EUROPEAN CONFERENCE OF MINISTERS OF TRANSPORT

XX

SEVENTEENTH ANNUAL REPORT AND RESOLUTIONS OF THE COUNCIL OF MINISTERS

YEAR 1970

FLORENCE, 11th JUNE 1970
PARIS, 17th DECEMBER 1970

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GENERAL REVIEW OF THE PROCEEDINGS OF THE CONFERENCE AND OF ITS EXTERNAL RELATIONS

1. As in previous years, the Council of Ministers held two sessions in 1970 : in Florence (31st session) on 11th June, and in Paris (32nd session) on 17th December.

2. The Officiers of the Conference in 1970 were the Italian Minister of Transport (Chairman), the Spanish Minister of Public Works (1st Vice-Chairman) and the United Kingdom Minister for Transport Industries (2nd Vice-Chairman). The Officers elected at the end of the 32nd session for the coming year were the Spanish Minister of Public Works (Chairman), the United Kingdom Minister for Transport Industries (1st Vice-Chairman) and the Netherlands Secretary of State for Transport and Waterways (2nd Vice-Chairman).

3. The Committee of Deputies held six sessions in 1970. It worked with the assistance of the following Standing Committees :

- the Investment Committee which, with the help of three Sub-committees (Railways, Roads, Inland Waterways) dealt with a series of practical studies in the field of transport economics. It produces a yearly report on transport investment and output in the Member countries for the following transport sectors : rail, road, inland waterways and pipelines (see Part II) ;

- the Railway Committee, whose proceedings are set out in Chapter III ;

- the Road Safety Committee (see IV) ;

- the Economic Research Committee ;

- the Urban Transport Committee (see Chapter VII).

The Noise Abatement Committee did not meet in 1970. Its Chairman keeps personally in touch with the work of other international organisations in this field and reported on developments at the 31st session of the Council of Ministers.

The Committee of Deputies and the subsidiary Committees were supported by 13 Groups of Rapporteurs. Such Groups are appointed on an ad hoc basis as required and are made up of representatives of four or five countries. As mentioned in previous reports, this is a useful procedure which has proved most effective for the preparation and drafting of basic documents and which appreciably eases the burden on Delegations and on the Secretariat.

When the proceedings of a group of rapporteurs reach the stage where actual negotiations are involved, it is given working party status and open to all Member countries of the E. C. M. T. Cases in point are the Group appointed to study the working conditions of crews of road vehicles in international traffic in 1969, and the Group appointed to draw up proposals for the multilateral road transport quota in 1970.

4. The two following Restricted Groups, appointed many years ago under Article 8 of the Protocol setting up the E. C. M. T., were in operation in 1970.

a) Restricted Group "A", consisting of the six Ministers of Transport of the Member countries of the European Economic Community (E. E. C.), which meets immediately before each session of

the Council of Ministers, when it then reports on transport developments within the E. E. C., thus keeping the Conference informed and providing a link between Community members and other Member countries of the E. C. M. T. ;

b) Restricted Group "B", comprising 14 countries, which is concerned with the co-ordination of road traffic rules and road signs and signals. The work of this Group is described in Chapter IV.

5. The organisation chart of the E. C. M. T. is shown in Annex I.

6. Relations with other international organisations developed satisfactorily in 1970.

7. As in previous years, the O. E. C. D. made available to the E. C. M. T. the practical working facilities provided for in the agreements between the E. C. M. T. and the O. E. E. C. first signed in 1954 and then renewed in 1961 when the O. E. C. D. was established.

The E. C. M. T. takes this opportunity of expressing its warmest thanks to the O. E. C. D. for its help and co-operation.

The O. E. C. D. /E. C. M. T. Liaison Committees appointed to deal with joint problems had no occasion to meet in 1970, but two sessions were held by the Scientific Liaison Group, appointed in 1968 under the aegis of these Committee to avoid duplication and organise co-operation between the two Organisations with regard to scientific research on transport, road construction and road safety. The Group considered the current research programmes and the progress made with various studies. It found that, generally speaking, no major difficulties were immediately apparent with regard to research as such. Directives were given for the continuance of the joint study on "Transport in New Communities" which began in 1969. In the course of these meetings, the representatives of the E. C. M. T. stressed the role that this body was called upon to play as regards policy and economic co-ordination in the transport field.

The new guidelines of the O. E. C. D. Programme of Action with its special emphasis on environment problems will doubtless give rise to exchanges of views between that body and the E. C. M. T. in 1971.

8. A main event in relations between the E. C. M. T. and the Council of Europe was the submission to the Consultative Assembly, on 19th September, 1970 of the 17th Annual Report of the E. C. M. T. by the then Chairman of the conference, Mr. Italo Viglianesi, Minister of Transport of Italy. Resolution N° 454 was adopted by the Assembly on this occasion.

Close and friendly contacts were maintained between the services of the two Organisations throughout the year. Views were exchanged on their respective programmes and representatives of the E. C. M. T. attended several meetings organised by the Council of Europe. For instance, the E. C. M. T. was invited to attend the meeting of Ministers responsible for Regional Planning, held in Bonn on 7th-9th September, 1970, which had been arranged by the Council of Europe in joint consultation with the German Federal Government.

The Secretariats of the two Organisations also co-operated closely with each other for the preparation of the Conference on Road Safety Education in Schools which is to be held in 1971.

9. The Director of the Transport Division of the United Nations Economic Commission for Europe regularly attended the ordinary sessions of the Committee of Deputies and was represented at several meetings of subsidiary bodies. The E. C. M. T was itself represented at the annual session of the Inland Transport Committee of the E. C. E. and at various meetings of specialised working parties. Co-operation between the two bodies is thus very close : it enables the E. C. M. T. to make use of certain basic studies which are essential for its own comprehensive reports or for decisions to be taken by the Council of Ministers.

10. Regular contacts are maintained between the Secretariat of the E. C. M. T. and the General Directorate for Transport of the European Economic Community.

11. The E. C. M. T. is regularly in touch with the Central Commission for Navigation of the Rhine and attended several of its meetings in 1970.

12. Although air transport does not fall within its terms of reference, the E. C. M. T. is increasingly confronted with problems for which the air transport implications must be taken into account so that the transport system may be seen as a single entity. Whenever air transport and inland transport issues have been found to be interlocked, the E. C. M. T. has called for the co-operation of the European Civil Aviation Conference (E. C. A. C.) and of the Institute of Transport Aviation (I. T. A.). The E. C. M. T. is in fact a member of this latter body.

Generally speaking, it is fair to say that the E. C. M. T. is regularly in touch with these two organisations and that the climate of these relations is most satisfactory.

13. The Conference always gives special concern to co-operation with non-governmental international organisations. These have been invited to take part in various meetings together with government delegations. They all took part in the work done within the framework of the Investment Committee. All the organisations concerned with container traffic were given a hearing by the Group of Rapporteurs on Combined Transport in 1970 : Delegates from organisations specialising in Maritime Transport and Air Transport, for instance, also attended besides those concerned with Inland Transport. In addition, E. C. M. T. Committees or Working Parties consulted, on several occasions, the organisations directly concerned with the work in hand.

In paragraph 23 of the 16th Annual Report, reference was made to the organisation of seminars, that is, meetings of senior officials designed with a view to formulating practical conclusions on the basis of theoretical studies covering the topics dealt with at Symposia or Round Tables. In order that the non-governmental international organisations may be more closely associated with this integration of theory and practice, they were invited for consultations on the day before the Seminar on Urban Transport and the Seminar on Allocation of Infrastructure Costs. In this way, substantially closer links were established between the E. C. M. T. and the non-governmental international organisations in 1970.

As in previous years, all the non-governmental international organisations with which the E. C. M. T. has working relationships were invited to a hearing, on the eve of the 32nd session of the Council, by the Officers of the Conference, so that they could give their views on the problems listed on the Agenda for that session and, more generally speaking, on all the activities of the E. C. M. T. and on the topical issues calling for the Ministers attention. These hearings are most useful and the views put forward always receive very close attention.

The E. C. M. T. attended a number of meetings of the International Chamber of Commerce.

It co-operated very closely with the Prévention Routière Internationale, and sponsored several events organised by that body. The E. C. M. T. attaches special value to this co-operation in view of the importance of road safety problems.

CHAPTER II

GENERAL TRANSPORT POLICY

A. ACTION TAKEN BY THE E. C. M. T.

14. The E. C. M. T. has always considered that its main task, which follows from the objectives laid down at the time of its foundation, is to define the guidelines of general transport policy. The Council of Ministers is well aware of its responsibilities in this respect and appreciates, in particular, the stress laid by the Consultative Assembly of the Council of Europe on the need for progress in the search for meaningful solutions to the many urgent problems that transport of international importance involves.

15. Previous reports showed what it had been possible to achieve in this field, especially since 1963 : the formulation of an Outline Plan setting out the main elements of a transport policy and signposting the course of future proceedings ; agreement on the general policy, aims and principles set out in the Outline Plan, and a series of successive studies on means of action. It is precisely in this last area, i. e. means of action, that difficulties arise and that different national policies, involving varying degrees of freedom and control, and based on different geographical and socio-economic conditions, are inclined to clash.

16. As mentioned in the XVIth annual report (paragraph 16), in order to coordinate and back up the action of the E. C. M. T. - which had become somewhat widely scattered over a series of specific projects - a standing Group of Rapporteurs was appointed under the Committee of Deputies to draw up periodically a programme of work covering all modes of transport and showing which points deserved priority. The two-year programme of work proposed by the Group in 1969, which was approved by the Council of Ministers, provided for the formulation of practical measures in clearly defined fields selected in the light of their particular importance. Thus, the intention at the time already was to give up the practice of all-embracing discussions based on the confrontation of national policies at a general level which doubtless helped to give an overall picture but did not lead to practical results.

17. During the year 1970, General policy activities continued in accordance with the two-year programme approved the year before and it is gratifying to be able to put on record that, despite the difficulties involved, positive results were achieved last year : namely, the agreements on automatic coupling and on the introduction of a multilateral quota for international road freight transport, both of which had been under consideration for many years. More details on these agreements are given below.

18. At the 32nd session of the Council (December 1970), a working paper on general transport policy was put before the Ministers with a view to their laying down the guidelines for a new two-year programme. This document and the discussions which followed assumed even wider significance for in addition to the future outlook, the Council took stock of what had been already done, the difficulties encountered, and the impact on E. C. M. T. studies of developments within the European Economic Community.

In the light of a most interesting discussion, the Ministers drew the conclusion that similar progress reviews should be submitted to them each year to enable them to take action on policy matters in a more direct manner.

19. It may be noted that, in accordance with the conclusions of the Council, the future two-year programme on general transport policy will include the following points :

a) efforts must be made to

harmonize the terms of competition as between modes of transport ; though some countries do not treat this as a matter of priority, it has to be recognised that others judge it to be a pre-requisite of progress in the shaping of general policy, especially with regard to liberalisation ;

b) special attention must be given to the development of European trunk line networks for the various modes of land transport ;

c) better co-ordination is needed between action on general transport policy in the E. C. M. T. and action on common transport policy in accordance with the provisions of the Treaty of Rome in the E. E. C. ;

20. As before, liaison between the work of the E. C. M. T. and that of the European Economic Community was dealt with by Restricted Group "A", which is made up of the six Ministers of the Common Market countries. This Group met regularly just before each plenary session of the Council to finalise the statement to be made to the other Ministers so that they may be informed about activities in the transport field within the Community with a view to possible discussions.

21. The main points referred to in 1970 were as follows :

- adoption of a Directive (8th December, 1969) which concerns the recording of international road haulage operations on a regional statistics basis, the aim being to get a better knowledge of traffic flows ;

- adoption of a Decision (27th January, 1970) on the organisation of infrastructure cost surveys in five E. E. C. conurbations ;

- adoption of a Regulation (16th February, 1970) which amends Article 5 of the Regulation of 30th July, 1968 concerning the introduction of bracket rates ;

- various Directives concerning the harmonization of technical requirements for motor vehicles ;

- final approval of the Regulation on aids to transport industries ;

- introduction, under a Regulation (20th July, 1970) of a mechanical device for monitoring the driving hours of road vehicle crews ;

- adoption of a Resolution asking the railways to proceed gradually with closer co-ordination and co-operation ;

- an Agreement arrived at, within the framework of the Central Commission for Navigation on the Rhine, between the Member countries of the E. E. C. and the other signatory States to the Manheim Convention, with a view to creating standard conditions for all navigation on the Rhine.

22. The Council's discussions at its 32nd Session made it clear that Restricted Group "A", which meets only at Ministerial level immediately before the plenary meeting of the Ministers, is no longer in itself an adequate instrument to ensure the fully effective co-ordination - which is increasingly needed - between the transport activities of the European Economic Community and those of the E. C. M. T. A new procedure is being considered to supplement the existing arrangements and bring working methods into line with present requirements.

23. The E. C. M. T. actively continued its work on economic research in the transport field in order to provide the Ministers with objective grounds for decision-making.

24. The Economic Research Unit instituted in 1967 has been gradually organised and developed. Its activities proceed at two levels : Symposia and Round Tables.

25. Symposia are held every two years. The topics selected are of fairly wide scope. The participants, about 300, come from the universities, government and business circles, international organisations and the newspaper world.

In 1970, the E. C. M. T. began the preparatory arrangements for a Symposium to be held at The Hague from 5th to 7th October, 1971.

Subjects for discussion are selected in the light of their topical interest.

In order to keep the discussion within even narrower boundaries than in the past, only two topics have been selected, as follows :

Topic I : Choice between private and public transport

I. 1 - The psychological factors of choice

I. 2 - The effect of the organisation of transport facilities

I. 3 - The role of cost

Topic II : Economic criteria for the maintenance, modification or creation of public transport services which may not necessarily be profitable

II. 1 - Urban and suburban transport

II. 2 - Transport outside towns (passengers and freight).

In order to give the discussion more depth and bring out their conclusions more clearly, the procedure will be different from that adopted hitherto : after the general discussion, the lessons to be drawn from it will be debated in public by a panel of experts.

26. The Round Tables bring together from 15 to 20 people who are selected, in the light of their qualifications, to discuss clearly specified issues from a scientific angle. Four Round Table sessions were held in 1970 : two of them (4th-6th March and 4th-5th June) dealt with "pricing the use of infrastructures", the other two discussed the following topics :

- the impact of high-speed ground transport on demand (9th-10th April) ;

- costs and benefits of road safety measures (18th-20th November)

The findings of the Round Tables are set out in documents to which the E. C. M. T. tries to give the widest possible circulation.

27. As pointed out in the XVIthe Annual Report (paragraph 23), it was important that what had been achieved at a practical level by the Symposia and Round Tables should be of practical help for formulating a general transport policy. This was the reason for the institution of Seminars. These are meetings where senior officials, using the work done on particular topics and Symposia or Round Tables as a basis, prepare material that can be used by the Ministers for decision-making.

Two Seminars were held in 1970 :

- the first (20th-22nd April) was on "Immediate measures for improving traffic flow in existing towns". A report was drawn up and the conclusions, adopted by the Council, should be of guidance for government action. Copies will be widely circulated to municipal authorities ;

- the second (28th-30th October, 1970) dealt with "Pricing the use of infrastructure". Though it has not been possible to formulate detailed practical rules on this difficult problem, it seems that some general guidelines have been worked out. They will be submitted to the Council of Ministers in 1971.

28. The publication of the Six-Monthly Bulletin of Information continued in 1970 (see XVI th Report, paragraph 25). The Bulletin indicates the research projects on transport economics currently proceeding in Europe. It is much appreciated by research staff because of the valuable information it provides for co-ordination of research.

Studies for the institution of an integrated system of research documentation were actively pursued. A common documentary language has been built up and discussions began on the structural arrangements required. It is hoped that these discussions will be completed in 1971.

29. One of the specific issues dealt with under the heading of general policy was the liberalisation of certain types of occasional (i. e. unscheduled) passenger transport services or, more precisely, services of this kind involving

an outward journey unladen and a return journey under load. The decision concerning liberalisation on this point already adopted by the Council of Ministers at its 30th session - as pointed out in the previous annual report - could not, unfortunately, come into force at the specified date (12th January, 1971) as it was found necessary to produce a common control document.

30. Attention was drawn in last year's report (paragraph 27) to the difficulties in reaching agreement on the multilateral quota for international road freight transport. These difficulties mainly concerned the adoption of measures for harmonizing the terms of competition, some delegations having treated this as a sine qua non. It is gratifying to see that the obstacles were gradually overcome in 1970. Agreement was reached on the institution of the quota and on the number of licences to be allocated to each country ; each licence will enable its holder to undertake freely any international transport of goods between areas within the E. C. M. T. 's jurisdiction.

The date at which the agreement comes into effect is not yet settled as it depends on the coming into force of the Agreement (A. E. T. R.) on the Working Conditions of Crews of Road Vehicles.

The political will to achieve a positive result concerning this three-year experiment with a multilateral quota induced certain countries to forego their original demands for previous harmonization, but without this prejudging the stand they would take at the end of the three-year period when the question of moving on to a permanent system came up for discussion ; in fact, they have already made it clear that their attitude would be a negative one unless essential harmonization measures were taken or covered by binding commitments by that date.

31. The study on total exemption from all duties and taxes on international road freight in transit, which had been undertaken at the request of the Greek Delegation, was continued in 1970. This matter falls within the framework of the harmonisation of terms of competition and the principles involved have a bearing on general transport policy.

32. Though the problems relating to combined transport have a bearing on general transport policy, they are dealt with in Chapter VI below.

Social problems :

33. The E. C. M. T. was again concerned with social and human factors. The problems it has to deal with are indeed seldom without human implications, especially where transport workers are concerned. It is fair to say that the Conference does not overlook this aspect, for though it has no special competence covering social issues, it does give particular attention, at every level of enquiry, to the impact of regulations or technical progress in the field concerned. A case in point is combined transport, or more precisely, large container transport ; here, the social aspects were carefully examined. Another instance is the automatic coupling of rolling stock and its direct effect on the working conditions of the labour force.

The E. C. M. T. maintains regular relations with the two largest international trade unions : the World Confederation of Labour (C. M. T.) and the International Transport Workers Federation (I. T. F.). Each year, on the day before the Ministerial session held in autumn these Organisations are invited, like the other non-governmental organisations, to a "hearing" by the Officers of the Council of Ministers. An opportunity is thus given them to express their views on the current programme and the draft conclusions envisaged, and to make any suggestions concerning the activities of the Conference. The information obtained in this way is communicated to the Council at its plenary meeting and carefully considered.

In addition, whenever the E. C. M. T. arranges a general hearing, as was the case in 1970 for large container transport, the two international trade-unions

mentioned above are invited to take part.

As another token of its concern to give attention to aspects of special importance for transport workers, the Conference convened, in 1970, a Group of Rapporteurs comprising representatives of four countries and of the two international unions in order to determine the items in its programme of work for which social aspects are of special relevance.

B. ACTION AT NATIONAL LEVEL

34. It is the usual practice for the Annual Report to set out the most important general transport policy measures adopted by Member countries of the Conference. This gives a useful idea of current trends and of the influence of E. C. M. T. action at national level.

35. The following measures are reported in the Federal Republic of Germany :

- 5 per cent increase in the quotas assigned to long-distance public transport vehicles. This increase, dating from 3rd July, 1970, had become necessary in the light of cyclical conditions.

- an amendment (4th December, 1970) to the legislation on road freight transport. This amendment enables all operators to determine the notional centre of the zone with a 50 km radius delimiting short-distance haulage. However, the maximum distance between the headquarters and the actual centre must not exceed 30 km (50 km for frontier areas and areas north of the Nordostseekanals).

- adoption of an amendment to the legislation concerning the taxation of long-distance transport undertakings and renewal, for one year, of the taxes on freight transport. The aim of this provision is to avoid, for a transitional period, excessive growth of road freight traffic.

- rail, road and inland waterways freight rates which had remained unchanged since 1966, were raised during the first half of 1970. Additional labour costs led to further increases of up to 20 per cent in December 1970.

- adoption of new road transport regulations with an eye to improving road safety. These new regulations paid due regard to the following international agreements :

- world Convention on Road Traffic Rules signed at Vienna.

- world Convention on Road Signs and Signals signed at Vienna

- European Agreements supplementing these Conventions.

- an Order of 4th May, 1970, designed to ease the flow of holiday traffic. Heavy vehicles were banned on motorways and certain federal roads during nine weekends in the holiday period. This appreciably improved the flow of weekend traffic.

- the Ordinance on safeguards concerning the transport of dangerous goods by road (23rd July, 1970). Transport of this kind is subject to licensing by the road traffic authorities concerned.

36. In Austria, no legislation relating to transport co-ordination is reported in 1970. However, as part of the Austrian Government's overall programme concerning transport, "a structural survey" was conducted for the central areas of Austria. Consideration was given to ways and means of making road transport services in this part of the country.

The recommendations cover :

- planning and organisation,

- adaptation of the railway network,

- measures for improving rail passenger traffic,

- measures for improving rail freight traffic,

- restructuring of the highway network,

- urban public passenger transport and co-operation in the field of short-distance public passenger transport.

As regards combined transport, an important step towards fruitful co-operation between road and rail is the piggy-back service accross the Arlberg between Bludenz and Schönwies, which began on 29th December, 1970.

An agreement has been signed with the German Federal Government with a view to facilitating the flow of rail traffic across the frontier. Bilateral agreements on international passenger and freight transport by road were also concluded or amended in 1970 to cover requirements resulting from the growth of traffic.

Legislation initiated in 1969 to provide safer working conditions for taxi drivers was adopted in 1970.

37. In Belgium, the electrified network was sizeably extended in 1970. The Namur-Liège and St. Nicolas-Antwerp sections came into service, thus raising the total length of the electrified network to 1,200 km. The electrified network accounts for 28.5 per cent of the entire network and 60 per cent of total traffic. Rail traffic in 1970 reached a record level, the figure for tonne-km being 7.5 per cent higher than in the previous year. Despite increased fares, the drift away from rail passenger transport, which has been going on for some years, is levelling off.

As regards road traffic, the number of new vehicles licensed in 1970 was about 10 per cent down as compared with the figure for the previous year, which was exceptionally high. The level of activity of the road transport trade was better in 1970 than in previous years, doubtless because economic conditions were favourable. However, there is a potentionally critical situation because of the inadequate level of prices in contrast with steadily rising operating costs.

International road transport recorded a further increase, especially as between Belgium and France and Belgium and Germany. Combined transport is also expanding most satisfactorily : a special terminal was opened at Antwerp in 1970.

Strikes at the beginning of the year brought down the figures for inland waterway transport by about 2 per cent as compared with 1969, but more recent developments suggest that the outturn for the full twelve months will finally be much the same. In the Brussels conurbation the first four stations on Line n° 2 of the "pre-metro" network came into service.

As regards legislation, one of the most important developments was the Royal Decree of 14th September, 1970 setting up a National Committee for Co-ordination of Transport Policy. This is a permanent body appointed to advise on matters concerning co-ordinated policy in the transport field, with special reference to the following : investment, programming of transport infrastructure projects extending over several years, transport costs, allocation of public investment and financing of the Belgian transport system.

The membership of the Committee is made up of officials from the Ministries concerned, representatives of the "Conseil Economique Wallon", the "Economische Raad voor Vlaanderen" and the "Conseil Economique Bruxellois", and representatives of port authorities, inland transport undertakings, transport users and trade unions.

Rail fares were increased on 1st March, 1970.

Other noteworthy developments were :

- the Royal Decree of 23rd March, 1970, issued as an implementing order for E.E.C. Regulation N° 543/69 of 25th March, 1969, adopted by the Council of the European Communities, which concerns the harmonization of certain social provisions relating to the road transport industry.

The provisions of this Decree cover, inter alia, certificates of professional aptitude for passenger and freight transport, individual log-books

for keeping a check on daily rest periods, breaks exceeding 15 minutes, driving hours and idle time, time spent beside the driver, or in a bunk, when the vehicle is on its way, and all other types of hours on duty. Provisions relating to infringements of the regulations are also included.

- The Royal Decree of 5th January, 1970, amending that of 15th March, 1968, which lays down general regulations concerning technical requirements for motor vehicles and trailers.

- The Royal Decree of 26th November, 1969 on the application to inland waterway freight transport of Regulation N° 11. concerning the abolition of discriminatory treatment as regards rates and terms of carriage, in accordance with Article 79, paragraph 3, of the Treaty setting up the European Economic Community.

Under this Decree carriers are required to notify the Minister of Communications, or his Deputies, of any tariffs which provide for different rates and terms of carriage, according to the country of origin or destination, or the same goods on the same routes. Forwarding Agents and other ancillary transport undertakings are obliged to provide the Minister, on request, with full particulars concerning the services provided, at what price and on what terms.

38. In Spain, the main provisions adopted in 1970 were as follows :

- The Ordinance of 6th March, 1970, amending Articles 6 and 17 of the International Convention on Transport of Goods by Rail of 21st February, 1961, and approving the decisions of the Commission for the Revision of the Berne Conventions (C.I.M.).

- The Ordinance of 5th March, 1970, which lays down regulations concerning the sale and delivery of liquid fuels.

- The Decree of 21st March, 1970 amending Article 277 of the Highway Code and empowering "Civil Governors" to impose penalties.

- The Circulars of 31st March and 7th April, 1970, implementing the findings of the Working Party on Customs problems of the United Nations Economic Commission for Europe.

- The Decree-law of 25th April, 1970 approving the project for the Tarrangona-Valencia toll motorway.

- The Law of 2nd December, 1970 on the revision and adjustment of development projects in the RENFE modernisation plan and on financing measures, due regard being paid to the Government contribution.

39. In Ireland, the Transport Act, 1970, provided for the payment of a grant to the Railway Authority of £ 2.98 million in the financial year ending 31st March, 1971. This grant, which is non-repayable, is in addition to the annual grant of £2.65 million to meet the Authority's revenue losses.

The Government in 1969 announced its intention to make changes in the present arrangements for licensing of road freight haulage. The Bill which is at present before Parliament represents a first step towards a regime more in keeping with the growth of the economy and the practice in other countries. The Bill proposes to free the carriage of cattle, sheep and pigs for reward from the merchandise licence requirement and to remove certain restrictions on existing hauliers so that the road freight haulage industry would be in a position to adapt itself to future requirements. The general aim is to secure greater efficiency and to reverse the present trend towards own account haulage.

40. In Italy, legislation concerning transport co-ordination was enacted to implement Regulations approved by the European Economic Community (ECE) regulations concerning :

- abolition of public service obligations, compensation for "social" tariffs and normalisation of Italian State Railways accounts ;

- abolition of public service obligations for operators of inter-regional road passenger transport services, compensation for remaining public service obligations and reimbursement of costs incurred in respect of certain tariff obligations ;

- institution of a system of bracket rates for road transport between Member States of the E. E. C.

41. In Luxembourg, the main provisions adopted in 1970 were as follows :

- Law of 23rd April 1970, giving formal approval to the European Agreement on Transport of Dangerous Goods by Road (ADR), the corresponding Protocol of signature, and Annexes A and B to that Agreement (drawn up in Geneva on 30th September 1957).

- Grand-Ducal Regulation of 23rd November 1970, implementing EEC Regulation N° 543/69 of 20th March 1969 concerning the harmonization of certain social provisions in the road transport field.

Grand-Ducal Regulations of 14th March 1970, 17th July 1970, 16th October 1970 and 23rd November 1970, amending and supplementing traffic rules applicable on all public highways.

With regard to these four regulations, the following points are particularly worthy of note ;

Adaptation of the national regulations concerning driving licences for heavy vehicles (lorries, buses and coaches) to match the provisions of EEC Regulation N° 543/69 mentioned above ;

Introduction of a 90 km/h speed limit on all roads outside built-up areas at weekends and on public holidays ;

Provision to the effect that the weight of tractive vehicle to weight of trailer ratio shall not exceed 1 : 1. 4.

Articulated motor coaches authorised for road traffic provide that the total length of the combination of vehicles does not exceed 18 metres ;

Speed limit of 90 km/h for vehicles with studded tyres during the period 15th November-15th April of each year.

42. In the Netherlands, two Bills relating to inland waterway transport came before Parliament in 1970, one providing for the scrapping of canal craft, the other for the abolition of the roster system applied to domestic inland waterway transport.

The Netherlands Government's railway policy aims to have the railway system operated by an independent undertaking organised on a commercial basis.

43. In Portugal, the principal measures to which attention may be drawn are as follows :

- a Decree-Law of 22nd October, 1970, regulating and standardizing the pattern, formulation and publishing of collective bargaining agreements ;

- adoption of the Resolution on Customs Problems (N°. 28) of the E. C. E. Inland Transport committee ;

- the conclusion of basic studies on the reorganisation of the Special Land Transport Fund so that it may effectively play its role in providing financial support for the restructuring of the transport sector ;

- the Decree-Law integrating in the National Pensions Fund, for purposes of disablement, old age and death benefits, Portuguese Railway workers (CP) affiliated to the Railway Workers' Social Security Funds of the Northern Portugal Railways Company, the Special Fund for Railway Workshop Staff and the Portuguese Railways Unestablished Staff Disablement Fund. The provisions also apply to staff employed by the Estoril Company ;

- the restructuring of the Portuguese Railways' Commercial Department ;

- the rationalisation of passenger and freight transport supply ; more frequent adoption of contracts of carriage combined with cartage ; affiliation to Intercontainer ; projects for the purchase of containers and rail or port trans-

shipment facilities ; adhesion to the scheme for European wagon-load tariffs for large container transport ;

- continuance of studies and other activities concerning renewal of infrastructure, more efficient use of vehicles and reorganisation of management methods ;

- an Order of the Secretary of State for Communications and Transport laying down interim provisions for minimum dimensions and loading capacity of vehicles ;

- depositing of the Instrument whereby Portugal accedes to the Convention on the Contract for the International Carriage of Goods by Road (C. M. R.) ;

- the Decree-Law which amends the previous provisions concerning licence fees for road freight vehicles, dual-purpose vehicles and trailers used for own account transport of goods ;

- the Decree-Law amending certain provisions of the Highway Code, in particular those concerning speed limits for drivers whose licence is less than 12 months old, crash helmets for drivers of motorcycles and mopeds, and safety belts in light motor vehicles ;

- the exchange of instruments ratifying the Convention between Portugal and Spain for the construction of an international bridge on the Guadiana (2nd April, 1970) ;

- the Order of 26th November, 1970 on the mandatory use of safety belts in motor vehicles ;

- partial revision of the "Motor Transport Regulations" concerning, in particular, franchises, the powers of the administration and inducements to industrial concentration ;

- the drafting of the "Statute of International Road Transport" ;

- the formulation of new draft regulations on suburban public transport services ;

- the drafting of regulations on the construction and operation of road transport terminals.

44. In the United Kingdom, the only remaining licensing restriction on road goods vehicles is a quality control which is designed to improve vehicle safety by ensuring proper vehicle maintenance. Disregard of these conditions may result in a reduction of the number of vehicles authorised for use, or even in the suspension or revocation of a licence. This system, which is administered by licensing authorities appointed by, but completely independent of, the Government, applies generally to vehicles exceeding 3. 5 tons plated weight. It became fully effective on 1st December, 1970. At the same time the existing system of quantity control was finally abolished, having been phased out during the preceding nine months.

The substitute system of quantity licensing provided for in the Transport Act 1968 is to be repealed by the present Government as soon as possible. In the meanwhile, it remains inoperative. The future of the system of transport managers licensing, under which the holder of an operators licence must either be a qualified transport manager or the employer of such a manager, has not yet been decided. The report of an independent committee set up by the Transport Industry is at present being considered by the Government. Meanwhile, these provisions also remain inoperative.

In March 1970, regulations were made introducing more restrictive hours of driving and working for drivers of commercial vehicles in Great Britain. The principal change brought about by these regulations was the introduction of the 11-hour working day which permitted ten hours driving time daily. This working day may be spread over periods of up to 12 1/2 hours and 16 hours respectively for goods vehicles and passenger vehicles, under certain conditions. A half-hour break for rest and refreshment must be taken after not more than 5 1/2 hours duty, and a

driver must have an interval for rest of at least 11 hours before starting a new working day, (this may be reduced to 9 1/2 hours once per week for drivers of passenger vehicles). A goods vehicle driver may not be on duty for more than 60 hours in a working week and must have a period of at least 24 hours off-duty during each working week. A passenger vehicle driver may not be on duty for more than 132 hours in any two consecutive working weeks, subject to a maximum of 72 hours in any one week, and must have a period of 24 hours off-duty every two working weeks. A general exemption from these rules is provided for drivers who spend only short periods at the wheel each day, and a number of dispensations have been provided.

A new system of drivers and employers records was also introduced on 1st March, 1970. Drivers of most goods vehicles exceeding 3.5 tons plated weight must keep details of periods of driving, duty and rest in their current record book. Employers must keep registers of record books issued to their drivers.

45. In Sweden a Government decision, applicable as from 1st January, 1971, provides for a new scale of taxes which increases the charges on heavy goods vehicles and reduced those on small goods vehicles, buses and coaches.

Another Government decision applicable as from 1st January, 1971 is intended to mitigate the transport cost burden in certain parts of the country where Government support is justified on grounds of regional policy. These provisions apply to land transport of goods (semi-finished or finished products) involving hauls of 300 km or over.

Monitoring of heavy goods traffic as regards plated weight and working hours of drivers has been strengthened.

A freely-negotiated agreement between the Ministry of Communications and representatives of the Transport Industry provides for the limitation of heavy goods vehicle traffic at certain times of the years.

46. In Switzerland, work is proceeding on an overall approach to national transport policy. An interim report will be published shortly.

Chapter III

RAILWAY PROBLEMS

A. FINANCIAL SITUATION OF THE RAILWAYS

a) General activities

47. The sub-heading given to this section as in previous annual reports should be interpreted in a broad sense. Although some of its contents do indeed have an impact on the financial situation of the railways, they primarily concern the adaptation of this mode of transport to the role it should play in future in a market economy where the terms of competition with road and inland waterway transport would be harmonized. It is fair to say that in weighing up the chances of the railways during the next few decades with due regard to the pattern of production and the location of industry, or in seeking to reenvigorate international rail traffic - which in relative terms has lost ground to its competitors in recent years - governments were prompted by their abiding concern to find ways of curing the deficit of the railways, which lays a heavy burden on the public purse.

It may also be recalled that the studies undertaken on the future pattern of rail traffic are based on the E.C.M.T.'s programme of work concerning the financial situation of the railways and that - as recognised in Resolution N° 454 of the Consultative Assembly of the

Council of Europe - the development of international rail freight traffic cannot be separated from all the efforts for improving that situation.

48. It may be of some interest to note the general trend of traffic in the light of the comparative figures for transport output in the first nine months of 1970 and the corresponding period of 1969. According to the figures produced by the International Union of Railways (U. I. C.) the increases for the 18 members of the E. C. M. T. combined were as follows:

- passengers carried
  + 3. 1 per cent (4. 2)
- passenger-km
  + 5. 1 per cent (5. 6)
- tonnes carried
  + 5. 3 per cent (6. 7)
- tonne-km
  + 8. 6 per cent (8. 5)

(Figures in brackets refer to the six member countries of the European Economic Community).

49. At its 32nd Session, the Council of Ministers approved the report on the trend of rail traffic patterns. As pointed out in previous reports (see XVIth Report, paragraph 51) this proved a complex and difficult study because all the data needed to establish safely the relationship between transport growth and the trend of major economic sectors were not available. The study therefore had to be confined to a qualitative analysis for which very valuable assistance was provided by the O. E. C. D. and the U. I. C.

Forecasts were made on a sectoral basis ; they suggested that the demand for the transport of bulk goods normally carried in trainload lots will be inclined to grow to an appreciably smaller degree than traffic which might be potential for wagon-load train services. This finding shows how necessary it is to restructure the operating system of the railways, and to achieve the utmost reduction in operating costs, so as to meet demand for transport in wagonload lots so far as this can be done economically. It has to be recognised, as stated in the report, that the role of the railways will to a large extent depend on their freedom to practise an active commercial policy. Cooperation between governments and railway administrations is essential to this end.

50. As foreshadowed in the 16th Annual Report (paragraph 52), a programme of action for the promotion of international rail traffic was submitted and approved at the 32nd session of the Council of Ministers. In this connection, the E. C. M. T. is glad of the encouragement given by the Consultative Assembly of the Council of Europe in Resolution N° 454. This programme issued as CM(70) 25 is set out in the second part of this report. It comprises a whole series of proposals for concrete action the implementation of which lies with governments, but is sometimes a matter for the railway administrations themselves. In this latter case, governments have a stimulating role to play. The responsibilities incumbent on them lie at national and international level alike. A case in point is the government action required to abolish Customs, health and veterinary inspection procedures at frontier stations and gradually transfer them into the hinterland of the country after having simplified them. Such intervention must operate at national level, by contacts with the various government departments concerned and, of course, at international level as well since the problem to be settled is inherently an international one.

The discussions at the 32nd session of the Council showed which efforts should be given priority. Furthermore, in compliance with the aims assigned to it when it was founded, the E. C. M. T., by allocating the basic studies between the Economic Commission for Europe and the International Union of Railways according to their respective fields of competence, after having itself assumed responsibility in this respect, has acted in accordance with its general role of co-ordination.

It was finally decided :

a) to ask the Economic Commission for Europe to give priority, in its own programme, to the arrangements required to ensure that administrative inspections of all kinds affecting international goods traffic by rail may be gradually alleviated and transferred into the hinterland of each country ;

b) to instruct the International Union of Railways to draw up concrete proposals designed :

- to strengthen commercial co-operation between networks, in particular by providing for mutual delegations of authority as regards the margins within which rebates can be granted and the terms for individual contracts ;

- to ensure wider application of international through rates and general adoption of a single European scale ;

c) to draw up, in consultation with the U. I. C., and with due regard to regional planning requirements, a map defining the network of international trunk routes with a view to mutually consistent specifications for the equipment of the lines included in this network ;

d) to try to standardize, for international traffic purposes, the age limits for the 50 per cent fare reduction for children, in order to facilitate the arrangements for issuing international rail tickets.

51. It may be useful to point out that the Council of Ministers approved Report CM(70)7, which appears in the second part of this volume, and which contains a most interesting exchange of information on the position concerning railway auxiliary services in each country and the policies followed in this respect.

b) Normalisation of accounts

52. As in previous years, the E. C. M. T. enquired into the ways in which its Member countries had applied the normalisation of railway accounts, a procedure which it recommended in its reports of 1957, 1961 and 1967 on the financial situation of the railways. It may be recalled that this procedure consists in showing, for each country individually, the liabilities that are not inherent in their present operation that the railways have to bear and to fit the railways in the same general context as other firms in the country concerned. This makes it possible, in particular, to apply what is recognised as one of the basic principles of general transport policy, that is, to try to achieve equal treatment for the different modes of transport through appropriate grants or compensation paid by governments to the railways.

53. In the light of the information supplied by the International Union of Railways, the amount of compensation granted to the railways in those countries where normalisation of accounts is the usual practice, was much the same in 1969 as in 1968. The implementation of this procedure, which first began about 14 years ago (Resolution N° 10 of the E. C. M. T., 1957) has more or less "settled down" in each individual country. On the basis of recent studies in the European Economic Community, a Regulation on normalisation has been drawn up for the Six countries concerned. This will make for more uniformity in future.

It may be useful to point out that, having regard to the grounds of general transport policy, the normalisation of accounts is applied in ten Member countries of the E. C. M. T. since 1969, Austria and the United Kingdom having recently joined the countries which had already adopted it.

54. The usual practice in the reports of the International Union of Railways is to show what is known as "normalisation claims", that is, the railways' own estimates of the compensation due to them. "Normalisation grants" are the claims accepted by governments within the context of their own policies.

The ratio of claims to grants for selected countries in 1967, 1968 and 1969 is shown below :

	1967	1968	1969
Germany DB	0.45	0.45	0.57
Belgium	0.60	0.57	0.50
France	0.65	0.62	0.60
Italy	0.67	0.48	0.52
Netherlands	0.56	0.99	0.96
Sweden	0.88	0.85	0.87

This table makes it clear that governments are careful to refrain from adding to the list of items to be "normalised" unless there is good reason for it from a transport policy angle.

55. To get a clearer idea of the exercise, it may be useful to see how it worked and what it covered in the various countries in 1970.

56. In the Federal Republic of Germany DM. 41 million were awarded to the Bundesbahn on the ground that, unlike other transport undertakings, they have to bear the cost of children's allowances for their present work force. In addition to DM. 443 million paid in respect of refugees, West Berliners and war victims, the Federal Government contributed DM. 890 million to cover exceptional benefits payable by the railways because of their present structure.

The Federal Government also allocated DM. 5 million as compensation for refusal of line closures, and DM 1.7 million as a lump-sum contribution from the DB to the Reichesbahn, this being a requirement for the resumption of freight traffic in the Gerstungen sector.

DM. 170 million were allocated to cover level-crossing operating and maintenance costs.

DM. 860 million were awarded to the Bundesbahn to cover losses in respect of fares reduced on social grounds, and DM. 20 million as compensation for refusal to increase certain goods rates.

In addition, the Government contributed DM. 205.2 million to the servicing of loans raised for increasing the Bundesbahn's own assets.

57. In Austria, on the basis of the Railways Act of 1969, the Government allocated S. 1,700 million for retirement and other pensions, and S. 350 million for revenue losses in respect of "social" tariffs and subsidies.

58. In Belgium a "Communications Finance Working Party" was instructed by the Ministerial Committee for Economic and Social Co-ordination to make a quantitative analysis of the railways' obligations, costs and benefits which ought to be normalised. Studies are in progress.

59. In Spain, no concrete steps concerning the normalisation of accounts were taken in 1970 though - as before - various studies were conducted on the subject ; for instance, the reclassification of operating expenditure on a functional basis. This study falls into the context of negotiations between R.E.N.F.E. and I.B.R.D. for the preparation of a Third Credit Agreement.

Though some measures adopted during the year do not in themselves constitute normalisation, they do nonetheless lighten the financial burden.

Such measures include :

- As regards active staff : Circular N° 367 of 10th January, 1970, which extended the time limit for entitlement to the early retirement benefits set out in Circular N° 367 issued in October 1969. This is in keeping with the policy of reducing the work force on a voluntary basis which was initiated in 1964 in conjunction with the modernisation of the R. E. N. F. E.

- As regards retirement and other pensions : expenditure under this head was borne by the Railway Workers Mutual Aid Fund and hence, was not included in the R. E. N. F. E. 's operating account. Though the deficits of this fund were originally met by the R. E. N. F. E., Law N° 26 of 2nd December, 1970, provides for them to be financed by the Government.

60. In France, the supplementary provisions of 27th January, 1971, which amend the financial clauses of the Agreement between the French Government and the S. N. C. F. of 31st August, 1937, were to come into force on 1st January, 1970.

The new provisions affect the four following items :

b) retirement and other pensions ;

e) infrastructure and installations used jointly with other modes of transport ;

g) other financial charges ;

h) certain tariff reductions.

1) The government contribution to retirement pension costs will be equal to the difference between :

- the overall costs incurred in respect of retirement benefits less the investment income from the retirement pensions reserve fund ; and

- the total for "normalised" contributions (employers' and workers' contributions combined) the rate of which is initially fixed at 40. 3 per cent of pensionable salaries.

The normalised contribution is calculated in such a way that the liabilities of the S. N. C. F. are the same as those of an undertaking whose staff would be affiliated to the "reference pensions scheme" and would receive, in addition, special benefits at the employers' expense.

2) (a) The normalisation of costs in respect of level-crossings consits of a government contribution amounting to half the overall costs relating to level-crossings for public use, irrespective of the legal status of the highway effected.

(b) Government assistance in respect of infrastructure costs will be calculated by applying to each of the major categories of activities of the S. N. C. F. uniform rules having an equivalent economic impact, as regards infrastructure pricing, as those applied to competitive modes.

3) A "shareholders" advance of Frs. 500 million is to be granted to the S. N. C. F. by the government as part of the arrangement for 1970, for the consolidation of government interest-bearing loans and advances. This advance, which will be non-reimbursable until 31st December, 1982, will bear interest at 4. 5 per cent.

4) Article 18, 3 of the supplementary provisions of 27th January, 1971, lays down the principle that the government will cover any revenue losses due to obligations imposed on the S. N. C. F. This implies that the Government will reimburse the costs borne by the latter in respect of reduced rates charged under the arrangements concerning regional adjustments to the tariff reform of 1962 for the carriage in one or more wagon-load lots of certain goods consigned to or from listed stations.

No new measures concerning the normalisation of other items were taken in 1970 : any differences in the amounts shown for such items are due to traffic and economic trends.

61. In Ireland, the railways do not at

present publish normalised railway accounts. During 1970 this issue was examined as part of the preparations necessary to Ireland's application for membership to the European Economic Community.

62. In Italy, the Italian railways administration (F. S.) took no new measures concerning normalisation of accounts during the financial year 1970.

Under the existing rules, the Italian railways received the following refunds from the government during the financial year under review.

Million 49,846.00 as reimbursement of costs in respect of free transport, reduced rates and fares and mail transport (Law N° 1155 of 29th November, 1957).

Million 44,010.00 as a grant to compensate for losses on unremunerative lines (Law N° 1155 of 29th November, 1957).

Million 109,298.40 (provisional figure), as a grant to cover the operating deficit on the pensions fund (Law N° 1688 of 29th November, 1962).

Million 50,686.60 as reimbursement of yearly redemption payments in respect of loans raised for the financing of railway investments (Law N° 211 of 27th April, 1962 ; Law N° 688 of 6th August, 1967 ; Law N° 374 of 28th March, 1968 ; Law N° 1089 of 25th October, 1968).

Million 4,339.40 as reimbursement of yearly redemption and interest payments in respect of reconstruction allowance (Law N° 1155 of 29th November, 1957).

Million 724.50 as reimbursement of yearly redemption payments on loans raised to finance part of the deficits for the financial year 1963-1964 and the second half of 1964 (Law N° 1424 of 31st October, 1963 and Law N° 444 of 28th June, 1964).

63. In Luxembourg the amounts taken into account in respect of normalisation for the financial year 1970 were as shown below. They are based on the 1970 operating accounts and balance sheet ;

a) active staff		180,290
b) retirement and other pensions		484,493,148
c) taxes and dues (government account)		4,965,454
d) maintenance and replacements		
CFL account	81,021,523	
Government account	14,000,000	67,021,523
e) infrastructure and installations used jointly with other modes		12,679,646
f) reconstruction and war damage		Nil
g) financial charges		48,728,626
h) tariff reductions		Nil
i) other operations relating to normalisation		24,821,440
Total :		633,013,219

As in previous financial years, the foregoing amounts were calculated in accordance with the provisions with the draft agreement on the normalization of the accounts of the Luxembourg Railways (Société Nationale des Chemins de Fer Luxembourgeois) drawn up by the Government Commissioners and approved by the Normalization of Accounts Commission comprising representatives of the Government and Railways.

It must be pointed out that EEC Regulation N° 1192/69 of 26th June 1969 concerning standard rules for the normalization of railway accounts comes into force on 1st January 1971. A Grand-Ducal Decree of 12th April, 1970, concerning the implementation of this Regulation, accordingly instituted a new Government Commission to judge the claims for normalization of accounts

submitted to it. The Société Nationale des Chemins de Fer Luxembourgeois filed its claim for normalization of accounts for the financial year 1971 with this Government Commission on the basis of the provisions of the E. E. C. Regulation.

64. In the Netherlands, the work force increased in 1970 by 1,574 units and now stands at 27,610.

Netherlands Government payments to the railways were as follows :

- Fl. 98.8 million to the Railway Pensions Fund.

The corresponding appropriation for 1971 is Fl. 117.4 million.

- Fl. 18.5 million as a contribution to costs in respect of level crossings and structures jointly used by rail and road. The corresponding appropriation for 1971 is Fl. 20.5 million.

- Fl. 70 million as a contribution to "extraneous costs". The corresponding appropriation for 1971 is Fl. 105 million.

The legislation concerning temporary financial assistance to the railways which came into force in 1968 to enable them to meet their cash requirements up to the end of 1969, later renewed for one year, was repealed at the end of 1970. As E. E. C. Regulation N° 1191/69 is to come into force on 1st January, 1972, interim arrangements to cover cash requirements will be required for the year 1971.

65. In Portugal, the Government took no steps concerning normalisation of accounts. However, the Portuguese Railways Company intends to submit to the Administration a report setting out, on the basis of the principles laid down by the U. I. C. and E. C. M. T., the measures regarded as necessary in future, with reference to the normalisation of :

a) expenditure in respect of active staff,

b) expenditure in respect of retirement and other pensions,

c) expenditure on maintenance and renewal of equipment,

d) expenditure on infrastructure and level crossings,

e) financial charges,

f) other tariff reductions.

66. In the United Kingdom no new measures with regard to normalisation of railway accounts were taken in 1970. The British Railway Board's annual accounts for 1970 will be drawn up on the basis of the provisions of the 1968 Transport Act, which were described in last year's report.

67. In Sweden, normalisation measures were as follows :

- an allocation of S. Kr. 143.1 million to cover the difference between actual expenditure on retirement pensions and the amount based on the method of calculation adopted by insurance companies. Pension costs are estimated at 20 per cent of wage costs ;

- an allocation of S. Kr 11.5 million to cover half the yearly cost of level crossings ;

- other allocations were as follows :

- S. Kr. 228.5 million to offset losses on lines with a low traffic density ;

- S. Kr 16.4 million to offset losses incurred in catering for defence requirements ;

- S. Kr. 20 million in respect of employers' contributions to the Health Service ;

- S. Kr. 3 million for costs in respect of suburban services.

Government counter-claims were as follows :

- S. Kr. 30 million for maintenance and replacements ;

- S. Kr. 144.5 million for interest on public funds invested in the railways.

The net balance implies a government contribution of S. Kr. 248 million.

68. In Switzerland, despite the increase in traffic and correspondingly higher revenues, the financial situation of the Swiss railways is deteriorating. Rationalisation measures are no longer enough to offset steadily rising labour and materials costs and sharp increases in financial charges. The accounts for the financial year 1969 showed a small net

profit of Sw. Frs. 0.9 million and, under the Budget for 1970, expenditure exceeded income by only Sw. Frs. 8.7 million, but the Budget estimates for the financial year 1971 involve a deficit of about Sw. Frs. 46 million.

The question of compensating the Federal Railways for the liabilities they assume in the interests of the economy as a whole is becoming an urgent issue. A draft Federal Decree providing for a yearly compensation payment of Sw. Frs. 100 million, to be paid for the first time in 1971, has been put before the Swiss Parliament. In the light of the Swiss Railways' cost analysis surveys, this amount is intended to cover revenue losses in respect of work and school commuter traffic and parcels traffic.

69. In Turkey, though detailed normalisation accounts are not compiled, operating losses are partly covered by government grants. In addition, the Government has appropriated T£ 80 million as compensation for reduced rates imposed for the carriage of livestock, straw and hay in 1970.

c) Steps taken to put the railways on a more strictly commercial footing and to reduce their public service obligations

70. The steps taken in this field usually involve the closure of lines to all traffic or to passenger traffic only and the complete or partial substitution of road transport services for rail. The following data give some idea of international developments in this respect in 1970.

71. In the Federal Republic of Germany 104 km of main and secondary lines were closed to all traffic and another 112 km were closed to passenger traffic only.

The railways themselves operate bus services to replace those withdrawn from rail because of their low traffic density.

The statutory and other regulatory obligations laid upon the German railways, particularly as regards operating and traffic requirements, tariffs and the publication thereof, were not alleviated in 1970.

The Government has already paid to the railway administration, in anticipation of the entry into force of E.E.C. Regulation N° 1191/99 on 1st January, 1971, DM. 860 million as compensation for costs incurred on social grounds.

As part of the arrangements made on 12th December, 1970 whereby proposals for increases in tariffs for goods passengers, baggage and express parcels were approved, the Federal Minister of Transport laid down, for the first time, of 16th December, 1970, a frame of reference within which the German Railways are authorised to determine tariffs of their own accord to suit market requirements.

Structural changes of fairly large scope are at present being made in the organisation of the Deutsche Bundesbahn with a view to saving costs and manpower and improving both transport services and commercial services.

In accordance with the Federal Government's decision of 23rd July, 1970, six of the Bundesbahn Regional Directorates are to be gradually phased out as from 1971 so that, at the ultimate stage (round about 1975-1976) only ten Regional Directorates will remain. In conjunction with the winding up of these Directorates, central units have been set up with a view to trimming down the work force and obtaining better administrative on a few clearly specific fields (Central Directorate for Transport Central Marketing Directorate).

To comply with the requirements that a business enterprise must normally fulfil, the Deutsche Bundesbahn has developed its general and local agencies and delegated more authority to them with a view to improving contacts with railway users.

72. In Austria, the Austrian Federal Railways grant a 50 per cent fare reduction to men aged over 65 and women aged over 60 provided that they produce

a certificate for which forms are issued at railway stations. One type of certificate is valid at all times except Saturdays, Sundays, public holidays and during the weeks including Christmas, New Year, Easter and Whitsun ; the other type is valid every day.

As from 1st June, 1970, reduced fares (both first and second class) are granted by the Austrian Federal Railways on return tickets for honeymoon couples married in Austria. The charge is equivalent to the full fare for a single person, the other travelling free.

73. In Belgium, 55.7 km of single-track line and 32 goods yards were closed to traffic in 1970. A 27 km replacement bus service was instituted between Walcourt and Philippeville.

74. In Denmark, three stations and two halts were closed and 13 stations were converted into unmanned holts.

In October 1970, a Bill was introduced for the reduction of services and, if necessary, the closing of certain State railway lines and of the Glyngore-Nykobind Mors ferryboat service (the total length of railway line involved is 403.4 km).

75. In Spain, attention may be drawn to the operating profitability criterion set out in Articles 54, 55 and 56 of the Statutory provisions relating to the Spanish Railways (RENFE).

This profitability criterion is also embodied, as an objective, in the ten-year Modernisation Plan of RENFE, and special emphasis is again laid upon it in the Law of 3rd September 1970.

In the light of this criterion, RENFE has undertaken various measures including those relating to lines and stations and certain train services. On the first point, a programme has been drawn up on the basis of a survey of " "economic operation and closure of railway lines" showing the loss-making main lines and branch lines for which - from an economic and social stand-point- services could usefully be partially or entirely with-drawn. The withdrawal of rail services would imply their replacement by road services as a matter of course. This programme is nearly completed and corresponding proposals for such replacements will therefore be submitted to the Government.

Studies concerning lines with a low traffic density are being conducted to determine their operating deficit. In cases where their closure should not be authorised, the deficits would be treated as expenditure "not imputable to normal operations".

Similar grounds can be invoked in respect of lossmaking stations, that is, those for which total passenger and freight revenues fall short of the costs that could be saved by closure.

As regards train services for which revenue falls short of the costs that could be saved by withdrawing them, similar arguments can be put forward as for lines and stations.

At present, the railways bear the entire cost of level-crossing maintenance and there is no contribution on the road transport side.

The Decree of 20th December, 1962, sets out the Government's policy concerning the elimination of level-crossings. It specifies statistically-based criteria for this purpose and for the allocation of costs relating to structure common to rail and road.

However, as this Decree omits to provide for the allocation of level-crossing maintenance costs, such costs should therefore be reckoned as "expenditure not imputable to ordinary operations".

The Law of 2nd December, 1970, endorsed subject to some amendments, the programme for the implementation of RENFE Development and Modernisation Plans together with the financial provisions relating to the Government contribution.

76. In Greece, passenger services were partly withdrawn on the Kryoneri-Agrinion line.

77. In Ireland, the ordinary fare structure continued to be based on a specific rate per mile charge. The commercial policy of encouraging regular use of C. I. E. services and the further development of traffic by way of concession fares was continued and expanded as follows :

- the regular travel concession was expanded in order to cater for business firms as distinct from individual travel and up to three persons in a firm can now avail themselves of this facility by a system of graduated deposit payments ;

- the availability of cheap weekend return fares during the period October/ May was extended so that this facility is now available every weekend with the exception of peak periods at Christmas and Easter.

The rates for group travel were restructured to give considerable freedom to Sales Staff in making quotations with the object of competing more effectively with private bus transport. Combined rail and hotel packages were introduced from provincial centres to Dublin during the winter period.

A nation-wide publicity campaign for rail passenger travel was launched during the year, covering Press, radio and television advertising.

Rail passenger fares were increased by 6. 25 per cent on 22nd June, 1970 and by a further 17. 5 per cent on 26th October, Goods rates were increased by 7. 5 per cent on 22nd June and by a further 12 per cent on 26th October, 1970.

The accession of Ireland to the Rail Traffic Conventions (C. I. M. and C. I. V.) became operative on 1st May 1970.

During 1970 the programme of modernising major railheads and installing high capacity gantries at key locations capable of dealing with I. S. O. Containers was continued.

The drive to secure new business for the railway was maintained during 1970. In this connection, a noteworthy development was the contract secured by C. I. E. to cater by rail for the entire transport needs of a new large mining/ production enterprise in the south of Ireland, which commenced operations in April.

78. In Italy, two insufficiently remunerative estabishments were closed to traffic and five stations were converted into unmanned halts. Four bus services, substituted for rail, were introduced on the following routes : SONDRIO-TIRANO ; L'AQUILA-AVEZZANO ; ROME-AVELLINO and ROME-L'AQUILA.

79. In Luxembourg, three halts ceased to be manned. Domestic goods rates were adapted to match the requirements of mechanised computing.

A scale of charges for 25-ton wagon loads was introduced in the rate structure.

Three privately-owned passenger transport services were incorporated in the co-ordinated road transport system.

80. In the Netherlands, 93 goods yards (previously open to outgoing and incoming consignments) were closed.

81. In Portugal, the Railway Administration has long been conducting economic profitability appraisals concerning various lines which are thought to be unremunerative and possibly suitable for closure together with the introduction of bus services to replace them on essential routes. This work was actively pursued in 1970 and the following studies are now completed :

- Tua line
- Lousã junction
- Fafe-Guimaraes line
- Dão line.

82. In the United Kingdom, decisions were taken in 1970 to close nine rail passenger services and also to close two stations not connected with any service closures.

A total of 21 lengths of line had

passenger services withdrawn from them during 1970, sixteen of which resulted from decisions taken prior to 1970. In addition, seven stations were closed as a result of decisions taken in earlier years.

In 17 of the 21 withdrawals consent to closure was conditional on provision of replacement bus services.

The Secretary of State has no detailed control over the operation of replacement bus services after two years from date of closure.

The Secretary of State has no statutory function in connection with obligations to operate, to carry or to publish tariffs in the case of freight services.

However, in relation to passenger services where the Secretary of State refuses his consent to a closure proposal, it is usual for a grant representing the deficit to be paid to the British Railways Board.

In the London area, the British Railways Board are required to submit fare levels for approval by the Secretary of State. Outside this area the Board are free to determine levels of fares themselves in the light of their commercial judgement, except in the case of those services in receipt of grand aid where the Department considers fares in relation to the deficit of a service.

An important decision was taken in 1970 in connection with the London Rail Commuter Network, which is to be made viable by 1973 by the imposition of substantial increases in fares. During the financial year 1971-1972, it is expected that the amount of the subvention for this network will be reduced by about 10 million.

83. In Sweden, 346.7 km of line were closed to traffic, including 222.2 km closed to passenger traffic only. In addition, 118 stations were closed. The replacement of unremunerative rail services by bus services went on as and when this was justified on economic grounds.

84. In Turkey, rising costs in recent years have appreciably raised the overall "production" cost per tonne-km. New tariffs are accordingly envisaged to bring the operating deficit down to the least possible level.

B. ACTIVITIES OF THE EUROFIMA COMPANY

85. The year 1970 was marked by difficulties of access to the various financial markets and by the world-wide increase in interest rates.

86. Especially with an eye to the participation of Eurofima in the financing of automatic coupling for rolling stock the share capital of the Company was raised from Sw. Frs. 100 million to Sw. Frs. 300 million in the course of the year. Of the additional Sw. Frs. 200 million to which most of the member-administrations subscribed, the first Sw. Frs. 50 million were called in, thus raising the paid up capital to Sw. Frs. 150 million.

87. This new intake contributed to the financing of rolling stock. Other accruals were :

- a bank credit of Sw.Frs. 24 million (nominal rate : 7.25 per cent - duration eight years). This credit was allocated to the purchase of 555 container-carrier wagons for the INTERCONTAINER Company after an international invitation for tenders ;

- a Sw.Frs. 30 million bond issue on the Swiss market (nominal rate 6.5 per cent, duration 17 years) ;

- two bank credits which, combined with own assets, amounted to a total of Sw.Frs. 40 million.

88. The additional finance provided by EUROFIMA in 1970 amounted to Sw.Frs. 113 million. This was much less than in previous years.

89. In 1970, EUROFIMA carried out the first preparatory proceedings for an international invitation for ten-

ders concerning the financing of automatic coupling. It was decided to begin preliminary consultations with suppliers at the beginning of 1971.

90. The results for the financial year 1969, as approved by the General Meeting on 10th June, 1970, showed a gross profit of Sw. Frs. 6,570,320.85. The usual allocation was made to the Ordinary Reserve Fund, the statutory minimum dividend of 4 per cent was distributed and Sw. Frs. 2 million were transferred to Special Guarantee Reserves. The balance-sheet total rose from Sw. Frs. 1,203 million at the end of 1968 to 1,392 million at the end of 1969.

C. AUTOMATIC COUPLING

91. In accordance with the intentions expressed at the December 1969 session (see paragraph 92 of the 16th Annual Report), the Member countries having considered the case for automatic coupling on its economic merits, the Council of Ministers of the E. C. M. T. adopted, at its June 1970 session in Florence, an important Resolution a copy of which is appended in the last section of this report.

92. The Resolution stresses the benefits of automatic coupling, sets out the Ministers' decision in favour of its introduction and stipulates the time scale - i. e. from Easter 1979 to Easter 1981 - within which the railway administrations concerned will have to fix the dates for putting the system actually into service for international traffic and domestic traffic.

93. In this connection, the negotiations between the International Union of Railways (U. I. C.) and the O. S. J. D. (the counterpart Organisation for Eastern Europe) are proceeding very satisfactorily.

94. The same resolution invites EUROFIMA to take part in the financing of the project and the Member countries to group their orders with a view to long production runs.

Earlier on in this chapter, reference is made to the action already taken by EUROFIMA, and it is clear that this body is concerned to carry out, with the greatest possible care, the role that has been assigned to it.

Chapter IV

CONDITIONS CONCERNING ROADS AND ROAD TRANSPORT

A. EUROPEAN ROAD NETWORK

95. The tasks planned under the heading of general transport policy (see paragraph 19) include those designed for the development of trunk lines of international significance matching the requirements which follow from the expansion of production and trade. In this connection, the E. C. M. T. intends to take an active part in the revision of the European trunk routes ("E" roads) network which, in principle, is to be dealt with in the framework of the United Nations Economic Commission for Europe.

The Report on Investment, contained in the second part of this volume, gives full particulars concerning the development of the international network, and how it is equipped and utilised.

B. CO-ORDINATION OF ROAD TRAFFIC RULES AND ROAD SIGNS AND SIGNALS

96. It may be recalled that Restricted Group "B" of the E. C. M. T., which comprises 14 countries, began to work on the co-ordination of road traffic rules and road signs and signals in 1960. The first stage of this Group's proceedings consisted in formulating provisions which were gradually embodied in national highway codes. Next,

when the United Nations Organisation announced its intention to convene a World Conference in Vienna to revise the 1949 Agreement on Road Traffic Rules and Road Signs and Signals, the Group was actively engaged in drafting proposals for this Conference. This work contributed substantially to the drafting of the world conventions signed in Vienna in November 1968.

97. However, as these agreements were of world-wide scope, the provisions on a number of points were of a very general order and left a range of alternatives, hence the need to supplement and amplify them in such a way that the choices made by European countries were fully consistent with each other. The E. C. M. T. accordingly drew up in 1969 two European Agreements, one on road traffic rules, the other on road signs and signals with a view to adopting a common approach on the wides possible geographical basis. The drafts of these agreements were transmitted to the United Nations Economic Commission for Europe in Geneva.

98. Bearing in mind the importance and urgency of having standard European rules in this respect because of their impact on road safety, the Consultative Assembly of the Council of Europe, in Resolution N° 454, was disappointed to see that the texts relating to Europe had not yet been submitted for signature to the governments concerned and called on the E. C. M. T. to retackle this matter itself if definitive agreement should fail to be reached in Geneva by 30th June, 1971 at the latest.

99. Although this anticipates the contents of the annual report for the year 1971, it may be useful - and it is also gratifying - to make it clear without further delay that, at the beginning of this year, the E. C. E. authorities concerned reached agreement on the two texts applicable to Europe and that these will be submitted to governments for signature as from 1st May, 1971.

100. In 1970, E. C. M. T. Restricted Group "B" undertook the task of incorporating in a single document the provisions of the Vienna Conventions and Geneva Agreements. This work has already made considerable headway except as regards road markings : negotiations on this point are still in progress.

101. As part of its long-term assignment, the Group also undertook studies on following points :

- consideration of problems arising in connection with the ratification of the Conventions because of the reservations that can be entered by the countries concerned ;

- co-ordination of the implementation and interpretation of these Conventions in each E. C. M. T. country ;

- adaptation of the texts to regulatory requirements. To this end, it will folow up rules on points not yet provided for but consistent with the Conventions that any Member country of the E. C. M. T. may introduce and that may be useful to other countries, and will consider, the technical, economic and legal developments that might justify amendments to the Conventions.

C. PROBLEMS CONCERNING ROAD SAFETY

102. The very fact that the E. C. M. T. bring together, in Council, the Ministers responsible for road traffic and road safety is a token of the important role assigned to the Conference in promoting the implementation appropriate measures for dealing with the situation in this field, which is still causing considerable concern.

The far-ranging programme of action for reducing the number of accidents, attacking their causes, preventing their occurrence and mitigating their severity and consequences, has always received ample treatment in previous annual reports. It may therefore suffice to recall that road safety - which has certainly become one of the

most critical problems of present-day European communities - is permanently on the agenda of the Council of Ministers. The Council's discussions are based on the studies of a specialised committee, made up of experts from each country, which proceeds in accordance with the guidelines laid down in a general programme embracing the various topics to be tackled by international co-operation.

103. Being anxious to seek out an apply the means of improving road safety with a full knowledge of the facts, the Conference has kept very close watch on developments in this field in order that the action taken by government authorities may be confronted, at regular intervals, with the situation in actual practice. This exercise - a careful analysis of the trend of road accidents in each Member country - gives valuable clues as to the effectiveness of the steps taken over a given period. To some extent, it also helps to show where action should be focussed in future.

The Council of Ministers accordingly decided in 1965 that the recent trend of road accidents should be analysed by specialists in as careful detail as the available statistics permitted and that these recent developments should be compared with the longer-term trend.

104. The third comparative review of this kind - of somewhat wider scope than its predecessors - was drawn up, as scheduled, in 1970. This review essentially covers the years 1967 and 1968. It ends with a series of important findings which are set out in detail in the document shown in the second part of this annual report. The main points may be summarised as follows :

a) The long-term trend (i. e. over the years 1961-1968) shows - for the Member countries of the Conference - an average yearly increase of 7 per cent for all motor vehicles and 12 per cent for cars. Meanwhile, the number of road deaths increased by about 4 per cent yearly on average (except for the year 1964 which was exceptionally bad) but the increase for total casualties was only 2 per cent.

Despite this relative improvement, the sad truth remains that, in 1968 some 79,000 people were killed on the road in the Member countries of the Conference.

b) Although the absolute number of deaths and injuries increased in recent years (1967 and 1968) in the great majority of Member countries, the rate per thousand motor vehicles tended to fall in most countries. This was probably largely due to the increasing proportion of four-wheeled vehicles and the decreasing proportion of the more vulnerable motor cycles and scooters.

These trends continued into 1969. Latest figures suggest that between 1968 and 1969 road deaths increased on average by about 3 1/2 % and total road casualties by 2 %. Again casualty rates per thousand motor vehicles tended to fall.

c) It is interesting to note that the adult pedestrian casualty rate per hundred thousand population appears to be declining despite the general increase in traffic. This doubtless shows that adults are becoming better adjusted to modern traffic conditions, but casualty rates for child pedestrians are still increasing, especially for young children of school age.

d) Careful analysis of the statistics shows a substantial fall in the number of accidents in several countries after the introduction of certain road safety measures. This may encourage the governments concerned to make more efforts to stem the tide, for there is no apparent reason to believe that this is a hopeless task.

The foregoing comment does, however, call for some qualification, first because the available data do not justify general conclusions and, secondly, because the effects which follows the introduction of new measures, though conspicuous for a while, seem to tail

off as time goes on.

This problem deserves closer enquiry in order to see more clearly the causal relationships there may be between the adminstrative measures referred to and the actual outcome.

105. In this connection the E. C. M. T. recently organised, as part of its research programme, a Round Table on the cost-effectiveness of road safety measures. The basic studies undertaken in this field will no doubt have to be supplemented at a later stage with a view to determining the objective criteria applicable in concrete cases for the guidance of public authorities.

106. The Council of Ministers has for some years been giving attention to the risks of accidents involving road tankers. Being aware of the specific hazards bound up with carriage of dangerous goods, the Ministers adopted, in 1968, a number of provisions on this subject and gave instructions for a subsequent review of the ways in which Member countries had implemented them.

A progress report submitted to the Council in 1970 shows that most of the measures recommended by the Conference have been put into force in the meantime or will be introduced shortly.

In particular, it is gratifying to see that many countries have begun the formalities for ratifying the European Agreement on the Carriage of Dangerous Goods by Road (A. D. R.) or for acceding to this Agreement.

However, it must be borne in mind that the Agreement covers only international traffic and that this ultimately accounts for only a small share as compared with domestic traffic. This being so, domestic transport of dangerous goods should also be subject to similar regulations, and the technical requirements for tankers should be at least as stringent as those of the A. D. R.

Another point concerns the periodical inspection or road tankers by skilled staff. It appears that provisions to this effect have been introduced in most Member countries. Similarly, the proposals concerning certain rules on working conditions, for instance those concerning working hours for road tanker drivers, are applied in most countries.

But it must be pointed out that the action taken so far to prevent water pollution seems inadequate. Rules to this effect should be drawn up on a general basis, and not simply on a local basis.

107. In 1970, the E. C. M. T. looked into a problem which has, without question, a very close bearing on the improvement of road safety, namely, effective traffic control. As this task is almost entirely handled by the police the latter fulfills a most important function in the efforts for improving road safety and ensuring the smooth flow of traffic - two factors which are in fact closely related.

Though it is true that in most Member countries the Ministers of Transport have no jurisdiction over matters concerning the police, the Conference judged, having regard to its co-ordinating role at international level, that it could usefully set out its views on this subject and so stimulate the efforts of the national and international authorities concerned, and more especially the Council of Europe.

The Council of Ministers approved the report listing the essential tasks of the police in the field of road safety, analysing the methods of control and the possibilities of adapting them to requirements, and then indicating the means for enabling the police to contribute more effectively to road safety, not only by providing them with suitable up-to-date equipment, but also by appropriate training, by specialisation and by generally increasing the number of police officers assigned to traffic duties.

108. On the basis of a Belgian Government project, the E. C. M. T. approved at its 32nd Session the principle of

a yearly campaign against drunken driving to be organised simultaneously in each country in a co-ordinated manner with the help of the Prévention Routière Internationale.

This action is prompted by the considerable bearing that excessive drinking has on road accidents ; its impact grows as living standards rise and, on average, it accounts for 35 per cent of such accidents.

109. The XVIth Report already mentioned the preparatory arrangements in close co-operation between the Council of Europe services concerned and the E. C. M. T. Secretariat for the joint organisation of another European Conference on Road Safety Education in Schools. This preliminary work went on in 1970 as scheduled and the programme of the Conference has now been drawn up together with the papers that will serve as a basis of discussion between representatives of government authorities responsible for education and transport.

On the invitation of the Austrian Government, the Joint Conference will be held in Vienna from 21st to 25th June, 1971. Besides national experts, a delegation of members of the Consultative Asembly of the Council of Europe and representatives of several international organisations concerned with this project will also attend.

110. In conformity with the role assigned to it, the E. C. M. T. has encouraged and co-ordinated the activities of various organisations whose efforts are devoted to making the roads safer in Europe and so converge with the aims of the Council of Ministers in this field. In accordance with long-established practice, it was represented at several international events and in some cases officially sponsored them

Chapter V

PROBLEMS CONCERNING INLAND WATERWAYS

111. As in previous years, the Investment Committee of the E. C. M. T. drew up in 1970 an annual report on developments in 1969 concerning the inland waterways as a whole, as regards both their equipment and the traffic carried on them.

This information will be found in the Investment Committee's Report, a copy of which is included in the second part of this volume.

112. As indicated in the XVIth Annual Report (see paragraph 104), the study on fleet capacity on Western European waterways was completed in the first half of the year and approved by the Council of Ministers at its June 1970 session in Florence.

113. In this study, the quantitative and qualitative aspects of the fleet are given separate treatment.

As regards the quantitative aspect, the trend of fleet capacity for the E. C. M. T. countries concerned showed a much faster increase than that of transport demand up to 1966.

From 1966 to 1968, fleet capacity increased relatively slightly whilst transport demand went on rising. The surplus capacities reported in 1967, to which favourable navigation conditions were a contributing factor and which led to a large number of craft being laid up, gradually declined and had practically vanished by the end of 1968.

From the last quarter of that year onwards, low water hampered navigation for the "normal" fleet and craft kept as a standby had to be put back into commission.

The Report indicates that despite full utilisation of capacity in the years 1968 and 1969, there can be no banking on the fact that navigation conditions

in future will be such as to ensure that fleet capacity is entirely utilised.

As regards qualitative aspects, the Report points out that unremunerative capacity, i. e. craft not adapted to technical progress, hampers the smooth working of the market. It is because inland waterway craft are long-lived that they are on average somewhat maladjusted to technical progress, and this maladjustment has a more disturbing effect on the working of the waterway transport market than the possible existence of quantitative over-capacity.

The Report's conclusion is that priority should be given to the qualitative aspect of the fleet when policy decisions concerning waterway transport capacity are made.

In approving the Report, the Council of Ministers suggested that this study should be resumed every two years and that there should be closer enquiries to determine the factors of inland waterway transport demand.

To comply with this suggestion, arrangements have been made to draw up a report on the subject in 1971.

As a part of the E. C. M. T. Research Programme, a Round Table is to be convened in the early months of 1971 on the following topic : "Economic criteria for determining the capacity of the inland waterways fleet with a view to obtaining an optimum balance between supply and demand".

114. A new map of the European inland waterways network showing the position as at the end of 1969, is to be drawn up.

Chapter VI

PROBLEMS CONCERNING COMBINED TRANSPORT

115. Large container transport receives special attention from the E. C. M. T. because of the share of traffic it accounts for and its fast development.

As pointed out in the XVIth Annual Report (see paragraph 106), the E. C. M. T. has not confined its enquiries to problems concerning inland transport (i. e. rail, road and inland waterways) but has judged it necessary in the case of intercontinental services - which account for the best part of the traffic under review - to get a comprehensive view of all the problems which arise throughtout the length of the transport chain. For some years, it has provided a forum where these problems of combined transport can be discussed and where, with the help of all the governmental and non-governmental international organisations, the efforts designed to ensure the best possible balance in the development of large container traffic can be co-ordinated.

116. In 1970, all these organisations were convened to a hearing where they could submit proposed amendments to a draft report. The European Civil Aviation Conference (ECAC), together with other interested bodies, attended this hearing. Thus, any misgivings about inadequate co-operation between ECAC and the E. C. M. T. - such as those expressed in Resolution N° 454 of the Consultative Assembly of the Council of Europe - are unfounded.

Civil Aviation does indeed seem to be moving towards solutions concerning the dimensional and strength standards of large containers which diverge from those persistently advocated by the E. C. M. T., which has always upheld the views of the I. S. O. (International Organisation for Standardization) as it considers that standard dimensions are an important factor for the development of containerisation. However, it has to be admitted that air transport conditions raise special problems.

117. The terms of reference for further action given by the Council of Ministers in Stockholm in 1969 (29th Session) more particularly concerned the determination of policy to be adopted with regard to inland transport of containers, irrespective of whether these came from overseas or were used for intra-European traffic.

Briefly, the aim was to see how far the principles of general transport policy were applicable to this type of transport.

118. The Report CM(70)18 submitted at the 32nd Session of the Council (17th December, 1970) - a copy of which appears in the second part of this Volume - endeavours to answer this point by reference to the relevant items of the Outline Plan for general transport policy approved by the Ministers in 1963, i. e. : equal treatment for transport modes and operators, freedom of choice for users, equal treatment for users, profitability of undertakings and sufficiently independent management. The conclusions of this Report, which were approved by the Council, make it clear that the basic principles of general transport policy should be applied to the combined transport sector.

More precisely, the recommendations are as follows :

1) The principal aim of any promotion policy for combined transport should be to ensure that the specific advantages of each mode of transport are maximised.

To this end, consideration should above all be given to making further progress in the removal of any inequalities in taxation, and to more flexible arrangements as regards tariffs and access to the market.

Concerning this last point, in particular, it is desirable gradually to promote the harmonious and balanced development of the various modes of transport concerned in container traffic.

2) Governments should endeavour, within their own sphere of jurisdiction, to create comparable conditions for the use of piggy-back facilities by own-account carriers and professional carriers.

3) The practical application of equal treatment for users in the combined transport field depends largely on the commercial policy decisions of transport operators. Governments should, however, endeavour to ensure that equal treatment is granted where conditions are comparable.

4) The Member countries should, in accordance with their general policy concerning the railways, also endeavour to give them the possibility, both nationally and internationally, of pursuing, where combined transport is concerned, a commercial policy which fits into an independent management framework aiming at profitability.

119. The Report then discusses how and to what extent progress might gradually be made on various points, for instance :

120. With regard to the standardization of container dimensions, the Report notes that a somewhat disquieting trend is becoming apparent in that many deviations from I. S. O. standards are found in actual practise. Reaffirming once again its support for the efforts made by the I. S. O. and the United Nations Economic Commission for Europe to promote standardization, the E. C. M. T. stresses that, in any event, care should be taken to ensure that the same handling facilities can be used for transhipment.

121. Though the E. C. M. T. 's jurisdiction embraces inland transport only, the Report considers that it should keep permanently in touch with the development of containerisation where shipping lines and ports are concerned in order that conclusions may be drawn with regard to correspondingly adequate rail, road and inland waterway facilities.

122. The Report in question CM(70)18 gives special attention to the question of container terminals. The Council had already pointed out (see XVIth

Report, paragraph 110) how important it was that these terminals should be planned in a European context, to avoid duplication and unhealthy competition.

As a first step, a detailed map of existing or planned terminals, with main particulars as to their equipment, has been drawn up.

123. The Report then discusses the financial problems which - because of the considerable outlays involved - are a matter of concern for some countries and so induced them to apply for aid, and also deals with problems of co-operation between firms in the private sector. It then considers to what extent containerisation and, more generally, combined transport as a whole might help to improve the financial situation of the railways. It looks into the social implications of the development of containerisation. These implications are not as clear for inland transport as for ports and shipping lines.

124. Combined transport of the piggy-back type developed considerably during the past year. New undertakings were established and a European Company has already been operating for some time in this field.

The Report considers that special quotas should be allocated for this type of traffic, without this pre-judging the policy to be adopted at a later stage.

125. To keep in touch with the trend of combined transport and see the technical, economic and administrative problems with a view to removing the obstacles to its development and promoting piggy-back transport at national and international level, the Council of Ministers, when approving [CM(70)8] , asked for the submission of a further report at its June 1972 session.

Chapter VII

PROBLEMS CONCERNING URBAN TRANSPORT

126. The critical aspects of urban transport problems today need not be emphasized : the increasing growth of population densities in the towns combined with the steadily rising number of cars leads to a situation which city-dwellers find more and more difficult to bear. Huge efforts are called for in many fields to improve living conditions, i. e. action to prevent noise and air pollution, to relieve traffic congestion which is an increasing obstacle to trade, to provide easier access form home to work place, etc. The E. C. M. T., on its own side, gives unremitting attention to the transport aspects of this problem.

127. The XVIth Annual Report (see paragraph 113) gives details of the programme of work drawn up in 1969. In 1970, the E. C. M. T. tackled the first two points in this programme as shown below.

128. The first point concerns the co-ordination, at technical and economic level, of the various modes of transport inside cities and their link-up with suburban and long-distance services.

The Group of Rapporters appointed for this purpose has drawn up its plans for this work, listed the points to be dealt with and apportioned the basic studies among its members.

After an Introduction setting out the purposes of the exercise, the Report will cover future means of public transport and technical and administrative co-ordination. This study will be followed by tentative conclusions and recommendations.

The final Report will in all probability be submitted to the Ministers in December 1971.

129. The second point in the programme of work of the Urban Transport Committee approved in 1969 is entitled "Financing of

Urban Transport : Profitability Study". This study will be undertaken in the first quarter of 1971 and a Group of Rapporteurs has been appointed. The final Report is likely to be submitted to the Council of Ministers in June 1972.

130. The third topic in the programme of the Urban Transport Committee, i. e. "Staggering of working hours in city centres with a view to smoothing the flow of traffic and enabling road users to save time" will be tackled in the second half of 1971.

131. To make practical use of the many scientific studies connected with Round Table and Symposia, the E. C. M. T. organised during the first half of 1970 a Seminar on Urban Transport which discussed measures to improve traffic in towns (see paragraph 27).

The final report on this topic was approved by the Council of Ministers in December 1970.

The discussions clearly show the importance of public transport for reducing urban traffic congestion, the inter-relationships between urban land-use planning and urban transport planning and the need to provide objective information for all interested parties.

The measures to be recommended fall under two heads : short-term measures not requiring substantial investment, and long-term measures which do require substantial investment. In the first case, the primary aim is to improve the existing situation by direct or indirect action on the use of public transport, e. g. measures relating to the staggering of working hours, parking restrictions, public transport fares and private cars. Indirect action in this field essentially concerns the management of public transport undertakings : here, there is a need for better co-ordination at administrative, geographical and technical level. Mergers would be useful in some cases, on a regional basis for instance.

Where long-term measures are concerned, some towns can be said to have already made plans up to the year 2000. A public transport network must indeed be planned a long way ahead if it is to be effective and many multi-disciplinary long-range studies must be undertaken with due regard to technological, town planning and human factors.

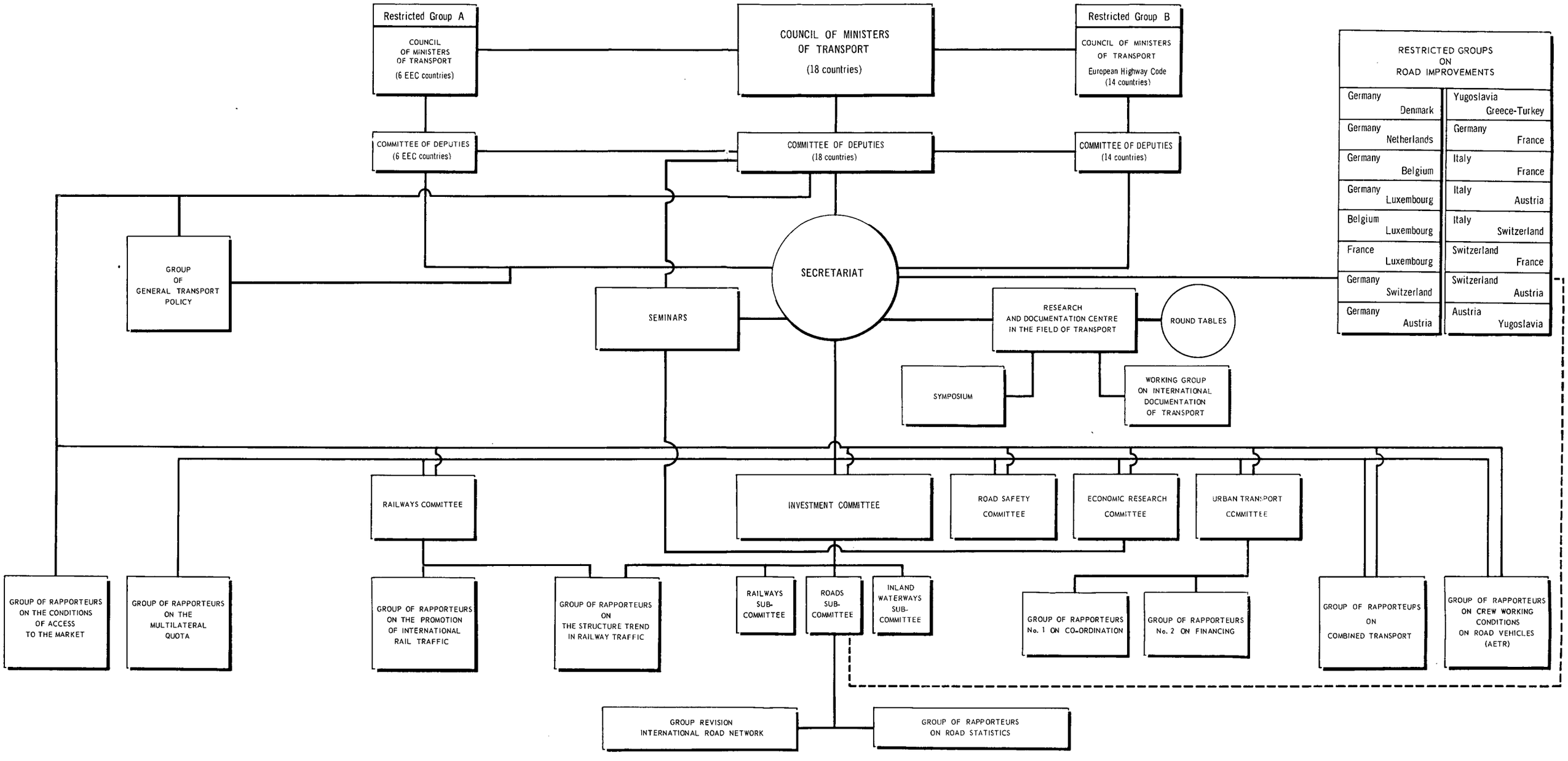
In the light of the discussions, a series of topics was recommended for closer investigation by each national authority. These studies include the staggering of working hours - the social and economic consequences of which should be evaluated ; charging for vehicle ownership and use in urban areas ; promoting co-ordination at management, administrative and technical level of public transport undertakings operating within a given conurbation ; rational use of existing resources, e. g. railway networks, if necessary by providing suitable railway junctions ; "functional" conversion of existing resources, e. g. conversion of conventional tramways into "semi-metro" ; harmonization of urban planning and transport planning in order that work places may be conveniently located in relation to housing and a suitable balance achieved between private and public transport.

As the Urban Transport Seminar Report approved by the Ministers may be useful for municipal authorities and in various other quarters, it has been decided to give it the widest possible circulation.

132. The work undertaken in co-operation with the O. E. C. D. for a study on transport in new communities continued during the past year. The papers for which the E. C. M. T. is responsible are likely to be completed in the first half of 1971 and will then be confronted, with a view to integration, with those prepared under the auspices of the O. E. C. D.

Annex I

ORGANISATION CHART OF THE ECMT FOR 1970



Annex II

CONSULTATIVE ASSEMBLY OF THE COUNCIL OF EUROPE

TWENTY-SECOND ORDINARY SESSION

RESOLUTION 454 (1970)[1]
in reply to the 16th annual report of the European Conference of Ministers of Transport (ECMT)

The Assembly,

1. Recalling its conviction of the vital need for ECMT to reach agreement on the main guidelines of a general surface transport policy, since without such agreement it will remain virtually impossible to arrive at meaningful solutions to numerous pressing transport problems of international importance ; conscious that some progress has been made during the past year in narrowing the differences of views between ECMT countries on organising a series of objective economic studies with a view to exploring the questions still standing in the way of agreement being reached, nevertheless re-emphasizes the heavy and continuing cost to the whole of Europe so long as such agreement is not reached ;

2. Deeply concerned at the growing burdens being imposed on the budgets of ECMT member States by the continued over all deterioration in the state of railway finances, warmly approves the recent emphasis placed by the Council of Ministers of ECMT on encouraging the development of international rail freight traffic in seeking to increase the attractiveness of rail haulage to potential users by improving the quality of the services offered rather than by restricting road competition,

3. Believes, in particular, that there would be great advantages for rail freight traffic in simplifying and speeding up customs procedures relating to such traffic at international frontiers, so as to eliminate the lengthy delays which frequently result from present customs arrangements ;

4. Holds that the time has come for ECMT to re-examine the particular needs of Western Europe so far as the so-called "E" road network is concerned, with a view to deciding whether further development of the Western European part of the network is not called for in the context of present plans for encouraging regional economic development in various ECMT member States ;

5. Records its disappointment at the fact that definitive agreement has still not been reached on a European Highway Code ; and, while having approved of the decision of ECMT to attempt to secure as wide an acceptance as possible of the Code by utilising the framework

of the UN Economic Commission for Europe for the final negotiations, again calls on ECMT to itself resume the negotiations with a view to securing the entry into force of the Code between ECMT Members if definitive agreement has not been reached in the framework of the UN Economic Commission for Europe by 30 June 1971 at the latest ;

6. Expresses its concern at the lack of liaison between ECMT and the European Civil Aviation Conference (ECAC) so far as relates to the work which both organisations are currently undertaking in the field of standardisation of containers, and calls on both bodies to work closely together in this field ;

7. Welcoming the work undertaken by ECMT in studying problems of traffic congestion in town centres; conscious that specific situations and needs in this field vary greatly from one locality to another ; believing that it would be invaluable if the information amassed by ECMT could be made available to individual communes and municipalities who could profit from the experience of other similarly placed communes and municipalities who have been faced with similar problems ; noting that the European Conference of Local Authorities existing in the framework of the Council of Europe could also assist in this matter, invites ECMT to examine how the existence of the information in its possession could be made known to communes and municipalities, and how information appropriate to their specific individual problems could be transmitted to them on request.

Part II

RESOLUTIONS

RAIL TRANSPORT PROBLEMS
RESOLUTION N° 18 CONCERNING AUTOMATIC COUPLING

CM(70)13 final

The Council of Ministers of Transport, metting in Florence, on 11th June, 1970,

Recalling the aims and basic principles of general transport policy that it has laid down with a view, inter alia :

- to ensuring optimum technical progress and safety of operations in the transport system ;

- striving for the profitability of transport undertakings ;

Having regard to the proposal submitted by the U.I.C., on behalf of its member administrations, regarding the introduction of automatic coupling - a topic with which the Council has been much concerned for many years ;

Having examined all the technical, economic and financial studies conducted by the International Union of Railways and by individual railway administration in close contact with their respective governments ;

Considering :

- that the employees concerned should be saved from hard and dangerous working conditions ;

- that it is most important to adopt progressively modern operating methods enabling rail transport to be automated to the fullest possible degree ;

Hereby signifies its decision in favour of the introduction of automatic coupling and invites Member governments to proceed with their railway administrations in such a way :

- that the automatic coupler designed by the U.I.C., which involves the coupling of one or two compressed-air circuits and, possibly, of electric wiring circuits, shall be introduced for international traffic and, in the case of some networks, simultaneously for domestic traffic, on such a date as those administrations will jointly decide, which could be as from 5th April, 1979 ;

- that the transition from the existing situation to the general adoption of automatic coupling to domestic traffic shall be phased in such a way that side-buffers are removed for international traffic ; on a date to be determined jointly by the railway administrations, on the understanding that the earliest possible date before Easter 1981 should be selected ;

Requests the U.I.C. to continue its negotiations with the O.S.J.D. ; with a view :

1. to an agreement on such technical measures as may be required for the coupling of O.S.J.D. and U.I.C. rolling stock ;

2. to the co-ordination of the time-table for the introduction of automatic coupling in joint agreement with the O.S.J.D. ;

Decides to refer problems of financing to the General Transport Policy Group, with the request that a report and draft Resolution be promptly submitted, if possible by next December, to the Council of Ministers ;

Invites "Eurofima" to provide the

largest possible measure of assistance in financing the necessary investments ;

Recommends the Member countries to provide the conditions enabling railway administrations to group their orders for large-scale production in order that their rolling stock may be fitted with automatic coupling at least cost ;

Instructs the Committee of Deputies to keep under review the problems concerning the introduction of automatic coupling and to report to the Council of Ministers in due course.

REPORT OF THE COMMITTEE OF DEPUTIES ON THE INTRODUCTION OF AUTOMATIC COUPLING

CM(70)6

I. INTRODUCTION

1. At the 29th Session of the Council of Ministers of the E. C. M. T., held on 12th June, 1969 at Stockholm, the Secretariat was instructed to ask Member Delegations for a written statement of their views on the introduction of automatic coupling in their respective countries. A summary of the replies received [circulated as CM(69)32 and Addendum] was submitted by the Chairman of the Railways Investment Sub-committee at the 30th Session of the Council of Ministers held on 16th December, 1969 in Paris.

2. The discussion showed that all Ministers were decidedly in favour of introducing automatic coupling.

The Netherlands Secretary of State, Mr. Kayser, said that both the documents so far produced by the U. I. C. and the profitability calculations still contained so many gaps that a decision of such vital importance involving considerable expenditure could not be taken forthwith. In his view a closer study and additional investigations were needed.

3. The Council of Ministers agreed that every effort should be made to come to a final decision on the introduction of automatic coupling at its next meeting to be held at Florence in June 1970, and to have the points raised by the Netherlands Delegation investigated in the meantime.

4. To facilitate a unanimous decision, the Netherlands Delegation was asked to supply the Secretariat with a list of the points calling for closer examination. This list was received in due course and circulated as CS/SC1(70)1.

II. COMMENTS ON THE POINTS RAISED BY THE NETHERLANDS DELEGATION

5. As requested by the Committee of Deputies, the Railways Investment Sub-Committee exchanged views on the points raised by the Netherlands Delegation at its meetings on 25th February and 23rd March.

6. The Netherlands Delegation judged that the data contained in the U. I. C. Report sent to the E. C. M. T. in September 1968 (i. e. the data on which the calculations are based) were still very doubtful, and that it was essential to obtain fuller and more accurate information on economic and financial aspects.

7. The main questions raised by the Netherlands Delegation concerned the following points :

a) total cost of the exercise ;

b) methods of financing and rate of interest ;

c) the problem of private wagons and stock for private sidings ;

d) profitability of the exercise ;

e) the place of automatic coupling

in future railway management ;

f) the technical and economic problems of 2-axle wagons.

The Sub-Committee, in consultation with the U. I. C. has drawn up the following comments on each of these points.

8. Total cost of the exercise

Here, the Netherlands Delegation referred to the following items :

- total number of couplers ;

- purchase price of couplers ; contracting and production arrangements.

a) Total number of couplers

It must first be pointed out that in their reports to governments [CM(69) 32 and Addendum] the railway administrations concerned already gave an order of magnitude as to the number of wagons to be equipped.

However, these figures may be altered to a greater or lesser degree by the course of developments up to 1980, more particularly in the following respects :

- increased wagon capacity ;

- development of unit-train traffic ;

- overall improvement in wagon turnround obtained by centralised control

- early scrapping of stock which has little suitability for automatic coupling.

The Planning Committee of the U. I. C. is at present engaged on studies designed to evaluate the impact of each of these factors more precisely.

Generally speaking, it has to be borne in mind that there must inevitably be a fairly long interval between the making of a decision on an investment project of so great importance as automatic coupling and the actual implementation of this project. Techniques, operating methods, the market situation and competitive conditions go on changing in the meantime, but it can safely be asserted, even at this stage, that the figures given by railway administrations for the wagons to be equipped are top limits and that, given equal traffic, the actual figures are likely to be lower than the present forecasts.

For these reasons, other things being equal, the scale of the exercise is likely to be reduced rather than increased, and this should rather ease the way for a policy decision.

b) Purchase price of couplers ; contracting and production arrangements

There is at present no justification for altering the 1967 estimate for the price of the coupler as shown in the U. I. C. Report except that the overall increase in prices, steel prices for instance, doubtless means that this estimate is now somewhat on the low side. However, no estimate can reach the degree of precision asked for in the Netherlands' note as long as potential manufacturers have not been consulted.

The U. I. C. is doing its utmost to create the right back-ground for ensuring that the purchase price is as low as it can be, particularly by paving the way for the free play of competition at international level. To this end, the U. I. C. has kept control of the working drawings for the production of the Unicupler to dispose of them as it sees fit.

Furthermore, the Eurofima Company, in consultation with the U. I. C. has begun a production market study and preparatory arrangements for inviting tenders. A world-wide invitation for tenders will be sent out early in 1971. Railway administrations will be made aware of the precise information on prices obtained in this way and, if they so desire, will remain free to buy where they please ; but it need hardly be said that if they are determined to buy from home manufacturers alone, this will not be a good way to get the best prices. It is indeed quite obvious that better terms could be obtained if the railway administrations combined their orders for the supply of very

large batches within a relatively short period.

9. Financing arrangements

Here it is appropriate to refer to the very detailed statement made by Professor Oeftering, speaking as Chairman of Eurofima, before the Officers of the Council of Ministers on 15th December.

The E. C. M. T. countries' requirements are estimated to be in the region of Sw. Frs. 6,800 million.

Mr. Oeftering listed the various possible sources of finance (such as self-financing, government contributions, loans, suppliers'credit) among which Eurofima ranks high.

The requirements which certain networks expect to be covered wholly or in part by Eurofima amount to Sw. Frs. 3,300 million for the period 1972-1976. Eurofima can already depend on funds amounting to some Sw. Frs. 2,000 million during this period, apart from its traditional resources.

Because of the present instability of the international financial market, the exact terms on which this credit would be available cannot yet be specified as required in the Netherlands'note.

The terms of the main transactions handled by Eurofima in 1968 and 1969 are given below for guidance :

1968 :

Total amount made available in 1968 : approwimately Sw. Frs. 267 million at interest rates ranging from 5 to 6 per cent.

1969 :

Total amount made available in 1969 : approximately Sw. Frs. 195 million at interest rates ranging from 5 to 6 per cent.

10. Private wagons and stock for private sidings

Though the U. I. C. report to the E. C. M. T. in September 1968 did not refer to this point, the railway administrations' reports to their respective governments generally did so, and gave figures for the corresponding costs.

In principle, the question of who should bear the cost of equipping privately-owned wagons and stock for private sidings is a matter for each individual administration as commercial considerations are paramount in this context. However, the U. I. C. will try to draw up general directives to avoid unduly differential treatment.

The U. I. C. is in close touch with the International Union of Private Wagon Owners' Associations (U. I. P.) and with the International Association of Users of Private Sidings (A. I. E. P.) to ensure joint consultation on the problems that the introduction of automatic coupling implies for these bodies.

It will be remembered that the U. I. C. has already given an opinion in flavour of sharing between railway administrations and owners of private rolling stock such aids and facilities as may be granted by governments.

11. Profitability

There are no grounds for asserting that the assumptions on which the U. I. C railway administrations based their profitability calculations in accordance with the method devised by the Economic Study Group are "unrealistic".

It must also be pointed out that profitability, considered in itself, is not the only determing factor for deciding whether automatic coupling should be introduced.

Other factors which cannot easily be quantified must also be taken into account. They include : safer working conditions for railway workers, the difficulties of recruiting shunters, increased output from operating facilities and, above all, the fact that automatic coupling opens the way for automated railways particularly with regard to marshalling operations.

The Netherlands Delegation contends that the 40-year period on which the

U. I. C. profitability calculations are placed is unduly long and should be changed to 35 years. Here, it should be made clear that the U. I. C. study is not based on a 40-year amortization period but on a cost/savings time-scale ending in the year 2010 ; given that automatic coupling is introduced in 1976 (i. e. the year taken as a basis for the U. I. C. study) the period of amortization would be in the region of 30 to 35 years only - an altogether normal figure for railway rolling stock.

12. Part played by automatic coupling in in the future management (i. e. operation) of the railways

This point is already partly dealt with in paragraph 8. There can be no hope of giving indications on "margins of variation of the calculation" that will be of so high a degree of precision that absolutely clear cut conclusions can be drawn therefrom.

Reference has been made to the likely expansion of unitrain and freight-liner traffic. The railway administrations consider, however, that this expansion will remain very limited, from which it follows that its scale should not be likely to detract from the usefulness of automatic coupling.

On the other hand, if railway operations are highly automated in the future (and automatic coupling is a prerequisite of this process) there will be a considerable improvement in the utilisation of rolling stock and, hence, a very sizable decrease in the number of wagons.

Generally, it is fair to say that the main course of the "great changes" mentioned in the Netherlands Delegation's note will be towards the kind of automation and simplification which implies automatic coupling and justifies its adoption.

13. Technical and economic problems of 2-axle wagons

There is no question of dispensing with 2-axle wagons forthwith. The problem of their stability will not in any event arise until side buffers are removed, that is after 1980.

The problem has two aspects :

a) to define the design characteristics required to ensure that future 2-axle wagons can be safely used without special arrangements ;

b) to find suitable ways of ensuring the stability of certain existing 2-axle wagons that will still be in commission after 1980.

The problem has been studied at length and in careful detail.

As regards item (a) above, the studies are completed. With regard to item (b), various solutions have been considered. They mainly concern braking characteristics, dynamic characteristics, of buffer devices linked with automatic couplers, the use of automatic couplers fitted with a stabilizer device, and grouping "unsuitable" wagons at the rear end of trains.

The U. I. C. will soon decide on the solution or combination of solutions to adopt with due regard to technical and economic considerations. Further information on this point will be supplied by the U. I. C. in due course.

The fact remains - as witness the American and Russian railways - that automatic coupling is a better proposition for large wagons rather than small. In this connection, the report approved on 11th March last by the Managing Board of the U. I. C. shows that development prospects for bogie wagons are promising. The conclusions of this report may be summarised as follows :

The railway administrations used to be divided in their opinion on the development prospects for bogie wagons, but they now agree that there is a sizeable market for this type of stock. The amount of traffic carried in bogie wagons might be doubled within the next 10 years or so and even account for 65 per cent of the total tonnage carried on some networks. It has been proved

that bogie wagons enable transport costs to be quite appreciably reduced by comparison with 2-axle wagons when the load exceeds the capacity of the latter. On the other hand, when the goods to be carried are light, the advantage of the bogie wagon decreases with the floor area or volume ratios between the two types of stock. The report also draws the conclusion that 2-axle wagons should survive unless new techniques, such as containerisation, were to yield equivalent advantages for the type of freight which, under present market conditions, does not seem suitable for carriage in bogie wagons.

III. SPECIAL STANDS TAKEN BY CERTAIN DELEGATIONS

14. In contrast to the majority view, the Netherlands Delegation judges that the Council of Ministers will not be able to make a proper decision on the introduction of automatic coupling by June 1970 as it considers that the Committee has not given a satisfactory reply to the questions raised in its Note circulated as. CS/SCI(70)1.

The Netherlands Delegation more particularly draws attention to the fact that certain points are still highly uncertain, i. e. the purchase price (which will not be exactly established until 1971) ; the prospects concerning the grouping of contracts for the supply of couplers and the implications this would have on the purchase price ; the solutions to be found for technical problems concerning existing 2-axle wagons and, hence, the cost of converting these wagons and, lastly, financing arrangements.

For these reasons, the rate of return on the project cannot be sufficiently safely appraised.

It can be assumed that automatic coupling constitutes a profitable investment in the long term. As a compromise the Netherlands Delegation is preapred to make a policy decision on the introduction of automatic coupling in June 1970 provided that the date adopted for the exercise is 1984.

The Netherlands Delegation emphasizes that this must be the date selected because, by then, the best part of the rolling stock in existence will be suitable, by its very design, for conversion to automatic coupling. Many of the old 2-axle wagons can thus be scrapped before then without this involving too much loss on amortization of assets.

15. After careful investigation the French Delegation considers that automatic co coupling will ultimately be a profitable investment and approves of it.

However, bearing in mind :

- the uncertainty as to the expenditure involved (because of the uncertainty as to the price of the coupler, accounting as it does for nearly 70 per cent of total cost) which will be dispelled to some extent when the results of the trial invitation for tenders to be sent out in 1971 by the European Company for the Financing of Railway Equipment' (Eurofima), become available ;

- the uncertainties as to the optimum duration (both from a technical and financial angle) of the transitional period (gradual equipment of the wagon fleet) ;

- the better rate of return obtainable by postponing the exercise, the cost of converting stock to make it adaptable to automatic coupling being reduced because the new stock that must in any event be bought for replacements will then be designed in such a way that the frame will stand up to the stresses deriving from the automatic coupler.

The French Delegation proposes :

a) that at its session on 11th June, 1970, the Council should agree to the railways being ultimately equipped with automatic coupling;

b) that it be decided to carry out this exercise within the period 1980-1984 ;

c) that the final decision on the timing of the exercise be made at the session of the Council of Ministers of the E. C. M. T. to

be held at the end of 1971, in the light of :

- the results of Eurofima's invitation for tenders ;
- the U. I. C. study on the practical problems concerning the transitional period (which should be as brief as possible)

16. The Luxembourg Delegation has declared itself in favour of simultaneous introduction in 1980.

IV. CONCLUSIONS

17. The need to introduce automatic coupling calls for no further proof and is indeed recognised by all Member Governments of the E. C. M. T.

Some doubts have been expressed, however, as regards the phasing of the exercise proposed by the U. I. C., certain Delegations judging that a better rate of return would be obtained if the beginning of the exercise were slightly postponed and the period of transition accordingly reduced. However, there is a consensus in favour of this period ending in 1980, subject to the reservations set out in Chapter III above.

18. If this target date is to be kept, the Railway Administrations must be made aware without delay of the stand taken by their Government sponsoring authorities with regard to this matter.

Final adjustments to the detailed arrangements for the actual introduction of automatic coupling will still take some time and the railway administrations cannot proceed as required without a firm decision.

19. Therefore, the Committee of Deputies (with the exception of France and the Netherlands) hereby submits the draft Resolution CM(70)13 to the Council of Ministers for approval.

GENERAL PROBLEMS

RESOLUTION N° 22 CONCERNING THE PROBLEMS OF ESTABLISHING A MULTILATERAL QUOTA AND THE HARMONIZATION OF COMPETITIVE CONDITIONS IN INTERNATIONAL TRANSPORT OF GOODS BY ROAD

CM(70)16

The Council of Ministers of Transport

Meeting in Florence on 11th June, 1970.

Having examined the report below of the Committee of Deputies [CM(70)5] ;

Confirming its intention to persist in its efforts to accomplish in the shortest possible time certain specific actions in the context of general transport policy, the broad principles of which are given in the Report CM(69)8 ;

Being of the opinion that among such concrete actions in regard to the international carriage of goods by road, priority must be given to the progressive liberalisation of road transport, along with the harmonization of terms of competition ;

Finding that these objectives cannot be achieved without a first experimental stage ;

Aware that during the experimental stage for the progressive liberalisation of international carriage of goods by road, the extent to which existing restrictions can be lifted should be limited, and that the establishment of a multilateral quota would seem at this time to provide the best answer to the problem ;

Noting moreover that there are differences within the E. C. M. T. regarding competitive conditions between road hauliers : differences in taxation and social measures and technical differences ;

Considering that the achievement of the harmonization of competitive conditions is a work of long duration and that it is accordingly appropriate for the first experimental phase, to make a choice between the different fields where harmonization is to occur ;

Taking note of the fact that two Member countries, France and Ireland, declared that they were unable to take part in the experiment under the conditions laid down by the Council, the reason given by France being that road haulage traffic within a multilateral quota cannot be envisaged until results are achieved in the fields of social (application of the A. E. T. R. as modified), technical (application of the P. T. A. Agreement), and fiscal harmonization (road pricing).

DECIDES :

To establish as soon as possible a multilateral quota comprising approximately 300 licences for allocation among Member countries of the Conference, for an experimental period of three years ;

To allocate this quota among the Member countries taking part in the experiment in accordance with the table in the Annex to this Resolution, without prejudice to the allocation to be adopted and the conditions to be defined at the end of the experimental period ;

To make the actual coming into force of the multilateral quota dependent :

a) as regards social conditions, on the application by the Member countries concerned of the A. E. T. R. (as amended) or of requirements at least as stringent

as those laid down in that Agreement ;

b) as regards taxation ;

1. on the power to decide that the amount of duty-free fuel which can be imported by each commercial vehicle shall be at least 50 litres per vehicle ;

2. on the abolition of any refund of the vehicle tax properly so called on a country's own vehicles for the time of their stay outside that country, in cases where these vehicles are exempt from the vehicle tax levied by the foreign country concerned ;

- to invite the Member countries to seek ways of achieving a closer alignment of the different countries' level of taxation on vehicles ;

- to invite those Member countries which are not taking part in the experiment or which have made certain restrictions to its working arrangements, to facilitate the transit of E. C. M. T. licensed vehicles under bilateral agreements.

To invite the Member countries to take steps at national level to promote the utilisation of E. C. M. T. licenses in multilateral traffic ;

To review the situation before the expiry of the three year experimental period starting from the date at which the multilateral quota comes into force ;

Reaffirms that the possibility of participating in the multilateral quota system remains open to Member countries of the Conference wishing to do so during the experimental period ;

INSTRUCTS the Committee of Deputies :

as regards the multilateral quota, to draft in specimen form an administrative convention comprising the main provisions for the establishment of this quota, to serve as a basis for the adoption of a multilateral administrative convention formulated in accordance with current practice for bilateral administrative conventions relating to international road haulage ;

to proceed with its efforts in the context of general transport policy, inter alia those concerning the harmonization of terms of competition in the fiscal, social and technical fields.

Annex a to Resolution N° 22

(General questions)

ALLOCATION (*) OF THE MULTILATERAL QUOTA
FOR THE THREE-YEAR EXPERIMENTAL PERIOD

Country	N° of licences
Austria	13
Belgium	25
Denmark	18
Germany	54(1)
Greece	15
Italy	25
Luxembourg	13
Netherlands	35(1)
Norway	15
Portugal	13
Spain	20
Sweden	16
Switzerland	17
Turkey	13
United Kingdom	20
Yugoslavia	17
Total	329

NOTA :

(1) It was agreed that out of this total, a maximum of 25 licences will be valid for Spanish territory.

(*) It should be noted that in this allocation it is agreed that, irrespective of the numbers of licences allotted to the respective countries, not more than 13 licences for each of them will be valid for Austrian territory.

REPORT OF THE COMMITTEE OF DEPUTIES ON THE ESTABLISHMENT OF A MULTILATERAL QUOTA AND THE HARMONIZATION OF COMPETITIVE CONDITIONS IN INTERNATIONAL TRANSPORT OF GOODS BY ROAD

CM(70)5

1. Taking into account the discussions at the 30th Session of the Council of Ministers of the E. C. M. T., the Working Party, appointed to deal with the establishment of the multilateral quota, at two meetings on 15th-16th January and 12th March, 1970, considered a solution to the problem of establishing a multilateral quota acceptable to the largest possible number of Member countries.

2. The Working Party took, as a basis for its work, the documents it had already prepared or which were prepared by the Group of Rapporteurs which had previously studied the matter, and in particular documents CM(69)12 of 7th May, 1969, and CS(69)15 of 27th October, 1969. Furthermore, it examined, as a working document, a questionnaire dated 22nd December, 1969, sent to all the Member countries.

3. It became apparent in the course of the discussions that a large majority of Member countries were in favour of setting up a trial multilateral quota without linking it to the application of prior conditions with regard to harmonization of competition.

4. A large majority of the Member countries could also accept a solution whereby the coming into effect of a multilateral quota would be linked with the application by the Member countries concerned of the A. E. T. R. (as amended) or of requirements at least as stringent as those laid down in that Agreement.

5. With regard to taxation, the divergences between taxes on fuel do not seem to play a decisive role, due to the relatively long distances generally covered in multilateral traffic (making it necessary to refuel in different countries), and to the explicit provisions in the Draft Resolution for limiting the amount of duty-free fuel which can be imported by each commercial vehicle.

The problem of the harmonization of taxes on vehicles can only be solved by a progressively closer alignment of the Member countries'different systems and levels of taxation. It emerged from the discussions, however, that this would call for amendments - in some cases far-reaching amendments - to the legislation of the countries concerned. In some quarters, it is also claimed that road pricing has a bearing on the issue. Harmonization on a voluntary basis would be very difficult, not only because there are no provisions to this effect in the Member countries but also because of the incidence that this might have on the utilisation of E. C. M. T. licences.

In view of the extent of the problem of fiscal harmonization, it can only be solved by a basic revision of the existing legislation in the Member countries. This task would entail relatively long delays and thorough studies before concrete proposals could be drawn up. Fiscal harmonization falls within the context of general transport policy. The Draft Resolution terminates with a confirmation of the instructions previously issued by the Council of Ministers to the Committee of Deputies.

Until some appreciable progress has been made in this field, it would be advisable to instruct the Member

countries to direct their efforts, by measures taken at national level, towards a closer alignment of taxation levels among themselves (1).

6. The representative for France pointed out that the coming into effect of a multilateral quota could only be envisaged after results had been achieved in the fields of social (application of the P. T. A. Agreement), and fiscal harmonization, particularly through road pricing.

A great majority of the Member countries stated that they were unable to accept this solution.

In view of the position that the Group had adopted, the representative for France said that his country could not take part in the establishment of a multilateral quota.

7. The representative for Ireland said that, in view of his country's geographical position and the general trends in its international traffic by road, Ireland wished to withhold any decision to take part in the establishment of a multilateral quota, and reserved the right to take part at a later date after having become acquainted with the actual operation of the system.

8. As regards the allocation of the quota, the majority of countries were in favour of an allocation based on the Member countries' international road haulage and foreign trade (by value).

Some countries stated that they still preferred either the sole criterion of international road haulage, or an equal allocation among Member countries.

Based on data for the year 1968, both for foreign trade and for international road haulage, a theoretical allocation has been prepared and is shown in Annex I to this report.

It is clear, however, that these figures cannot take into account certain important elements which entail corrections to the theoretical calculation prepared. Among these elements, particular mention should be made of :

- the variable extent, from country to country, of border traffic, the figures for which are included in the international road transport statistics ;

- the distance to be covered, which varies according to the geographical position of the different countries ;

- the special situation of some countries with regard to transit traffic ;

- the need for E. E. C. member countires to attain a certain balance among themselves - this could be found through the allocation of the community quota (although the situation is not absolutely comparable owing to the non-participation of France and the distribution as corrected to give each country a minimum number of licences) ;

- the fact that this correction has a relatively important incidence for those countries which are at the limit of the requisite minimum for benefitting, in accordance with the theoretical calculation from a supplementary quota (examples : the case of Spain, and Switzerland).

After negotiations, therefore, a new allocation was prepared and is annexed to the Draft Resolution.

9. Provided that, during an experimental period, the overall quota is not large, the problem of criteria to be taken into consideration is important for only a limited number of countries. It is however particularly important to stress that the criteria adopted for the experimental period cannot be considered a priori as equally valid for a later stage of the system.

10. The representative for Austria said that due to existing regulations in his country, Austria could accept no other system except that of equal allocation, following the example of that currently in force on the conclusion of the bilateral agreements for road transport. Any other system would first necessitate amendments to Austrian legislation and, in view of the relatively small size of the quota this could not be envisaged at present.

(1) Several Delegations entered reservations.

11. Taking into account the special problem raised by the Austrian representative, the Group thought that a solution might be found by limiting the validity of the licences issued to the different Member countries, so that the number of licences valid for Austrian territory would not exceed, for each Member country, the number of licences granted to Austria.

12. In view of the position adopted by France and the restriction requested by Austria, some Member countries felt it would be necessary to embody in the Draft Resolution a provision under which the two aforementioned countries would facilitate the transit on their territory of vehicles operated under an E. C. M. T. licence, either within the context of bilateral agreements (1), or by granting general freedom of transit for the vehicles in question.

With regard to the number of licences exceeding the minimum, France and Austria declared that vehicles in transit in their territory must be covered by the normal bilateral licences.

13. Finally, as regards the total number of licences, the Group (2) agreed on a figure of approximately 300, and submits the Resolution N° 2280 the Council of Ministers.

(1) The Spanish Delegation pointed out that the need to resort each time to a transit licence for France in accordance with the Franco-Spanish bilateral agreement raised the problem of using up the transit quota too quickly. It wished to re-examine this matter at a later date.

(2) With the exception of France.

Annex I - REALLOCATION OF OVERALL QUOTA ON THE BASIS OF FOREIGN TRADE AND INTERNATIONAL ROAD TRAFFIC

Country	Theoretical calculation				
	Foreign trade % (1)	Road traffic % (2)	Total (3) = (1)+(2)	Theoretical allocation of overall quota	Corrected allocation (in round figures) minimum quota of 12 licences
Austria	2.6	4.8	7.4	10.7	12
Belgium	9.6	16.9	26.5	38.2	29
Denmark	3.7	3.4	7.1	10.2	12
Germany	25.7	27.9	53.6	77.2	59
Greece	1.1	0.1	1.2	1.7	12
Italy	10.3	4.1	14.4	20.7	16
Luxembourg	0.8	1.5	2.3	3.3	12
Netherlands	11.0	21.4	32.4	46.7	35
Norway	2.9	1.4	4.3	6.2	12
Portugal	1.0	0.1	1.1	1.6	12
Spain	2.7	6.4	9.1	13.1	12
Sweden	6.0	3.6	9.6	13.8	12
Switzerland	5.3	5.6	10.9	15.7	12
Turkey	0.7	0.7	1.4	2.0	12
United Kingdom	15.2	0.8	16.0	23.0	17
Yugoslavia	1.4	1.3	2.7	3.9	12
Total	100.0	100.0	200.0	288.0	288

SUPPLEMENTING RESOLUTION N° 22 CONCERNING THE PROBLEMS OF ESTABLISHING A MULTILATERAL QUOTA AND THE HARMONIZATION OF COMPETITIVE CONDITIONS IN INTERNATIONAL TRANSPORT OF GOODS BY ROAD (1)

CM(70)21 revised

The Council of Ministers of Transport,

Meeting in Paris on 17th December, 1970,

Having considered the Report below of the Committee of Deputies [CM(70)21] ;

Recalling the provision of Resolution N° 22 confirming that the possibility of participating in the multilateral quota scheme remains open to Member countries of the Conference wishing to do so during the three-year trial period ;

Notes the fact that France has now agreed to take part in the experimental stage of the multilateral quota, but has made it clear that it would be unable to take part in the subsequent stage until results have been achieved as regards harmonization :

- in the social field (application of A. E. T. R. as amended) ;

- in the technical field (application of the A. T. P. agreement) ;

- in the field of taxation (government commitment to the application of a road pricing policy) ;

- as regards government/railway relationships : government commitment to the introduction of financial relationships leading to independent management and financial equilibrium of railway undertakings.

Decides to amend the Annex to Resolution N° 22 as follows :

a) by adding to the allocation table ;

France : 43 licences, with a reference to footnote (1) in the table, which concerns traffic with Spain ;

b) by raising the total number of licences in the table to 372 (instead of 329) ;

Instructs the Committee of Deputies to put this Decision into effect.

ALLOCATION (*) OF THE MULTILATERAL QUOTA
FOR THE THREE-YEAR EXPERIMENTAL PERIOD

Country	N° of licences
Austria	13
Belgium	25
Denmark	18
France	43(1)
Germany	54(1)
Greece	15
Italy	25
Luxembourg	13
Netherlands	35(1)
Norway	15
Portugal	13
Spain	20
Sweden	16
Switzerland	17
Turkey	13
United Kingdom	20
Yugoslavia	17
Total	372

(1) It was agreed that out of this total, a maximum of 25 licences will be valid for Spanish territory.

(*) It should be noted that in this allocation it is agreed that, irrespective of the numbers of licences allotted to the respective countries, not more than 13 licences for each of them will be valid for Austrian territory.

SUPPLEMENTARY REPORT BY THE COMMITTEE OF DEPUTIES ON CERTAIN PROBLEMS RELATING TO THE ESTABLISHMENT OF A MULTILATERAL QUOTA FOR INTERNATIONAL TRANSPORT OF GOODS BY ROAD

CM(70)21

At its 31st Session in Florence on 11th June, 1970, the Council of Ministers agreed to the provisions of Resolution N° 22 on the problems concerning the establishment of a multilateral quota and the harmonization of competitive conditions in international transport of goods by road.

This Resolution, which lays down inter alia the procedure for establishing such a quota experimentally for a three-year period, was adopted by 16 Member countries, namely, all the E. C. M. T. countries except France and Ireland. The Resolution, however, expressly confirms that the possibility of participating in the scheme remains open to all Member countries of the Conference wishing to do so.

At the 107th Session of the Committee of Deputies on 10th July, 1970 which followed the Ministerial Session referred to above, the French Delegation stated that, in its view, the multilateral quota was an important element in the construction of a European transport system and that France would accordingly like to take part in the experiment, on the understantding that its reservations, as recorded in Resolution N° 22, should be considered during the experimental period, and that the problems to which the reservations referred must be satisfactorily solved before the end of that period.

The French Delegation explained however that it wished to participate in the multilateral quota only with those States which showed themselves willing to take an active part in shaping a general transport policy. In this connection, acceptance of the principle of making national railways bear the cost of introducing automatic coupling would, in the view of the French Delegation, be a token of the political will to tackle the objectives of the Conference in a practical manner.

Formulated in this way, the problem was considered in detail insofar as it affected the introduction of a multilateral quota, first in the Working Party set up for this purpose and subsequently in the Committee of Deputies which, by way of conclusion, hereby submits the supplementary Resolution to the Council of Ministers for approval.

Part III

REPORTS APPROVED BY THE COUNCIL OF MINISTERS

REPORT OF THE COMMITTEE OF DEPUTIES ON PROBLEMS CONCERNING RAILWAY AUXILIARY SERVICES FOR ROLLING STOCK

[CM(70)7]

I. INTRODUCTION

A. Background

1. At its 26th Session on 12th December, 1967, the Council of Ministers of Transport approved the report on the financial situation of the railways [CM(67)25] and, at the same time, instructed the Railways Committee to study problems concerning railway auxiliary services. To carry out this study, the Committee appointed a Group of Rapporteurs drawn from the following Delegations : Austria (Chairman), Federal Republic of Germany and Italy. The Group also consulted a representative of the U. I. C.

2. The Group of Rapporteurs has drawn up the attached report in the light of 13 Member countries' replies (1) to an ad hoc questionnaire.

Japan supplied information on the auxiliary services of its State Railways (see Annex 1).

The comparative figures and statistics based on Delegations' replies are intended to enable Member countries to see how the situation stands with regard to railway auxiliary services.

B. Scope and range of the study

1. The complexity of the subject is such that the original aim - which was to study the entire problem of railway auxiliary services - had to be abandoned. Questions relating to auxiliary commercial services, railway power plants and permanent way auxiliary services are accordingly omitted. The study is thus restricted to work on rolling stock performed in workshops. Work which is directly and inseparably linked with operational maintenance (e. g. minor inspection and maintenance jobs performed in workshops belonging to Traction and Rolling Stock departments) is also omitted. In principle,

(1) Austria, Belgium, Germany, Ireland, Italy, Luxembourg, the Netherlands Norway, Portugal, Sweden, Switzerland, Turkey and the United Kingdom.

The Spanish Delegation also sent in a paper, but as it was received only a very short time before the completion of the report, the information it contained could not be entirely incorporated in the "detailed statement" in Chapter II. It is taken into account only in paragraph 8 "General Situation of Railway Auxiliary Services" and Annex 3 ;

Denmark indicated that Danish railway workshops did not come within the scope of this study.

the figures relate to the year 1968.

2. With a view to producing a report of topical interest, the programme of the study was simplified and the period covered by the required information was reduced. It was decided to forego, inter alia, any studies designed to appraise the profitability of auxiliary services or to set out their social aspects, such problems being as a general rule more particularly bound up with internal reorganisation and rationalisation measures.

C. Purpose of the study

1. The purpose of the study was to exchange information and experience at international level and not to formulate a philosophy setting out a standard solution for the problems of railway auxiliary services.

2. However, the scope and range of the study having thus been strictly limited, both in quantity and quality, there was a risk of its missing its actual purpose. That is why, in paragraph 8 of Chapter II, details are given on the situation of railway auxiliary services in certain countries as regards rationalisation, experience concerning work given out to contractors (comparative costs, standard of performance and delivery dates) and the arguments for retaining railway auxiliary services.

D. O. E. C. D. study on railway rolling stock

The O. E. C. D. has prepared a far-ranging study on the development and present situation of the railway rolling stock industry [DIE/EQ1/69. 24 - 1st Revision of 20th November, 1969, with Addenda 1 and 2].

This study refers to the construction and renovation of rolling stock in railway workshops. The relevant passages (paragraphs 175 and 176) are shown in Annex 2.

II. DETAILED REPORT

1. Number of auxiliary services for rolling stock

The relevant figures are shown in Table 1. In 1968, railway auxiliary services in the 13 countries covered by the study amounted, in all, to 282.

The Italian State Railways accounted for the largest number (66) followed by the United Kingdom (47), Sweden (35) and Germany (34).

Except in Norway, every railway administration is equipped with "main" workshops. The Germain Railways have the biggest number (28), followed by the Italian Railways (19) and British Railways (15). Workshops belonging to Traction and Rolling Stock Departments which handle major jobs are fairly numerous in Italy (35), the United Kingdom (32) and Switzerland (21), but none are encountered in Germany, Belgium, the Netherlands and Turkey.

"Other auxiliary services" are found in seven countries : their number ranges from 25 (Sweden) to 1 (Portugal).

2. Type of activity

Soon after the beginning of the railway boom in the 19th century, the heavy wear and tear inflicted on rolling stock by operating and weather conditions was already apparent. In the early days, unscheduled repairs were handled partly in the railways' own precincts and partly in the makers' works. However the railways soon built their own workshops for major repairs and, as the number of vehicles increased, these workshops expanded into larger units, usually specialised in a particular field (locomotive repairs, wagon repairs, etc.). Specialisation was then further developed within each workshop and many specific repair facilities unavailable to the makers themselves were provided. A later stage, specialisation was often carried to greater lengths by concentrating repairs for a given series of vehicles in the same workshop with a view of better productivity. Conversion operations were finally added to repair work and, in the case of several railway administrations, the construction of new stock.

Technical progress on the railways,

Table 1. NUMBER OF ROLLING STOCK AUXILIARY SERVICES

Year 1968

Country	Large workshops and main workshops	Workshops belonging to traction and Rolling Stock Departments	Total number of workshops	Other auxiliary services	Total number of auxiliary services
Germany (F.R.)	28	-	28	6	34
Austria	5	4	9	-	9
Belgium	6	-	6	-	6
Ireland	12	5	17	9	26
Italy	19	35	54	12	66
Luxembourg	2	1	3	-	3
Norway	-	6	6	3	9
Netherlands	3	-	3	7	10
Portugal	3	2	5	1	6
United Kingdom	15	32	47	-	47
Sweden	7	3	10	25	35
Switzerland	6	21	27	-	27
Turkey	4	-	4	-	4
Total	110	109	219	63	282

and more particularly structural changes in motive power, have made it necessary to introduce new working methods and to modernise and rationalise workshop practice.

Rationalisation measures in various countries are shown in paragraph 8 below.

The questionnaire replies received from 13 countries show that rolling-stock repairs are still the main task handled by their workshops. As a general rule, repairs to all categories of traction and trailer stock are their responsibility.

Except in Italy and Luxembourg, conversion or modification of a more or less elaborate kind is performed in every country. The main items involved are coaches, vans, freight stock and service wagons. In Austria, Belgium, Ireland, the United Kingdom, Sweden and Switzerland, the railways also handle the renovation of traction units.

In several countries (Belgium, Ireland, Norway, Portugal, United Kingdom and Turkey) auxiliary services also cater for rolling-stock construction. Railway workshops produce carriage and vans in Ireland, the United Kingdom and Turkey, wagons in Belgium, Ireland, Norway, Portugal, the United Kingdom and Turkey, traction units in Norway, the United Kingdom and Turkey, and special vehicles in Ireland and Turkey. In the United Kingdom they also produce large numbers of British Rail containers. In addition, the range of production of auxiliary services includes the components needed by the railways for their own rolling stock.

Two countries (Belgium and Norway) state that their railway auxiliary services are only provisionally employed on the construction of new rolling stock. The aim is to find jobs for workers made redundant by modernisation and rationalisation schemes until surplus capacity is eliminated by normal wastage of the labour force.

3. Organisation of rolling-stock auxiliary services

1. The replies from the 13 countries show that, as a general rule, auxiliary services are under central control or, at least, centrally co-ordinated. Purely regional management is encountered only in Germany, where the Federal Railways repair shops come under the " "Bundesbahndirektionen". In most countries the General Headquarters includes Directorates or Departments responsible for railway workshops. In a few countries (Portugal and the United Kingdom, for instance) certain powers are also delegated to regional or local services.

2. In the majority of countries, other administrative departments besides the authority in charge of auxiliary services exercise various control functions and have an impact on their general management. This usually applies to matters of finance, personnel and supplies and also to technical and administrative problems of a general order.

3. As a general rule, auxiliary services operate within a given area.

4. Internal organisation varies, of course, from one administration to another but the replies to the questionnaire show that the following departments are encountered in most cases :

- administrative department ;
- economics department ;
- general department responsible for technical matters ;
- special departments or sections for separate categories of vehicles ;
- inspection department.

4. Number of staff employed

Figures for staff employed in 1968 are shown in Table 2.

For the 13 countries combined, the total number of staff employed in auxiliary services is 126,569, of whom 17,290 (13.7 per cent) are classified under "Administration and Technical Supervision", 84,929 (67.1 per cent) are engaged on "main tasks", 17,079

Table 2. NUMBER OF STAFF EMPLOYED BY ROLLING-STOCK AUXILIARY SERVICES

Year 1968

Country	Job classification				
	Administration and technical supervision	Main tasks	Subsidiary tasks (*)	Apprentices	Total
Germany (F.R.)	3,870	15,535	5,500	1,982	26,887
Austria	790	4,066	1,189	540	6,585
Belgium	448	2,991	2,128	-	5,567
Ireland	327	755	915	134	2,131
Italy	2,338	15,974		-	18,312
Luxembourg	67	400	87	21	575
Norway	141	1,600	953	6	2,700
Netherlands	367	1,287	238	35	1,927
Portugal	289	2,137	1,230	288	3,944
United Kingdom	6,700	26,100	3,800	2,600	39,200
Sweden	529	2,492	616	-	3,637
Switzerland	616	2,365	155	352	3,488
Turkey	808	9,227	268	1,313	11,616
Total	17,290	84,929 (1)	17,079 (2)	7,271	126,569

(*) E. g. Cleaning, internal transport, plant and machinery maintenance.

(1) Including staff employed on subsidiary tasks in Italy.

(2) Excluding staff employed on subsidiary tasks in Italy.

(13.5 per cent) are engaged on subsidiary tasks (such as cleaning, internal transport, etc.) and 7,271 (5.7 per cent) are apprentices.

British Railways have the biggest labour force (39,200) followed by Germany (26,887), Italy (18,312) and Turkey (11,616).

Except in Belgium, Italy and Sweden, all the railway administrations under review provide apprentice training. Thorough training of future specialised staff is regarded as a most useful asset by the railways concerned. In the United Kingdom, apprentice training is highly developed ; British Railways emply 2,600 apprentices, 500 of whom are trained in schools belonging to the railways.

5. Numbers of rolling stock for which auxiliary services provide maintenance

The figures for 1968 (see Table 3) show that steam traction is dying out and that, where motive power is concerned, electric and diesel locomotive maintenance is the main item.

Freight wagons constitute the largest category. Of the total amounting to roughly 1,138,000 units, the auxiliary services of the 13 countries under review were responsible for the maintenance of about one million.

Insofar as information on this point is available, the average age of rolling stock varies widely from one country to another. The age-brackets recorded for each category were as follows :

Locomotives - steam	28.8 - 55.0 years
Locomotives - electric	8.0 - 26.2 years
Locomotives - diesel and special systems	5.9 - 12.0 years
Railcars - electric	8.0 - 21.0 years
Railcars - diesel and special systems	13.5 - 19.9 years
Coaches and vans	12.6 - 34.6 years (up to 62.5 years for 2-axle coaches)
Wagons	10.3 - 48.8 years (up to 55.5 years for 2-axle wagons)

These figures show that whilst the railways have done much to modernise their rolling stock, some obsolete vehicles are still in commission. Close attention should be given to problems of profitability in relation to age of vehicles.

6. Yearly operating returns

The relevant figures for 1968 are shown in Table 4.

When considered in conjuction with those for numbers of rolling stock (Table 3) they are useful for appraising the activities of auxiliary services.

7. Yearly output of auxiliary services

The figures supplied by Member countries with regard to the output (construction, conversion and repairs of rolling stock) of auxiliary services in 1968 are shown in Tables 5, 6 and 7. Table 8 gives figures for work given out to private contractors. The details given for separate categories of equipment are taken from the tables in Annex 3 where the output figures are shown separately for each country.

In 1968, auxiliary services in six countries produced just under 6,000 new railway vehicles besides components. In three other countries, production was restricted to components only.

The United Kingdom scored the biggest output : 4,278 units to a value of nearly £16 million. Bristish Railways' rolling stock construction is normally limited to mechanical parts and assembly

Table 3. NUMBERS OF ROLLING STOCK FOR WHICH AUXILIARY SERVICES PROVIDE MAINTENANCE

Year 1968

Country	Steam locomotives	Electric locomotives	Diesel and special systems locomotives	Electric railcars	Diesel and special systems railcars	Coaches and vans	Wagons	Special vehicles	Total
	1	2	3	4	5	6	7	8	9
Germany (F.R.)	2,265	2,156	3,791	419 (1)	1,015	19,706	271,545	16,144	317,041
Austria	411	489	338	105	103	4,874	34,265	3,156	43,741
Belgium	-	169	850	337	86	2,270	36,630	541	40,883
Ireland	-	-	221	-	86	602	9,348	457	10,714
Italy	649	1,579	551	396	856	10,438	92,962	9,176	116,607
Luxembourg	-	20	64	-	22	98	3,426	19	3,649
Norway (2)	3	60	28	97	57	900	2,483	-	3,628
Netherlands	-	107	567	1,204	325	472	18,024	1	20,700
Portugal	152	35	177	59	94	1,232	8,182	211	10,142
United Kingdom	3	329	4,326	7,373	3,830	12,601	436,124	1,288	465,874
Sweden	54	868	196	180	382	2,139	43,380	350	47,549
Switzerland	-	778	91	204	3	5,188	32,578	-	38,842
Turkey	700	3	99	27	48	1,150	15,689	505	18,221
Total	4,237	6,593	11,299	10,401	6,907	61,670	1,004,636	31,848	1,137,591

(1) Including 238 battery-driven railcars.

(2) Total number of periodical and general overhauls

Table 4. YEARLY OPERATING RETURNS

Year 1968

Country	Gross ton-km steam traction (million)	Gross ton-km electric traction (million)	Gross ton-km diesel traction (million)	Engine-km (1) steam traction (thousands)	Engine-km (1) electric traction (thousands)	Engine-km (1) diesel traction (thousands)	Coach and van-km (thousands)	Wagon-km (thousands)	Remarks
	1	2	3	4	5	6	7	8	9
Germany (F.R.)	45,350	151,556	32,481	97,883	352,671	245,382	2,082,212	6.151,167	
Austria	3,465	23,347	2,461	12,938	70,678	24,911	325,999	908,780	
Belgium	-	15,620	14,249	-	67,273	54,122	.	.	
Ireland	-	-	.	-	-	13,741 1)	.	.	1) = 8,588 miles
Italy	5,431	124,340	12,795	14,903	218,695	117,449	3,979,076	4.454,000	
Luxembourg	-	743	981	-	1,147	4,319	8,203	47,404	
Norway	.	.	.	600	27,920	11,450	61,689	201,476	
Netherlands	-	18,494	6,762	-	14,173	15,970	53,980	397,760	
Portugal	763	2,725	2,829	5,031 1)	8,372 2)	18,005 3)	90,144	153,446	
United Kingdom	.	.	.	2,736	56,326	342,781	.	.	1) = 1,700 miles 2) = 35,000 miles 3) = 213,000 "
Sweden	12	37,813	2,567	100	102,400	26,700	1,292,000	2.591,000 1)	1) Including privately owned wagons
Switzerland	-	30,611	71	-	101,744	3,415	409,620	946,702	
Turkey	13,607	488	4,424	36,308	2,952	13,510	148,371	508,345	
Total	68,628	405,737	79,620	170,499	1.024,351	891,755	8.451,294	16.360,080	

(1) Distance covered by locomotives and railcars on own network and other networks.

Table 5. YEARLY OUTPUT OF AUXILIARY SERVICES CONSTRUCTION OF ROLLING STOCK

Year 1968

Country	Category of rolling stock	Number	Total value in national currency of units built (production cost) (million)	Number of manhours (thousands)	Remarks
	1	2	3	4	5
Germany (F.R.)	Components	.	D.M. 34.65	882	
Austria	Components	.	S. 39.67	485	
Belgium	Electric railcars, wagons, components	361(1)	Frs. 538.66	1,080	(1) Number of components not specified.
Ireland	Coaches and vans, wagons, special vehicles	215(1)	£ 0.29	71	(1) Number of coaches and vans not specified
Italy	Components	12,474	L. 1,745.8	289	
Luxembourg	-	-	-	-	
Norway	Diesel locomotives, wagons	149	.	.	
Netherlands	-	-	-	-	
Portugal	Wagons	17	Esc. 3.00	26	
United Kingdom	Electric railcars,) coaches and vans,) wagons, containers) (1)	4,278	£ 15.89	4,483	(1) Including components
Sweden	-	-	-	-	
Switzerland	-	-	-	-	
Turkey	Diesel locomotives, coaches and vans wagons, special vehicles, components	849(1)	T.L. 177.03	5,660	(1) Number of special vehicles and components not specified.

Table 6. YEARLY OUTPUT OF AUXILIARY SERVICES CONVERSION OF ROLLING STOCK

Year 1968

Country	Category of rolling stock	Number	Total value in national currency of conversion work (production cost) (million)	Number of man-hours (thousands)	Remarks
	1	2	3	4	5
Germany (F.R.)	Coaches and vans, wagons, special vehicles	3,618	DM. 106.37	1,613	(1) Minor renovations not classifiable as routine maintenance
Austria	Electric and diesel power units, coaches and vans, wagons, special vehicles (1)	5,598	S. 64.80	279	
Belgium	Electric and diesel power units, coaches and vans, wagons	.	Frs. 228.16	359	
Ireland	Diesel locomotives, coaches and vans, wagons	22	£ 0.11	38	
Italy	-	-	-	-	
Luxembourg	-	-	-	-	
Norway	Coaches and vans, wagons	33	.	.	
Netherlands	No conversion work in 1968				
Portugal	Coaches and vans, special vehicles	34	Esc. 1.02	224	
United Kingdom	Special vehicles	3	5.55	1,706	
Sweden	Electric locomotives and railcars, diesel locomotives, coaches and vans, wagons, components	304	S. Kr. 9.12	.	
Switzerland	Electric and diesel power units, coaches and vans, wagons(1), components	.	Sw. Frs. 17.25	153	(1) Including privately owned wagons
Turkey	Coaches and vans, wagons	174	T. . 3.77	142	

Table 7. YEARLY OUTPUT OF AUXILIARY SERVICES : REPAIR OF ROLLING STOCK

Year 1968

Country	Category of rolling stock	Number	Total value in national currency of repairs (production cost) (million)	Number of man-hours (thousands)	Remarks
	1	2	3	4	5
Germany (F.R.)	All categories shown in Table 3	146,389	DM. 447.47	15,074	
Austria	All categories shown in Table 3	17,922	S. 357.24	5,715	
Belgium	All categories shown in Table 3 (except special vehicles), components	.	Frs. 777.28	2,988	
Ireland	All categories shown in Table 3, components	1,450(1)	£ 1.51	758	(1) Number of components not specified
Italy	All categories shown in Table 3, components	3,833(1)	L. 21,749	7,263	(1) Number of components not specified
Luxembourg	All categories shown in Table 3	3,649	L. Frs. 63.97	627	
Norway	All categories shown in Table 3	3,628	N. Kr. 113.98	2,751	
Netherlands	All categories shown in Table 3 (excluding electric railcars), components	7,393(1)	Fl. 42.94	1,902	(1) Number of accident repairs to coaches and vans and number of components not specified
Portugal	All categories shown in Table 3	4,430	Esc. 79.25	2,966	
United Kingdom	All categories shown in Table 3 (excluding steam locomotives and special vehicles), containers, components	166,179	£ 42.63	22,760	
Sweden	All categories shown in Table 3 (excluding special vehicles)	10,353(1)	S. Kr. 102.47	1,881(2)	(1) Number of incidental repairs not specified (2) Number of man-hours for incidental repairs not specified
Switzerland	All categories shown in Table 3, components	.	Sw. Frs. 42.21	571	
Turkey	All categories shown in Table 3 (except electric locomotives and electric and diesel railcars), components	13,296(1)	T. .171.52	7,208	(1) Number of components not specified

Table 8. WORK GIVEN OUT TO CONTRACTORS (EXCLUDING CONSTRUCTION)

Year 1968

Country	Category of rolling stock	Number	Total value of contracts (in national currency units) (million)	Remarks
	1	2	3	4
Germany (F.R.)	-	-	-	-
Austria	Wagons special vehicles, components	427(1)	S. 152. 49	(1) Number of components not specified
Belgium	-	-	-	
Ireland	-	-	-	
Italy	Coaches and vans, wagons	23,135	L. 13,982	Number of man hours approximately 6 million
Luxembourg	-	-	-	
Norway	-	-	-	
Netherlands	Electric and diesel railcars components	121(1)(2)	Fl. 6. 33	(1) Multiple units (2) Number of components not specified
Portugal	Electric locomotives and railcars, coaches(1)	4	Esc. 3. 44	(1) Major repairs
United Kingdom	Wagons, special vehicles	281,596	£ 4. 35	
Sweden	Electric locomotives	59	S. Kr. 2. 59	
Switzerland	Coaches and vans	20	Frs. 1. 53	
Turkey	Diesel locomotives	20(1)	£ 4. 44	(1) Including 10 knocked-down locomotives ; some of the components for these locomotives are made in railway workshops

other components such as diesel engines, wheels and axles being purchased. Under the Transport Act, 1968, British Railways Workshops are also entitled to make rolling stock for sale. Containers are an important item in the production programme : 1,848 units were built for British Railways in 1968.

The Turkish State Railway Workshops have a large-scale production programme : over 800 vehicles were built in 1968.

In 11 countries, auxiliary services carried out conversion work on some 10,000 vehicles of nearly all categories in 1968. Output in this field is difficult to compare as details on the type and scope of the work involved is usually missing. According to the data supplied by Member countries, these activities accounted for 4.5 million man-hours, but it must be pointed out that two countries gave no figures for man-hours.

In all, some 380,000 vehicles were repaired in 1968 by the auxiliary services of the 13 countries which replied to the questionnaire. They accounted for about 72 million man-hours. As stated in paragraph 2, railway workshops normally undertake repairs for all categories of rolling stock. In terms of units repaired, the highest scores were : United Kingdom (166,179), Germany (146,389), Austria (17,922), Turkey (13,296), and Sweden (10,353) ; in terms of man-hours, United Kingdom (22.76 million), Germany (15.07 million), Italy (7.26 million), Turkey (7.21 million) and Austria (5.72 million).

In the 13 countries under review, construction, conversion and repairs of rolling stock accounted for nearly 90 million man-hours in 1968, of which about 80 per cent for repairs, about 15 per cent for construction and about 5 per cent for conversion work.

In eight countries (Austria, Italy, the Netherlands, Portugal, the United Kingdom, Sweden, Switzerland and Turkey) repair and conversion work involving some 305,000 vehicles was given out to the private sector by the railway authorities in 1968.

As shown in Table 8, British Railways' contracts with private industry in this field showed the highest score, accounting as they did for some 280,000 wagons and some 260 special vehicles. Next came the Italian State Railways, on whose account private contractors dealt with about 23,000 coaches, vans and wagons. In Italy, private enterprises normally handle repairs for 50 per cent of the carriages and vans and nearly all the freight stock.

Information on the experience of railways which have given out work to private contractors will be found in paragraph 8.

8. General situation of Railway Auxiliary Services

1. Rationalisation measures

a) United Kingdom

The British Railways Board carried out a rationalisation and development plan in the years 1963 to 1967 for the reorganisation of British Railways main workshops and their adaptation to meet current needs.

Under this reorganisation and modernisation programme only 15 of the 32 existing major workshops were retained. The decision to retain particular workshops was made in the light of operational and georgraphical considerations - to provide an adequate regional service - and social problems and problems of national economy and local employment were also taken into account. The total manpower of the main workshops was thus reduced from 66,000 in 1962 to about 40,000 in 1968.

The remaining workshops now work double shifts as far as possible, so as to lower general costs by reducing standing time and consequently increasing utilisation to capacity ; they have been better equipped, particularly with modern machines and machine tools.

The various workshops are largely

self-administered. Each workshop has its planning team which, in carrying out work, takes account of local conditions, the existing capacity and plant of workshops and sees to it that duplication with other workshops is avoided.

The workshops' Head Office is responsible for the general assessment of the work to be done, its distribution, the co-ordination of workshops' plans, decisions on standardization and supervisory functions.

In order to rationalise work in the workshops, construction of rolling stock has been limited as regards the three main categories to two workshops for each type, two for locomotives, two for coaches and two for wagons.

As regards repairs, the main factors taken into account were operational and geographical needs, the concentration of types of locomotives in certain workshops serve to reduce reserves.

The real cost resulting from the carrying out of this programme (mainly the cost of reorganising and modernising the workshops) was £16.2 million compared with a forecast of £16.8 million. The building of entirely new workshops - according to British Railways' estimates 12 new units would have been required - would have cost about £85 million.

The procurement of more efficient machines, their intensified utilisation and the rationalisation of production methods, coupled with a decline in work at locomotive workshops, have made it possible to reduce the number of machine tools from about, 11,000 in 32 workshops in 1962 to about 2,800, without loss of efficiency.

Out of the 12 workshops which were closed up to 1966, nine were sold for a sum of £2.2 million and one was let.

An assessment of the savings achieved at a particular stage by the reorganisation of British workshops would be difficult because in comparison with the previous period, the volume of work of each workshop has changed in greater or less degree. The planned reduction of manpower has taken place. A substantial part of the total expenditure of over £16 million for workshops which have been kept in being was needed to bring about the planned merger and to overtake arrears of maintenance. The elimination of annual overheads made a vital contribution to the savings although this was at the expense of reorganisation of remaining workshops. The fact that the plan provided for double shift working has proved very useful.

Direct savings in operating costs were estimated in the reorganisation plan of the British workshops at £3.8 million per year. After deducting interest on capital the remaining savings are £2.7 million per year. In addition, the elimination of fixed overheads has produced estimated savings of £3.3 million.

There was also a special payment for severance to redundant personnel, though the resulting cost was not charged to the reorganisation plan.

On 1st January, 1970 the British Railways Board formed a new subsidiary company - British Rail Engineering Limited - to manage the remaining workshops, modernised and re-equipped under the reorganisation plan. These workshops now have a total strength of some 37,400.

b) Sweden

In 1935, the Swedish State Railways had six main workshops and a subsidiary workshop with a total labour force of 3,140. The nationalisation of most private railways added another ten workshops and raised the labour force to 5,687.

Since 1955, a number of workshops have been closed down as a consequence of rationalisation and, by 1st October, 1969, the labour force had been reduced to 3,520.

Rationalisation measures in Sweden concerne the modernisation of rolling

stock (e. g. replacement of steam locomotives by electric and diesel locomotives replacement of plain bearing axle-boxes by roller bearing units, introduction of steel-bodied coaching stock, changes in codes of practice for overhauls (longer intervals - based on tests - between locomotive overhauls, substitution of engine mileage for time as a criterion for overhaul schedules), restructuring of workshops and more efficient methods of maintenance.

The restructing process is not yet completed. Studies are in progress with a view to reducing the number of electric locomotive workshops from three to two and the number of workshops which handle the overhauling of bogie coaches to only one (two at present). In addition, plans are being made to concentrate intermediary overhauls of coaching stock at one point only (instead of three at present). This exercise should be completed in 1970.

From 1954 to 1969, concentration of maintenance operations in fewer workshops called for capital investment amounting to kr. 24.2 million in buildings and Kr. 36.9 million in plant and machinery.

c) Spain

An outstanding feature of the situation in Spain is the much altered pattern of R.E.N.F.E.'s rolling stock since 1968.

The last steam locomotive is to be taken out of commission in 1970 and the modernisation of tractive stock will continue during the coming years with the acquisition of up-to-date diesel and electric units.

Trailer stock is also being replaced by modern units.

These developments have an impact on the activities of railway auxiliary services : the number of workshops and the size of the labour force is gradually declining, but as the labour force cannot be scaled down at the same pace as the workload for social reasons, the aim is to deal with the problem of provisionally redundant manpower by making railway workshops handle casual jobs which, in most cases, are not directly relate to rolling stock maintenance.

It has also been found necessary to reorganise all the workshops and the arrangements for the participation of the private sector in the maintenance of railway rolling stock.

Up to the end of 1968, the supervision of repairs carried out in railway workshops and in private contractors' workshops was the responsibility of the Rolling Stock and Motive Power Department, which comes under the authority of the Operating Directorate. At the end of 1968, a new Directorate in charge of "Supplies" was instituted and it now centralises all the work allocated to outside contractors.

At the beginning of 1969, a new form of organisation was introduced for R.E.N.F.E. main workshops. This is a self-administered body, though not a separate legal entity, which is responsible for the management of railway workshops with its own administrative machinery and separate accounting system.

The structure of the new body is broadly the same as in private industry and comprises :

- a six-member Board whose Chairman is the General Manager of R.E.N.F.E. ;

- a "Delegate-Adviser" ;

- a Managing Director assisted by the technical services of the 12 workshop managers.

This body is studying an overall plan for the restructuring of workshops which would reduce the number of main workshops from 12 to seven and cut the total labour force by about 50 per cent during the period 1970-1977.

d) Austria

On the instructions of the Federal Minister of Transport and Nationalised Industries, a survey of Austrian Federal

Railways workshops was produced in 1967. Besides main workshops it covers some of the workshops controlled by Traction and Rolling Stock Departments and lays down the guidelines for certain rationalisation measures.

In this Report, the planned allocation of the various categories of tractive and trailer stock to specific main workshops is regarded as one of the prerequisites of rationalisation. On this basis, workshop layout - as regards buildings, plant and machinery - must be seen from a long-term angle. The total capital investment needed for the workshops is estimated at some Sch. 200 million.

Practical proposals for rationalisation concern the adaptation of buildings and machinery to present-day requirements, technical problesm of rolling-stock design in relation to maintenance, and questions of internal organisation and manning.

These proposals are being acted upon. In 1969, the Austrian Federal Railways drew up a five-year Plan which - for the five main workshops - provides for capital expenditure amounting to some Sch. 25 million on buildings and approximately Sch. 35 million on plant and machinery. The labour force is expected to be scaled down during the coming years.

e) Among the other countries which replied to the questionnaire :

Germany states that the number of repair workshops was reduced by about 45 per cent during the years 1951-1968. The reasons given for this decline are the structural change in motive power and the following factors which have a bearing on the volume of vehicle maintenance : trend of transport demand, changes in methods of maintenance, improved vehicle design, use of long-lasting materials, new construction processes (partial automation, centralised control). All these factors have a decisive bearing on the long-term approach to railway auxiliary services.

Belgium stated that repair workshops are specialised in particular types of rolling stock. This specialisation was made necessary by the reconversion of motive power (elimination of steam traction) and by the improved technical characteristics of trailer stock.

Italy expects to spend L. 10,000 million on the development and modernisation of State railway workshops during the next three years.

Norway states that since the change from district to central administration, the main structural change has been the centralised production of spare parts and centralised maintenance of rolling stock.

As regards the rationalisation of railway workshops, policy in Portugal is in favour of concentrating repairs and maintenance in one main centre.

In Switzerland, an increase in output capacity, combined with a slight decrease in the labour force, has been achieved in recent years by the modernisation and renewal of plant and machinery in Swiss Federal Railway workshops.

As part of the general outlook for the coming years, the preparation of rolling stock for the fitting of automatic couplers will considerably increase the volume of work in the railway workshops.

2. Experience of railways which have given out work to contractors

Germany

The cost of rolling-stock repairs is usually higher in the private sector than in comparable workshops of the German federal Railways. In addition, delivery dates are considerably longer. When rolling stock is laid up for long periods in this way, more stand-by vehicles are needed, hence involving heavier capital outlays.

Austria

Experience shows that the practice of giving out work to contractors involves

fairly heavy administrative machinery for supervision and cost-auditing. The Austrian Federal Railways mention a case where coaches of a given type were sent for general overhaul to a wagon-building works, a shipyard well equipped for coach repairs and a railway workshop. The comparative figures were as follows :

	Railway Workshop	Wagon-building works	Shipyard
Man-hours	11,216	13,086	13,518
Cost (Schillings)	1,032,141	1,279,961	1,125,240
Delivery dates	5-6 months	8-9 months	10 months

The railway workshop thus made a better score as regards man-hours, total cost and delivery dates than the two private concerns.

Spain

The reorganisation of workshops has been so designed that private industry will in future continue to play a part in rolling stock maintenance activities. This seems desirable in the light of past experience having regard to comparative cost, quality and methods, and to the possibility of offsetting peak loads.

The extent of the private sector's contribution depends on various factors such as the rate at which the R.E.N.F.E. workshops staff is reduced and the possible ill-effects on the national economy if jobs assigned to private industry were unduly curtailed.

Italy

It is judged more profitable to allocate to railway workshops any work calling for highly-skilled manpower, special plant and machinery and the shortest possible immobilisation of rolling stock.

Sweden

A comparative study of the quality, delivery dates and cost of maintenance work done by a Swedish railway workshop and a private workshop gives the following results :

Quality : no differences can be traced.

Delivery dates : slightly longer for the private workshop.

Cost : repair costs usually higher in private workshops.

It must be pointed out, however, that the organisation of private concerns is not adapted to maintenance and repairs in the same way as railway workshops.

Switzerland

Repair costs are found to be a little higher in private industry than in Swiss Federal Railway workshops, but there is no difference as to the quality of the work, it being supervised by railway officials. Delivery dates are also slightly longer in private industry than in railway workshops.

3. Grounds for the continuance of rolling-stock auxiliary services

All the replies to the questionnaire were in favour of retaining specifically railway workshops.

Germany judged it essential that the operating department should be able to draw upon trained staff from the workshops when required. Stress was also laid on the facilities for giving highly skilled training to young workers.

Austria recalled that private contractors were not equipped with suitable track and sidings for handing over repair jobs and that these were most safely and cheaply dealt with in railway workshops.

Sweden considered that there would be no economic advantage in transferring maintenance work from main workshops to the private sector.

Switzerland, in the light of previous experience and research, was unquestionably in favour of retaining the auxiliary services of the Swiss Federal Railways.

REMARKS

A. 1 This is the first study on railway auxiliary services to be undertaken in the E. C. M. T. Its aim was to exchange infor information and experience between Member countries on work performed on rolling stock in railway workshops. Having regard to the quantity of data provided, this aim can be regarded as having being achieved.

The Report gives useful details on the range of operations, organisation and manning of railway auxiliary services and on their output in the fields of rolling stock construction, conversion and repairs in 1968.

2. According to the data supplied by 13 Member countries, a total labour force of about 126,500 was employed in 282 auxiliary services. Rolling-stock repairs remain the main task of such services, accounting as they do for 80 per cent to total man-hours, followed by 15 per cent for construction of railway vehicles and components, and 5 per cent for conversion work. In various countries where auxiliary services handle rolling-stock construction, this activity is governed to a large degree by considerations concerning the employment of staff made redundant by modernisation and rationalisation measures.

In the United Kingdom, however, the far-ranging construction programme of British Railways workshops is largely determined by economic and commercial considerations : British Railways are now entitled to produce, for sale to private customers, not only vehicles and other railway equipment such as containers but also any other products that can be made in their workshops provided that the capacities required for this purpose are already available within the framework of the main line of activity.

More or less radical measures with a view to modernisation and rationalisation of workshops have already been taken in most countries. Investment programmes have also been drawn up to this end. As indicated in Annex 1, modernisation and rationalisation in Japanese workshops will be carried to considerable length with the help of computers.

4. A specific problem mentioned in the Report is the average age of vehicles handled in the workshops under review. The fact that some very old stock is still kept in commission is a matter for consideration with an eye to the economics of railway operations.

Railway auxiliary services will be faced with an extremely important task during the coming years with the introduction of automatic coupling. Work under this head will represent a sizeable item in the total cost of the exercise.

5. In the light of the information supplied, an interesting point is that in four countries (Luxembourg, Netherlands, Sweden and Switzerland) the construction of new rolling stock is not part of the activities of the Railways' own workshops.

In other countries, railway workshops are engaged in the construction of new units to a greater or lesser degree.

In Germany, Austria and Italy, this applies to components only. In Belgium and Norway, the construction of new rolling stock is only provisionally assigned to railway auxiliary services on grounds of manpower policy.

6. The countries' replies show that, on various grounds, it is judged essential for the railways to keep at least some

workshops of their own for the repair of rolling stock.

The replies received from some countries (Germany, Austria, Italy, Sweden and Switzerland) also show that in the light of the experience of administrations which have given out jobs to the private sector the total cost of rolling stock repairs in such cases are higher than if they were done by railway auxiliary services, especially if account is taken of the length of time for which the vehicles concerned remain idle.

B. As this Report does not consider the criteria for evaluating the profitability of railway auxiliary services, no conclusions can be drawn as to the impact that the management of these services has on the financial situation of the railways.

However, having regard to the consequences of the steps already taken in this field in certain countries, it may be assumed that the rationalisation and reorganisation of workshops has an important bearing on sound management and, hence on a healthier financial position for the railways. Action in this field at this stage is doubtless bound up with economic, social and political considerations. With a view to improving the financial situation of the railways, it would be desirable nonetheless for them to bear always in mind the possibilities of rationalising auxiliary services and for the latter to maintain suitable relations with the private sector.

Lastly, it must be pointed out that this paper, though containing useful elements, covers only part of the broader issue of auxiliary services taken as a whole. An overall study would require wider and more elaborate enquiries.

Annexe 1

REPORT ON PROBLEMS OF RAILWAY AUXILIARY SERVICES FOR ROLLING STOCK

THE SITUATION OF AUXILIARY SERVICES IN JAPANESE NATIONAL RAILWAYS

1. Review of Railway Workshop Development

1) Historical record in brief

The first railway in Japan was opened in 1872. A railway workshop had been established the year before in 1871. With the expansion of the railway network since then, workshops were set up one after another throughout the country and these have grown in size and capacity, engaged not only in repairing but also in producing new rolling-stock. At present, however, J. N. R. workshops are not engaged in manufacturing new rolling-stock ; for repair work has increased in volume and it has become J. N. R. policy to phase out this part of activity, so as to promote the growth of the civilian rolling-stock manufacturing industry.

Today J. N. R. is operating 26 workshops in all throughout the country with a staff of 35,000 men. These occupy a total area of 5,150,000 sq. m., their assets aggregating some 83,000 million yen.

2) Action taken lately for workshop rationalisation

J. N. R. launched its Third Long-range Plan beginning with the year 1965, and had invested up to 1968 some 1,415,200 million yen for the improvement of its commuter service, for the boosting of its trunk line transport capacity and for greater safety in train operation. For the workshops 9,500 million yen was invested, mainly in order to strengthen and expand their inspection and repairing capacity and to enhance the safety rate of rolling-stock.

Personnel rationalisation was also undertaken at the workshops in conjunction with the management rationalisation plan. Notwithstanding an increase in the number of rolling-stock, rationalisation of personnel to the extent of 7,500 men was effected through the mechnisation and automation of repairing operations and by giving out work to outside contractors. For the mechanisation and automation of repair operations alone, some 10,000 million yen was invested, and a new inspection and repairing plant for wheels, engines and rotary machines was introduced, also a new system of intensive mass-production of rolling-stock parts and components. Personnel was rationalised here to the extent of some 2,000 men.

3) Repairing work given out to contractors

Rolling-stock repair work is given out to contractors in two ways : overall repairing contract and partial repairing contract. Taking the standpoint that the overall repairing contract is not advantageous in respect of economy, safety and work-time, J. N. R. has been following the policy of giving out the contractors such indirect jobs as moving things around in the workshops, the maintenance of buildings and machines and repair work on rolling-stock parts and components such as the accommodation in passenger coaches, having little to do with the safety of rolling-stock.

The dismantling, assembling, conditioning and testing of rolling stock, and the repairing of essential equipment requiring the keeping of car records for control, are performed.

2. Future of Railway Workshops

Safety maintenance of rolling stock is of vital importance in ensuring safety in railway transport. Naturally enough, the workshops are drawing up plans, in concert with the rationalisation plan of J. N. R. as w whole, aiming at the complete modernisation of their set-up within the next ten years and the institution of a most up-to-date rolling stock maintenance system. Steps envisaged in these plans are :

1) New rolling stock inspection system

Aiming at a reduction of work load by taking positive steps to introduce new rolling stock techniques for the improvement of rolling stock itself, so as to make all vehicles maintenance - free, and to simplify the check-up procedure, as well as to extend rolling stock inspection periodicity.

2) Mechanisation and automation of repairing operations

Aiming at further personnel rationalisation through the mechanisation and automation of the repairing capacities of worshops to cope with modernised rolling stock.

3) Utilisation of contractors' abilities and capacities

Aiming at reduction of the labour force in workshops, by giving to outside contractors jobs other than those of dismantling, assembling, conditioning and testing of rolling stock, and the inspection and repairing of essential equipment, that is to say the repairing of those parts and components that have little to do with the safety maintenance of rolling stock, to be given to outside contractors.

4) E. D. P. S. system for workshop administration

For the modernisation of workshop administration, medium-size computers are to be installed at nine of the 26 workshops and their agent sets in all others, for the centralised processing of information. Thus, all the work involved in keeping rolling-stock inspection and repairing records, in planning for inspection and repairing, and in controlling work schedules, cost accounting and stores and personnel, will be computerised. This will mean not only the establishment of an information control system for workshops but also a greater efficiency in the other indirect sector of administration.

Annex 2

Organisation for economic co-operation and development
special Committee for machinery

AN ASSESSMENT OF DEVELOPMENT AND THE PRESENT SITUATION OF THE RAILWAY ROLLING STOCK INDUSTRY

Extract from DIE/EQ1/69. 24(1st Revision)
of 20th November, 1969

(ii) Supply and removation of R. R. S. by railway shops

175. Most R. R. in the O. E. C. D. engage in the rebuilding of locomotives and trailer stock, though it cannot be said to what extent this activity is economically justified, taking into account the age, economic utility of the stock, and rebuilding costs. There is, of course, no standard cut-off point regarding the efficiency of a unit of equipment. Financing possibilities, the cost-performance of new equipment and the cost-performance of renovated equipment all have to be weighed. In such a calculation the immediate cost of otherwise redudant statutory personnel is also taken into consideration. R. R. in practically all Member countries are attempting to reduce operating personnel ; as sacking is not always feasible they often resort to renovation. Some of them, in spite of attempts to streamline maintenance operations, have transferred personnel to their shops, which still have to cope with a relatively heavy flow of work which results from the impossibility of acquiring all the new equipment which would provide the most economical overall solution. This rebuilding activity of course reduces and postpones orders to equipment manufacturers.

176. Possibly of still greater importance is the manufacture of new equipment by the R. R. shops. There are three countries in which R. R. shops engage regularly in the production of R. R. S. These are the United Kingdom, whose railway shops deliver all types of equipment and most of that used by British Railways, Germany where railway shops have traditionnally supplied part of passenger coaches, and the United States where railway shops assemble general purpose freight cars. In the general stagnation observed in demand for new stock in the last few years, R. R. shops in Germany and the United States have reduced their output, though in the United States in 1968 the reduction was not as great as that of the equipment producers. Some examples (e. g. Belgium and Norway) of occasional production by R. R. shops have been reported. In one case, it was stated that production would be continued in R. R. shops until employment could be brought into line without creating any major social difficulties.
See Table 8 .

Annex 3

Statistics supplied by each country on :

- yearly output of auxiliary services for rolling stock ;
- work given out to contractors (excluding construction).

GERMANY

Table 3.1.1. YEARLY OUTPUT OF AUXILIARY SERVICES FOR ROLLING STOCK

1968

Category of rolling stock	Construction			Conversion			Repairs		
	Number	Total value in national currency (1) production cost) (thousands)	Number of man-hours (thousands)	Number	Total value in national currency (1) (production cost)(thousands)	Number of man-hours (thousands)	Number	Total value in national currency (1) (production cost) (thousands)	Number of man-hours (thousands)
1	2	3	4	5	6	7	8	9	10
Locomotives - steam	-	-	-	-	-	-	1,058	43,788.7	1,727.8
Locomotives - electric	-	-	-	-	-	-	1,518	43,755.6	1,092.4
Locomotives - diesel and special systems	-	-	-	-	-	-	1,500	64,799.5	1,662.5
Railcars - electric	-	-	-	-	-	-	282	4,969.1	146.5
Railcars - diesel and special systems	-	-	-	-	-	-	870	27,212.0	931.0
Coaches and vans - 2-axle	-	-	-	-	-	-	2,790	6,198.8	239.9
Coaches and vans - 4-axle	-	-	-	150	32,234.7	559.1	13,780	95,592.1	4,050.7
Wagons - 2-axle	-	-	-	2,411	39,100.1	558.2	)		
Wagons - 4-axle	-	-	-	895	30,717.3	345.5	) 118,983	142,771.2	4,392.3
Special vehicles	-	-	-	162	4,313.1	120.5	5,608(2)	18,382.8	831.2
Rolling stock components	.	34,654.8	881.8	-	-	-	-	-(3)	-
Total		34,654.8	881.8	3,618	106,365.2	1,613.3	146,389	447,469.8	15,074.3

(1) Deutsche Mark.

(2) Service coaches and wagons.

(3) Components are included in production cost as used parts or spares.

GERMANY

Table 3.1.2. WORK GIVEN OUT YEARLY TO CONTRACTORS (EXCLUDING CONSTRUCTION)

1968

Category of rolling stock	Number of vehicles	Total value of contracts (in national currency)	Remarks
1	2	3	4
Locomotives - steam	-	-	-
Locomotives - electric	-	-	-
Locomotives - diesel and special systems	-	-	-
Railcars - electric	-	-	-
Railcars - diesel and special systems	-	-	-
Coaches and vans - 2-axle	-	-	-
Coaches and vans - 4-axle	-	-	-
Wagons - 2-axle	-	-	-
Wagons - 4-axle	-	-	-
Special vehicles	-	-	-
Rolling stock components	-	-	-
Total	0	0	-

AUSTRIA

Table 3.2.1. YEARLY OUTPUT OF AUXILIARY SERVICES FOR ROLLING STOCK

1968

Category of rolling stock	Construction			Conversion(1)			Repairs(2)		
	Number	Total value in national currency (3) (production cost)	Number of man-hours	Number	Total value in national currency (3) (production cost)	Number of man-hours	Number	Total value in national currency (3) (production cost)	Number of man-hours
1	2	3	4	5	6	7	8	9	10
Locomotives - steam	-	-	-	-	-	-	157	24,085,427	445,865
Locomotives - electric	-	-	-	216	3,488,871	43,775	333	64,067,435	1,040,704
Locomotives - diesel and special systems	-	-	-	79	1,881,964	30,456	290	28,011,908	390,014
Railcars - electric	-	-	-	Relevant figures included in those for electric and diesel locomotives			108	12,647,361	202,744
Railcars - diesel and special systems							128	12,117,497	192,127
Coaches and vans - 2-axle	-	-	-	1,032	15,726,252	148,801	2,040	40,228,770	713,895
Coaches and vans - 4-axle	-	-	-	-	-	-	2,470	78,670,094	1,178,704
Wagons - 2-axle	-	-	-	-	-	-	)		
Wagons - 4-axle	-	-	-	4,271	43,691,237	56,184	) 11,953)	80,520,140	1,271,635
Special vehicles	-	-	-	.	8,718	.	443	16,889,742	279,411
Rolling stock components	.	39,670,818	484,607	-	-	-	-	-	-
Total		39,670,818	484,607	5,598	64,797,042	279,216	17,922	357,238,374	5,715,099

(1) Minor modifications not classified as routine maintenance (e.g. installation of INDUSI system, modification of braking devices, fitting of roller bearings).

(2) Including incidental repairs carried out in main workshops.

(3) Austrian schillings.

Table 3.2.2. WORK GIVEN OUT YEARLY TO CONTRACTORS (EXCLUDING CONSTRUCTION)

1968

Category of rolling stock	Number of vehicles	Total value of contracts (in national currency)(1)	Remarks
1	2	3	4
Locomotives - steam	-	-	-
Locomotives - electric	-	-	-
Locomotives - diesel and special systems	-	-	-
Railcars - electric	-	-	-
Railcars - diesel and special systems	-	-	-
Coaches and vans - 2-axle	-	-	-
Coaches and vans - 4-axle	-	-	-
Wagons - 2-axle Wagons - 4-axle	426	1,331,137	(2)
Special vehicles	1	1,163,393	(3)
Rolling stock components	.	Approximately 150,000,000	-
Total	427	152,494,530	-

(1) Austrian Schillings.

(2) Repair of tank wagons belonging to the Administration.

(3) Conversion of a saloon carriage.

BELGIUM

Table 3.3.1. YEARLY OUTPUT OF AUXILIARY SERVICES FOR ROLLING STOCK

1968

Category of rolling stock	Construction			Conversion			Repairs		
	Number	Total value in national currency (1) (production cost) (thousands)	Number of man-hours	Number	Total value in national currency (1) (production cost) (thousands)	Number of man-hours	Number	Total value in national currency (1) (production cost) (thousands)	Number of man-hours
1	2	3	4	5	6	7	8	9	10
Locomotives - steam	-	-	-	-	-	-	-	-	-
Locomotives - electric	-	-	-	.	1,937	3,953	.	33,087	110,931
Locomotives - diesel and special systems	-	-	-	.	43	268	.	134,261	419,787
Railcars - electric	.	936	484	.	7,197	23,688	.	94,484	409,141
Railcars - diesel and special systems	-	-	-	.	42	172	.	32,428	134,857
Coaches and vans - 2-axle	-	-	-	.	87,077	102,818	.	183,198	854,164
Coaches and vans - 4-axle									
Wagons - 2-axle	361	307,483	628,092	.	131,863	227,751	.	290,033	997,734
Wagons - 4-axle									
Special vehicles	-	-	-	-	-	-	-	-	-
Rolling stock components	.	230,241	451,296	-	-	-	.	9,792(2)	60,886(2)
Total		538,660	1,079,872		228,159	358,650		777,283	2,987,500

(1) Belgian Francs.

(2) Components are included in the data for rolling stock. The figures shown apply to routine spares.

BELGIUM

Table 3. 3. 2. WORK GIVEN OUT YEARLY TO CONTRACTORS (EXCLUDING CONSTRUCTION)

1968

Category of rolling stock	Number of vehicles	Total value of contracts (in national currency)	Remarks
1	2	3	4
Locomotives - steam	-	-	-
Locomotives - electric	-	-	-
Locomotives - diesel and special systems	-	-	-
Railcars - electric	-	-	-
Railcars - diesel and special systems	-	-	-
Coaches and vans - 2-axle	-	-	-
Coaches and vans - 4-axle	-	-	-
Wagons - 2-axle	-	-	-
Wagons - 4-axle	-	-	-
Special vehicles	-	-	-
Rolling stock components	-	-	-
Total	0	0	-

SPAIN

Table 3.4.1. YEARLY OUTPUT OF AUXILIARY SERVICES FOR ROLLING STOCK

1968

Category of rolling	Construction			Conversion			Repairs(1)		
	Number	Total value in national currency (2) (production cost) (thousands)	Number of man-hours (thousands)	Number	Total value in national currency (2) (production cost) (thousands)	Number of man-hours (thousands)	Number	Total value in national currency (2) (production cost) (thousands)	Number of man-hours
1	2	3	4	5	6	7	8	9	10
Locomotives - steam	-	-	-	-	-	-	451	554,740	4,462,500
Locomotives - electric	-	-	-	-	-	-	134	53,165	462,300
Locomotives - diesel and special systems	-	-	-	-	-	-	111	51,600	327,700
Railcars - electric	-	-	-	-	-	-	49	25,360	220,500
Railcars - diesel and special systems	-	-	-	-	-	-	43	26,530	165,600
Coaches and vans - 2-axle	-	-	-	-	-	-	1,555	166,100	1,418,840
Coaches and vans - 4-axle	-	-	-	-	-	-	2,825	401,030	3,413,760
Wagons - 2-axle	-	-	-	-	-	-	45,474	873,530	7,509,080
Wagons - 4-axle	-	-	-	-	-	-	2,232	65,610	531,880
Special vehicles	-	-	-	-	-	-	-	-	-
Rolling stock components	.	.	.	-	-	-	. (3)	481,960(3)	3,427,200(3)
Total				-	-	-	52,874	2,699,625	21,939,360

(1) Including minor maintenance jobs done in Rolling Stock and Motive Power Department workshops.

(2) Pesetas.

(3) Including construction

Table 3.4.2. WORK GIVEN OUT YEARLY TO CONTRACTORS (EXCLUDING CONSTRUCTION)

1968

Category of rolling stock	Number of vehicles	Total value of contracts (1) (in national currency)	Remarks
1	2	3	4
Locomotives - steam	-	-	-
Locomotives - electric	83	169,240	-
Locomotives - diesel and special systems	38	31,805	-
Railcars - electric	70	132,954	-
Railcars - diesel and special systems	55	81,400	-
Coaches and vans - 2-axle	-	-	-
Coaches and vans - 4-axle	322	382,141	-
Wagons - 2-axle	40	2,315	-
Wagons - 4-axle	25	2,605	-
Special vehicles	.	334,605	(2)
Rolling stock components	.	111,477	(3)
Total	633	1,248,542	-

(1) Pesetas.

(2) Talgo train maintenance.

(3) Electric motors for tractive stock, lighting equipment, etc.

Table 3.5.1. YEARLY OUTPUT OF AUXILIARY SERVICES FOR ROLLING STOCK

1968

Category of rolling stock	Construction			Conversion			Repairs		
	Number	Total value in national currency (1) (production cost)	Number of man-hours	Number	Total value in national currency (1) (production cost)	Number of man-hours	Number	Total value in national currency (1) (production cost)	Number of man-hours
1	2	3	4	5	6	7	8	9	10
Locomotives - steam	-	-	-	-	-	--	-	-	-
Locomotives - electric	-	-	-	-	-	-	-	-	-
Locomotives - diesel and special systems	-	-	-	3	68,003	9,512	104	309,012	150,372
Railcars - electric	-	-	-	-	-	-	-	-	-
Railcars - diesel and special systems	-	-	-	-	-	-	32	49,115	16,013
Coaches and vans - 2-axle Coaches and vans - 4-axle	-	12,297	12,912	10	33,877	27,003	371	561,980	329,574
Wagons - 2-axle Wagons - 4-axle	92	237,362	42,559	9	6,485	1,049	943	331,425	156,976
Special vehicles	123	40,150	15,568	-	-	-	-	-	-
Rolling stock components	-	-	-	-	-	-	.	254,054	104,999
Total	215	189,809	71,039	22	108,365	37,564	1,450	1,505,586	757,934

(1) Sterling.

Table 3.5.2. WORK GIVEN OUT YEARLY TO CONTRACTORS (EXCLUDING CONSTRUCTION)

1968

Category of rolling stock	Number of vehicles	Total value of contracts (in national currency)(1)	Remarks
1	2	3	4
Locomotives - steam	-	-	-
Locomotives - electric	-	-	-
Locomotives - diesel and special systems	-	-	-
Railcars - electric	-	-	-
Railcars - diesel and special systems	-	-	-
Coaches and vans - 2-axle	-	-	-
Coaches and vans - 4-axle	-	-	-
Wagons - 2-axle	-	-	-
Wagons - 4-axle	-	-	-
Special vehicles	-	-	-
Rolling stock components	-	-	-
Total	0	0	-

Table 3.6.1. YEARLY OUTPUT OF AUXILIARY SERVICES FOR ROLLING STOCK

1968

Category of rolling stock	Construction			Conversion			Repairs		
	Number	Total value in national currency (1) (production cost) (thousands)	Number of man-hours	Number	Total value in national currency (1) (production cost)	Number of man-hours	Number	Total value in national (1) currency (production cost) (thousands)	Number of man-hours
1	2	3	4	5	6	7	8	9	10
Locomotives - steam	-	-	-	-	-	-	63	1,408.4	558,836
Locomotives - electric	-	-	-	-	-	-	231	2,929.7	967,196
Locomotives - diesel and special systems	-	-	-	-	-	-	96	1,232.5	361,485
Railcars - electric	-	-	-	-	-	-	141	2,040.3	716,702
Railcars - diesel and special systems	-	-	-	-	-	-	195	3,877.1	1,305,411
Coaches and vans - 2-axle Coaches and vans - 4-axle	-	-	-	-	-	-	2,236	5,640.3	2,374,850
Wagons - 2-axle Wagons - 4-axle	-	-	-	-	-	-	866	314.1	134,455
Special vehicles	-	-	-	-	-	-	5	32.9	4,769
Rolling stock components	12,474	1,745.8	288,810	-	-	-		4,274.0	839,342
Total	12,474	1,745.8	288,810	-	-	-	3,833	21,749.3	7,263,046

(1) Lire

Table 3.6.2. WORK GIVEN OUT YEARLY TO CONTRACTORS (EXCLUDING CONSTRUCTION)

1968

Category of rolling stock	Number of vehicles	Total of contracts (1) in national currency	Remarks
1	2	3	4
Locomotives - steam	-	-	-
Locomotives - electric	-	-	-
Locomotives - diesel and special systems	-	-	-
Railcars - electric	-	-	-
Railcars - diesel and special systems	-	-	-
Coaches and vans - 2-axle Coaches and vans - 4-axle	2,434	5,412	2,281,400 man-hours
Wagons - 2-axle Wagons - 4-axle	20,701	8,570	3,390,400 man-hours
Special vehicles	-	-	-
Rolling stock components	-	-	-
Total	23,135	13,982	-

(1) Lire.

Table 3.7.1. YEARLY OUTPUT OF AUXILIARY SERVICES FOR ROLLING STOCK

1968

Category of rolling stock	Construction			Conversion			Repairs		
	Number	Total value in national currency (1) (production cost)	Number of man-hours	Number	Total value in national currency (1) (production cost)	Number of man-hours	Number	Total value in national currency (1) (production cost)	Number of man-hours
1	2	3	4	5	6	7	8	9	10
Locomotives - steam	-	-	-	-	-	-	-	-	-
Locomotives - electric	-	-	-	-	-	-	**20**	4,648,143(2)	45,658(2)
Locomotives - diesel and special systems	-	-	-	-	-	-	64	15,182,961(2)	148,607(2)
Railcars - electric	-	-	-	-	-	-	-	-	-
Railcars - diesel and special systems	-	-	-	-	-	-	22	9,849,982(2)	96,695(2)
Coaches and vans - 2-axle	-	-	-	-	-	-	20	1,478,294	14,493
Coaches and vans - 4-axle	-	-	-	-	-	-	78	5,967,157	58,501
Wagons - 2-axle	-	-	-	-	-	-	2,615	18,060,460	177,063
Wagons - 4-axle	-	-	-	-	-	-	811	8,192,476	80,318
Special vehicles	-	-	-	-	-	-	19	586,380	5,749
Rolling stock components	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	3,649	63,965,853(2)	627,084(2)

(1) Luxembourg Francs.

(2) Including an unspecified number of repairs at depots.

(3) Trailers.

Table 3.7.2. WORK GIVEN OUT YEARLY TO CONTRACTORS (EXCLUDING CONSTRUCTION)

1968

Category of rolling stock	Number of vehicles	Total value of contracts (in national currency)	Remarks
1	2	3	4
Locomotives - steam	-	-	-
Locomotives - electric	-	-	-
Locomotives - diesel and special systems	-	-	-
Railcars - electric	-	-	-
Railcars - diesel and special systems	-	-	-
Coaches and vans - 2-axle	-	-	-
Coaches and vans - 4-axle	-	-	-
Wagons - 2-axle	-	-	-
Wagons - 4-axle	-	-	-
Special vehicles	-	-	-
Rolling stock components	-	-	-
Total	0	0	0

NORWAY

Table 3.8.1. YEARLY OUTPUT OF AUXILIARY SERVICES FOR ROLLING STOCK

1968

Category of rolling stock	Construction			Conversion			Repairs		
	Number	Total value in national currency (1) (production cost)	Number of man-hours	Number	Total value in national currency (1) (production cost)	Number of man-hours	Number	Total value in national (1) currency (production cost)	Number of man-hours
1	2	3	4	5	6	7	8	9	10
Locomotives - steam	-	-	-	-	-	-	3	2,544,800	76,200
Locomotives - electric	-	-	-	-	-	-	60	18,177,900	394,700
Locomotives - diesel and special systems	6(2)	.	.	-	-	-	28	10,265,600	241,200
Railcars - electric	-	-	-	-	-	-	97	11,479,600	288,000
Railcars - diesel and special systems	-	-	-	-	-	-	57	9,163,200	223,600
Coaches and vans - 2-axle	-	-	-	-	-	-	51	2,359,900	72,500
Coaches and vans - 4-axle	-	-	-	5	.	.	849	38,578,500	933,000
Wagons - 2-axle	143	.	.	28	.	.	2,414	19,933,100	488,100
Wagons - 4-axle	-	-	-	-	-	-	69	1,473,900	33,800
Special vehicles	-	-	-	-	-	-	-	-	-
Rolling stock components	-	-	-	-	-	-	-	-	-
Total	149	-	-	33	-	-	3,628	113,976,500	2,751,100

(1) Norwegian Kroner.

(2) Shunting engines.

Table 3.8.2. WORK GIVEN OUT YEARLY TO CONTRACTORS (EXCLUDING CONSTRUCTION)

1968

Category of rolling stock	Number of vehicles	Total value of contracts (in national currency)	Remarks
1	2	3	4
Locomotives - steam	-	-	-
Locomotives - electric	-	-	-
Locomotives - diesel and special systems	-	-	-
Railcars - electric	-	-	-
Railcars - diesel and special systems	-	-	-
Coaches and vans - 2-axle	-	-	-
Coaches and vans - 4-axle	-	-	-
Wagons - 2-axle	-	-	-
Wagons - 4-axle	-	-	-
Special vehicles	-	-	-
Rolling stock components	-	-	-
Total	0	0	-

NETHERLANDS

Table 3.9.1. YEARLY OUTPUT OF AUXILIARY SERVICES FOR ROLLING STOCK

1968

Category of rolling stock	Construction			Conversion			Repairs		
	Number	Total value in national currency (1) (production cost)	Number of man-hours	Number	Total value in national currency (1) (production cost)	Number of man-hours	Number	Total value in national currency (1) (production cost)	Number of man-hours
1	2	3	4	5	6	7	8	9	10
Locomotives - steam	-	-	-	-	-	-	-	-	-
Locomotives - electric	-	-	-	-	-	-	137	1,883,800	62,360
Locomotives - diesel and special systems	-	-	-	-	-	-	263	5,854,300	202,300
Railcars - electric	-	-	-	-	-	-	-	-	-
Railcars - diesel and special systems	-	-	-	-	-	-	307	15,543,900	700,900
Coaches and vans - 2-axle	-	-	-	-	-	-	.	232,700	14,800
Coaches and vans - 4-axle	-	-	-	-	-	-	76	3,735,000	194,900
Wagons - 2-axle	-	-	-	-	-	-	6,559	7,561,600	220,500
Wagons - 4-axle	-	-	-	-	-	-	40	120,400	3,300
Special vehicles	-	-	-	-	-	-	11	155,400	5,900
Rolling stock components	-	-	-	-	-	-	.	7,850,000	496,800
Total	-	-	-	-	-	-	7,393	42,937,100	1,901,760

(1) Florins

NETHERLANDS

Table 3.9.2. WORK GIVEN OUT YEARLY TO CONTRACTORS (EXCLUDING CONSTRUCTION)

1968

Category of rolling stock	Number of vehicles	Total value of contracts (in national currency)(1)	Remarks
1	2	3	4
Locomotives - steam	-	-	-
Locomotives - electric	-	-	-
Locomotives - diesel and special systems	-	-	-
Railcars - electric	85 mu	4,108,000	) to be fitted out for) automatic trains control
Railcars - diesel and special systems	36 mu	-	)
Coaches and vans - 2-axle	-	-	-
Coaches and vans - 4-axle	-	-	-
Wagons - 2-axle	-	-	-
Wagons - 4-axle	-	-	-
Special vehicles	-	-	-
Rolling stock components	-	2,222,000	-
Total	-	6,330,000	-

(1) Florins

Table 3.10.1. YEARLY OUTPUT OF AUXILIARY SERVICES FOR ROLLING STOCK

1968

Category of rolling stock	Construction			Conversion			Repairs		
	Number	Total value in national currency (1) (production cost)	Number of man-hours	Number	Total value in national currency (1) (production cost)	Number of man-hours	Number	Total value in national currency (1) (production cost) (thousands)	Number of man-hours
1	2	3	4	5	6	7	8	9	10
Locomotives - steam	-	-	-	-	-	-	46	14,519.4	615,087
Locomotives - electric	-	-	-	-	-	-	33	2,870	156,183
Locomotives - diesel and special systems	-	-	-	-	-	-	117(2)	13,612.2	290,647
Railcars - electric	-	-	-	-	-	-	112	17,167	370,173
Railcars - diesel and special systems	-	-	-	-	-	-	97	11,386.6	419,644
Coaches and vans - 2-axle	-	-	-	9	3,960	72,000			
Coaches and vans - 4-axle	-	-	-	10(3)	4,314	127,541			
Wagons - 2-axle	17	3,002,200	26,248	-	-	-	4,025(4)	29,698.2	1,114,353
Wagons - 4-axle	-	-	-	-	-	-			
Special vehicles	-	-	-	15(5)	1,011,235	24,945			
Rolling stock components	-	-	-	-	-	-	-	-	-
Total	17	3,002,200	26,248	34	1,019,509	224,486	4,430	79,253.4	2,966,087

(1) Escudos.

(2) Including light rail motor tractors.

(3) Two carriages fitted with steel bodies, three carriages equipped with a bar compartment, five narrow-gauge carriages.

(4) All types, both wide and narrow gauge.

(5) Car-carrier train.

Table 3.10.2. WORK GIVEN OUT YEARLY TO CONTRACTORS (EXCLUDING CONSTRUCTION)

1968

Category of rolling stock	Number of vehicles	Total value of contracts (in (in national currency)(1) (thousands)	Remarks
1	2	3	4
Locomotives - steam	-	-	-
Locomotives - electric	2	958	Only major repairs completed in 1968
Locomotives - diesel and special systems	-	-	-
Railcars - electric	1	1,079	-
Railcars - diesel and special systems	-	-	-
Coaches and vans - 2-axle	-	-	-
Coaches and vans - 4-axle	-	1,400	-
Wagons - 2-axle	-	-	-
Wagons - 4-axle	-	-	-
Special vehicles	-	-	-
Rolling stock components	-	-	-
Total	4	3,437	-

(1) Escudos.

Table 3.11.1. YEARLY OUTPUT OF AUXILIARY SERVICES FOR ROLLING STOCK

1968

Category of rolling stock	Construction			Conversion			Repairs		
	Number	Total value in national currency (1) (production cost) (thousands)	Number of man-hours (2) (thousands)	Number	Total value in national currency (1) (production cost) (thousands)	Number of man-hours (2) (thousands)	Number	Total value in national currency (1) (production cost) (thousands)	Number of man-hours (2) (th (thousands)
1	2	3	4	5	6	7	8	9	10
Locomotives - steam	-	-	-	-	-	-	-	-	-
Locomotives - electric	-	-	-	-	-	-	195	.	.
Locomotives - diesel and special systems	-	-	-	-	-	-	2,607	.	.
Railcars - electric	93	.	.	-	-	-	2,005	.	.
Railcars - diesel and special systems	-	-	-	-	-	-	2,230	.	.
Coaches and vans - 2-axle	-	-	-	-	-	-	10,732	.	.
Coaches and vans - 4-axle	264	.	.	-	-	-			
Wagons - 2-axle	1,628	.	.	-	-	-	127,536	.	.
Wagons - 4-axle	445	.	.	-	-	-			
Special vehicles	1,848(3)	.	.	3	5,548	1,706	20,874(3)	.	.
Rolling stock components (4)									
Total	4,278	15,892	4,483	3	5,548	1,706	166,179	42,628	22,760

(1) Sterling.

(2) Direct workers.

(3) Containers.

(4) Included in preceding categories.

Table 3.11.2. WORK GIVEN OUT YEARLY TO CONTRACTORS (EXCLUDING CONSTRUCTION)

1968

Category of rolling stock	Number of vehicles	Total value of contracts (in national currency)	Remarks
1	2	3	4
Locomotives - steam	-	-	-
Locomotives - electric	-	-	-
Locomotives - diesel and special systems	-	-	-
Railcars - electric	-	-	-
Railcars - diesel and special systems	-	-	-
Coaches and vans - 2-axle	-	-	-
Coaches and vans - 4-axle	-	-	-
Wagons - 2-axle	277,516	)	
Wagons - 4-axle	3,817	) 4,346	-
Special vehicles	263	)	
Rolling stock components	-	-	-
Total	281,596	4,346	-

(1) Sterling.

Table 3.12.1 YEARLY OUTPUT OF AUXILIARY SERVICES FOR ROLLING STOCK

1968

Category of rolling stock	Construction			Conversion			Repairs		
	Number	Total value in national currency (2) (production cost)	Number of man-hours	Number	Total value in national currency (2) (production cost) (thousands)	Number of man-hours	Number	Total value in national currency (2) (production cost) (thousands)	Number of man-hours
1	2	3	4	5	6	7	8	9	10
Locomotives - steam	-	-	-	-	-	-	5	452	9,628
Locomotives - electric	-	-	-	78	3,681	.	261	23,871	454,810
Locomotives - diesel and special systems	-	-	-	1	115	.	52	7,824	97,985
Railcars - electric	-	-	-	7	1,516	.	57	4,849	87,698
Railcars - diesel and special systems	-	-	-	-	-	-	72	7,131	79,056
Coaches and vans - 2-axle	-	-	-	1	27	.	171	1,139	29,234
Coaches and vans - 4-axle	-	-	-	16	1,914	.	1,714	33,148	865,942
Wagons - 2-axle Wagons - 4-axle	-	-	-	184	1,630	.	8,021	24,053	257,118
Special vehicles	-	-	-	-	-	-	-	-	-
Rolling stock components	-	-	-	17	233	.	-	-	-
Total	-	-	-	304	9,116		10,353	102,467	1,881,471

(1) Including incidental repairs for which only value figures are shown below.

(2) Swedish Kroner.

Table 3.12.2. WORK GIVEN OUT YEARLY TO CONTRACTORS (EXCLUDING CONSTRUCTION)

1968

Category of rolling stock	Number of vehicles	Total value of contracts (in national currency)(1)	Remarks
1	2	3	4
Locomotives - steam	-	-	-
Locomotives - electric	59	2,591	-
Locomotives - diesel and special systems	-	-	-
Railcars - electric	-	-	-
Railcars - diesel and special systems	-	-	-
Coaches and vans - 2-axle	-	-	-
Coaches and vans - 4-axle	-	-	-
Wagons - 2-axle	-	-	-
Wagons - 4-axle	-	-	-
Special vehicles	-	-	-
Rolling stock components	-	-	-
Total	59	2,591	-

(1) Swedish Kroner

SWITZERLAND

Table 3. 13. 1. YEARLY OUTPUT OF AUXILIARY SERVICES FOR ROLLING STOCK

1968

Category of rolling stock	Construction			Conversion			Repairs		
	Number	Total value in national currency (1) (production cost)	Number of man-hours	Number	Total value in national currency (1) (production cost)	Number of man-hours	Number	Total value in national currency (1) (production cost)	Number of man-hours
1	2	3	4	5	6	7	8	9	10
Locomotives - steam	-	-	-	-	-	-	-	-	-
Locomotives - electric	-	-	-	-	6,262,924	23,477	.	16,627,006	139,513
Locomotives - diesel and special systems	-	-	-	.	213,110	637	.	1,368,530	8,342
Railcars - electric	-	-	-	)					
Railcars - diesel and special systems				) .	1,100,299	6,834	.	459,640	202
Coaches and vans - 2-axle	-	-	-	)					
Coaches and vans - 4-axle	-	-	-	) .	4,482,484	59,632	.	876,517	14,848
Wagons - 2-axle	-	-	-	)			.	10,193,311	181,059
Wagons - 4-axle	-	-	-	) . (2)	5,195,700	62,287	. (2)	7,330,033	174,115
Special vehicles	-	-	-	)					
Rolling stock components (3)				-	-	-	-	-	-
Total	-	-	-	-	17,254,517	152,867		42,212,725	570,793

(1) Swiss Francs.

(2) Including private wagons.

(3) Included in preceding categories.

SWITZERLAND

Table 3.13.2. WORK GIVEN OUT YEARLY TO CONTRACTORS (EXCLUDING CONSTRUCTION)

1968

Category of rolling stock	Numbers of vehicles	Total value of contracts (in national currency)(1)	Remarks
1	2	3	4
Locomotives - steam	-	-	-
Locomotives - electric	-	-	-
Locomotives - diesel and special systems	-	-	-
Railcars - electric	-	-	-
Railcars - diesel and special systems	-	-	-
Coaches and vans - 2-axle	-	-	-
Coaches and vans - 4-axle	20	1,531,441	-
Wagons - 2-axle	-	-	-
Wagons - 4-axle	-	-	-
Special vehicles	-	-	-
Rolling stock components			Included in foregoing figure
Total	20	1,531,441	

(1) Swiss francs

TURKEY

Table 3.14.1. YEARLY OUTPUT OF AUXILIARY SERVICES FOR ROLLING STOCK

1968

Category of rolling stock	Construction			Conversion			Repairs		
	Number	Total value in national currency (1) (production cost)	Number of man-hours	Number	Total value in national currency (1) (production cost)	Number of man-hours	Number	Total value in national currency (1) (production cost)	Number of man-hours
1	2	3	4	5	6	7	8	9	10
Locomotives - steam	-	-	-	-	-	-	491	73,300,000	3,375,100
Locomotives - electric	-	-	-	-	-	-	-	-	-
Locomotives - diesel and special systems	2	3,000,000	163,400	-	-	-	12	2,293,000	90,700
Railcars - electric	-	-	-	-	-	-	-	-	-
Railcars - diesel and special systems	-	-	-		-	-	-	-	-
Coaches and vans - 2-axle	-	-	-	-	-	-	576	5,270,000	401,351
Coaches and vans - 4-axle	60	32,969,140	1,640,400	66	454,000	18,600	900	16,989,000	838,606
Wagons - 2-axle	687	46,175,803	840,000	-	-	-	9,262	29,187,000	1,010,413
Wagons - 4-axle	100	19,953,178	556,000	108	3,318,000	123,000	1,270	6,118,000	248,760
Special vehicles	. (2)	2,140,000	50,850	-	-	-	785	1,629,000	81,220
Rolling stock components	.	75,790,000	2,572,000	-	-	-	.	31,731,000	1,162,100
Total	849	180,028,121	5,659,250	174	3,772,000	141,600	13,296	171,517,000	7,208,250

(1) Turkish.

(2) Preparation of components

Table 3. 14. 2. WORK GIVEN OUT YEARLY TO CONTRACTORS (EXCLUDING CONSTRUCTION)

1968

Category of rolling stock	Number of vehicles	Total value of contracts (in national currency)	Remarks
1	2	3	4
Locomotives - steam	-	-	-
Locomotives - electric	-	-	-
Locomotives - diesel and special systems	10 Diesel-electric locomotives (fully assembled) 10 Diesel-electric locomotives (knocked-down	$4,435,573	(1)
Railcars - electric	-	-	-
Railcars - diesel and special systems	- -	-	-
Coaches and vans - 2-axle	-	-	-
Coaches and vans - 4-axle	-	-	-
Wagons - 2-axle	-	-	-
Wagons - 4-axle	-	-	-
Special vehicles	-	-	-
Rolling stock components	-	-	-
Total	20	$4,435,573	

(1) 35 per cent of the components for the 10 knocked-down locomotives will be made in T. C. D. D. workshops. The latter will also handle assembly and tests.

REPORT OF THE COMMITTEE OF DEPUTIES ON FUTURE RAIL TRAFFIC PATTERNS

[CM(70)24]

Contents

General considerations

The European Conference of Ministers of Transport (E. C. M. T.) has been studying the financial situation of the railways since 1955. Various studies have been submitted to the Council of Ministers of Transport, who approved in December 1967, inter alia, a report by the Committee of Deputies [CM(67)25].

Besides this study of the financial situation of the railways, the Council of Ministers felt that certain questions needed further examination, more particularly those with longer term implications. One such question was the forecasting of future pattern of rail traffic demand. To carry out the Council of Minister's directives to the Committee of Deputies on this subject, a Group of Rapporteurs was appointed within the Railways Committee, under the Chairmanship of the Netherlands Delegation.

It might be assumed, at first sight, that this was purely a matter for action by the railway administrations in the form of a market survey ; but it must be recognised - as the railway administrations themselves have pointed out - that having regard to the contraints imposed by governments, the latter should also concern themselves with this question, to ensure that all transport operators have an equal footing on the market. The privileges enjoyed by the railway administrations as national undertakings (in respect of finance, coverage of deficits, etc.) do not alter the fact that their capacity to withstand competition from other modes of transport has so far been handicapped by certain obligations.

If the "normalization of accounts" calculations were fully accepted and concrete action taken on them by the governments concerned, the financial situation of the railways in several countries might well be seen in a very different light (1).

The Railways point out, in particular, that if a state of true competition is to be achieved, it is essential that every form of transport be put on an equal footing as regards infrastructure costs. The Ministers made it clear that they attached much importance to the solution of this issue. The allocation of infrastructure costs is one of the questions being studied under the E. C. M. T. programme of scientific research, with the object of finding an equitable solution to the problem of the terms of competition, as a matter of general transport policy.

Two further considerations warrant the preparation of an E. C. M. T. report on competitive conditions :

1) the principle of continuity of railway services, which is a government responsibility ;

2) the major part played by public services as the railways in each country's economic policy.

Apart from this, the railway's situation is becoming increasingly disquieting as rail traffic fails to keep pace with transport development as a whole.

This state of affairs was made clear both in CM(67)5 (Forecasts of Passenger Transport Demand up to 1975) and in CM(68)10 (Forecasts of Goods Transport Demand up to 1975). As already noted, in both cases the data available were unfortunately not always sufficient. The statistical series used for the compilation of both reports were somewhat incomplete in certain instances ; for railways, in particular, it is regrettable that no distinction was made in the report on forecasts of goods transport demand up to 1975, between domestic and international traffic.

Owing to the difficulty of finding statistics on which a realistic forecast of rail passenger demand could be

(1) See in this connection the Reports approved by the Council of Ministers on Public Service Obligations [CM(68)24] and Cost Analysis [CM(69)25]. These reports contain some useful pointers for the solution of the problems referred to by the Railway Administrations.

safely based [CM(67)5] it was decided that the present report would not cover this category of traffic.

For the countries able to supply data a marked decline was forecast in rail's share of overall traffic, and this trend seems likely to presist until the horizon year 1975. The same applies to passenger transport, as shown in CM(67)5.

The U.I.C., for its part, was able to supply figures only for the trend of freight traffic as a whole, and for certain specific categories of goods. The U.I.C. data relate to categories of goods carried in large consignments, for which transport costs are low (train-load lots, transport between private sidings, unit loads). The U.I.C. was unable to give any particulars about international goods transport by categories. The lack of knowledge about the possibilities of switiching from one type of transport to another induced the U.I.C. to abandon the study of transport demand trends by conventional methods. It has now drawn up a new forecasting programme, which provides for the building of a model of traffic trends, but this will be a long-term task.

All this shows that the available data are at present inadequate, but methods of drawing up acceptable forecasts are now being worked out.

As stated in the above-mentioned E.C.M.T. reports, it would be useful if the gaps could be filled as soon as possible.

It must also be pointed out that, as part of the E.C.M.T. programme of scientific activities, research has been undertaken into the factors which determine transport users' choice, and forecasting models of transport demand are being constructed with a view to more accurate appraisals.

In the light of the foregoing considerations, this report is based on an analysis of the pattern of demand in respect of existing traffic, and only for the categories of traffic for which sufficient figures were available. The data used in the present study are drawn from a U.I.C. paper on the relative importance of rail transport as a whole by comparison with other branches of transport, and for different categories of goods.

Analysis of these figures involves a study of the trend of production in the economic sectors concerned in order that the outlook for rail traffic may be both quantitatively and qualitatively appraised.

The Group of Rapporteurs also obtained from various O.E.C.D. services most useful data on the trend of production and the location of industry in sectors such as energy, iron and steel, oil and oil products, agriculture and chemical products.

Lastly, the Group had had access to the publications of international organisations such as the E.C.S.C. and the E.E.C., and has also received direct contributions from the E.C.M.T. member Delegations.

Summary of the report

This report must be considered in the context of the studies on the improvement of the financial situation of the railways in E.C.M.T. countries.

Previous documents have already provided valuable guidelines for determining the relationship between governments and the railway administrations as regards the definition of the latter's obligations and the corresponding compensation. They also emphasized the importance of a fair allocation of costs.

It had been agreed that future trends of rail transport demand should be studied, this having a decisive influence on transport capacity, and the following report was produced in compliance with this decision.

Despite the studies already made by the E.C.M.T. on the trend of passenger and goods transport in general,

it proved impossible to fulfil the prescribed task to the letter, (a) because no allowance could be made for the changing structure of various economic sectors or for the growing scale of international traffics, and (b) because no account could be taken of the factors determining switches from one mode of transport to another.

Consultations with E. C. M. T. circles concerned with economic research further showed that transport forecasting methods were not yet sufficiently crystallised, and that sufficiently refined statistical series were not available. In the case of rail transport, for instance, it is immediately apparent that the figures for international traffic are either entirely lacking or not comparable.

The report therefore merely gives a qualitative analysis of the outlook for freight traffic by rail in the light of developments in certain economic sectors which may be considered important for the railways.

The International Union of Railways has supplied data, for many of the E. C. M. T. countries, relating to the trend of rail transport for some eight categories of goods produced in the economic sectors concerned.

These figures, which are analysed in Chapter I, indicate the decisive importance for the railways of bulk hauls, i. e. substantial flows of goods which can be handled as train-load lots or carried between private sidings. A large proportion remains which must, for our purposes, be treated as "scattered" traffic in wagon-loads or as freight sundries (1).

Chapter II shows the foreseeable trends in the energy sector, iron and steel, oil and oil products, agriculture, chemical products and fertilizers, building materials and other goods carried in wagon-load lots. It points to the conclusion that the railways can continue to provide bulk transport on a large scale for these sectors but their share will decline in relative terms and the traffic links involved will be different. Transport demand will increase in such developing sectors as the chemical industry, but will not essentially apply to bulk hauls.

Broadly speaking, the conclusion may be drawn that there will be a big switch towards "scattered traffic".

The drift will thus move towards the type of rail traffic which has to face the stiffest competition, especially from road transport, and which is not usually remunerative in most of the E. C. M. T. countries. That is why it is most important to reshape railway management policy in order to ensure that at least a reasonable share of this expanding traffic can be handled as a paying proposition.

The forecast of a substantial increase in international traffic - a field in which the railways have already shown considerable commercial enterprise - is a cheering factor in this respect.

The new approach referred to above cannot be considered apart from the other aspects of rail transport policy concerning relationships between railway administrations and governments.

Chapter III deals with two transport forecasts, one prepared in Germany, the other in France. The assumptions underlying these studies, which confirm the drift of the conclusions to Chapter II, should be examined. It is interesting to consider how far the rail traffic forecasts in these studies differ, and how far they attempt to draw specific conclusions regarding certain aspects of rail transport.

As compared with Chapter II, the German study is much more optimistic

(1) For the purposes of this paper "scattered traffic" or "scattered hauls" means goods consigned in small lots from different origins to different destinations. "Bulk traffic" or "bulk hauls" means goods carried in large quantities from a single origin to a single specified destination.

concerning the development of rail traffic as a whole. Although the study draws attention to structural changes which are beneficial to road transport, the elasticity of road transport demand in relation to the growth of G. N. P. is estimated to be less than 1.

Long-distance and medium-distance transport in wagonloads (within the Federal Republic) is regarded as the essential function of the railways. As regards the distribution of traffic between the various modes of transport, the study is based on separate calculations for road and inland waterway transport, the figures for rail being obtained by inference.

The French study concerns the switch from "heavy" traffic (which can be taken as equivalent to "bulk traffic") to "light" traffic (which can be taken as equivalent to "scattered traffic").

Transport in train-load lots will nevertheless increase ; but the types of goods carried and the traffic links involved will be different. As regards "light" traffics, the share accounted for by rail will depend on the extent to which the railway companies succeed in making them remunerative (new techniques for combined transport will play a very important part in this respect) and also on the railways' commercial policy. Special emphasis is laid on the growing scale of international traffic, for which a separate international framework is required.

Chapter IV sets out the general conclusions of the report.

Chapter I

THE TREND OF RAIL FREIGHT TRAFFIC

The trends in this respect were indicated in the Report on the Financial Situation of the Railways [CM(67)25].

They are still moving in the same direction as shown by the E. C. M. T. 's annual reviews ; rail traffic is expanding slightly, or in some cases marking time in absolute terms, but is still losing much ground to other forms of transport.

The U. I. C. supplied the Group with figures for 1965, 1966, 1967 and 1968 relating to eight categories of goods, "other" goods in wagon-load lots and freight sundries (see Tables I, I bis and 1 ter).

The eight categories of goods were selected for their suitability for rail transport, as they are generally despatched in large consignments, over long distances. As a result, the cost of rail transport usually compares very favourably with that of its competitors, including inland water transport, which holds a particularly strong position in these sectors where necessary infrastructure exists.

In any event, solid fuels, ores, basic metal products and building materials are included in the group which is specially suited to rail transport.

The following Table A shows the percentages of the total traffic accounted for by the categories mentioned, for five major railway systems and five others. The significance of such traffic for the railways is clearly apparent.

In actual fact, there should be added to these categories : cereals

(1) As the terminology of the French study is not identical with that adopted in this report where "bulk traffic" and "scattered traffic" are concerned, reference should be made to the pages which deal with this study. However, in order that the results of the French and German studies may be compared with the conclusions of this report, "heavy traffic" in the French text can, mutatis mutandis, be equated with "bulk traffic" and similarly, "light traffic" with "scattered traffic".

(foodstuffs), oil (i.e. crude oil, oil and oil products) metal products (wrought metal products) and fertilizers (chemical products and fertilizers).

The U.I.C. was not, unfortunately, able to state what proportion of such commodities are carried in the most profitable conditions for the railways, i.e. in train-load lots, batches of wagon-loads, or between private sidings.

Clearly, if bulk trunk hauls of other categories of goods were added to those shown in the table, the total figures would cover the best part of the traffic carried by rail, especially in the case of the smaller networks.

A special Table B has been compiled from the U.I.C. figures for the ten countries covered by Table A, showing transport in wagon-load lots and freight sundries, which are dealt with in the same way on most rail networks, i.e. individual wagons or batches handled through marshalling yards.

Table B relates to traffic which meets strong competition from road haulage. In actual fact, these figures should also cover goods in the following categories (less the quantities included in bulk traffics) : foodstuffs, oil and oil products, wrought metal products, chemical products and fertilizers.

The U.I.C. figures cannot be further broken down, as the following data are lacking : average length of haul ; output in terms of ton-kilometres, transport in train-load lots, batches of wagon-loads, or single wagon-loads, and separate figures for domestic and international transport.

Lastly, the available data are some-what heterogeneous, and consistent series for rail traffic cannot therefore be built up from them. Comparison with other modes of transport is a still more difficult matter, in view of the notorious inadequacy of road transport statistics.

Table A - PERCENTAGES OF TOTAL TRAFFIC (TONNAGE) ACCOUNTED FOR BY THE FOLLOWING CATEGORIES OF GOODS IN 1968
(five large and five other networks)

	Solid fuels (column 6 of U.I.C. data)	Bulk traffic (columns 6, 10, 12 and 16 of U.I.D. data)
D.B.	29.2	52.7
S.N.C.F.	17.1	50.8
F.S.	5.1	33.2
S.J.	1.4	(71.3)*
R.E.N.F.E.	17.9	45.8
C.F.F.	3.7	34.6
O.B.B.	12.6	34.5
S.N.C.B.	29.4	69.0
N.S.	31.9	54.2
C.F.L.	26.6	(82.1)**

*Including Lapland ores.

**Including wrought metal products.

Table B - "OTHER GOODS" IN WAGON-LOAD LOTS, AND FREIGHT SUNDRIES (INCLUDING EXPRESS PARCELS), IN THOUSAND TONS AND AS A PERCENTAGE OF TOTAL TRAFFIC IN 1968
(five large and five other networks)

	Other goods in wagon-load lots (columns 19 and 20 of U.I.C. data		Freight sundries including express parcels (columns 21 and 22 of U.I.C. data)		Two foregoing percentages combined (columns 20 and 22 of U.I.C. data)	
	'000 tons	% of total	'000 tons	% of total	%	Average
D.B.	29,739	9.7	5,515	1.8	11.5	
S.N.C.F.	30,541	13.3	2,307	1.0	14.3	
F.S.	13,993	25.1	678	1.2	26.3	17.24
S.J.	6,699	11.9	1,098	2.0	13.9	
R.E.N.F.E.	4,987	17.4	789	2.8	20.2	
C.F.F.	4,026	10.2	2,487	6.3	16.5	
O.B.B.	12,050	27.8	524	1.2	29.0	
S.N.C.B.	3,427	5.4	567	0.9	6.3	14.36
N.S.	2,057	8.0	1,290	5.0	13.0	
C.F.L.	955	6.8	32	0.2	7.0	

Table 1. TRAFFIC BY CATEGORIES OF GOODS(1) IN THE 18.E.C.M.T. MEMBER COUNTRIES

Railway Administration	Year	Rail traffic "Commercial" tonnage, including international transit ('000 metric tons)																			
		Foodstuffs, fish, tobacco		Solid fuels		Oil and oil products		Ores and ferrous scrap		Basic metal products		Wrought metal products		Building materials		Chemical products and and fertilizers		Other goods in wagon-load lots		Freight sundries, including express parcels	
			%		%		%		%		%		%		%		%		%		%
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
B.R. (United Kingdom)	1965	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1966	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1967	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
C.E.H. (Greece)	1965	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1966	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1967	753	29.9	168	6.7	15	0.6	1	0	3	0.1	44	1.7	211	8.4	28	1.1	1,226	48.6	72	2.9
C.F.F. (9) (Switzerland)	1965	5,898	15.9	2,219	6.0	4,801	13.0	2,850	7.7	1,550	4.2	3,041	8.2	6,552	17.7	2,704	7.3	4,786	12.9	2,641	7.1
	1966	6,142	16.3	1,875	5.0	5,014	13.3	2,573	6.8	1,957	5.2	3,019	8.0	6,554	17.4	2,839	7.5	5,123	13.6	2,559	6.9
	1967	6,058	15.7	1,591	4.1	5,318	13.8	2,725	7.1	2,339	6.1	2,968	7.7	6,788	17.6	3,059	7.9	5,179	13.4	2,552	6.6
C.F.L. (2) (Luxembourg)	1965	(3)	(3)	4,113	29.0	455	3.2	4,481	31.6	(4)	(4)	2,933(5)	20.7(5)	841	5.9	872	6.2	433(6)	3.1(6)	33	0.2
	1966	(3)	(3)	3,700	29.0	461	3.6	3,768	29.6	(4)	(4)	2,715(5)	21.3(5)	802	6.3	789	6.2	473(6)	3.7(6)	33	0.3
	1967	(3)	(3)	3,473	27.7	581	4.6	3,611	28.8	(4)	(4)	2,816(5)	22.4(5)	826	6.6	763	6.1	458(6)	3.6(6)	32	0.2
C.I.E. (Ireland)	1965	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1966	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1967	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
C.P. (Portugal)	1965	732	19.8	122	3.3	101	2.7	788	21.4	12	0.3	17	0.5	204	5.5	704	19.1	314	8.5	696	18.9
	1966	651	19.9	94	2.9	103	3.1	705	21.5	11	0.3	8	0.2	85	2.6	667	20.4	309	9.4	641	19.6
	1967	760	22.3	74	2.2	86	2.5	725	21.3	13	0.4	6	0.2	110	3.2	724	21.3	317	9.3	590	17.3
D.B. (Germany)	1965	21,418	7.2	89,461	30.0	23,129	7.7	35,208	11.8	4,740	1.6	29,623	9.9	33,697	11.3	26,287	8.8	28,353	9.5	6,554	2.2
	1966	21,459	7.5	84,169	29.3	23,852	8.3	32,990	11.5	3,475	1.2	28,678	10.0	31,172	10.9	26,839	9.4	28,195	9.8	6,165	2.1
	1967	19,861	7.1	81,893	29.3	23,763	8.5	33,846	12.1	3,455	1.2	28,524	10.2	28,108	10.1	17,792	10.0	26,478	9.5	5,401	1.9
D.S.B. (7)(8) (Denmark)	1965	1,895	25.1	737	9.8	144	1.9	49	0.7	4	0.1	934	12.4	931	12.4	965	12.8	1,097	14.6	769	10.2
	1966	1,645	23.4	547	7.8	123	1.8	46	0.7	3	0	845	12.1	912	13.0	1,008	14.4	1,150	16.4	732	10.4
	1967	1,653	24.0	570	8.2	113	1.6	63	0.9	3	0	844	12.2	812	11.7	950	13.7	1,244	17.9	682	9.8
F.S. (Italy)	1965	9,420	18.9	3,275	6.6	2,904	5.8	10,307	20.6	995	2.0	5,670	11.3	2,837	5.7	3,006	6.0	10,472	21.0	1,072	2.1
	1966	8,956	17.4	2,987	5.8	2,736	5.3	11,362	22.1	1,172	2.3	6,371	12.4	1,842	3.6	3,245	6.3	11,645	22.7	1,052	2.0
	1967	9,149	16.5	3,195	5.7	2,665	4.8	12,520	22.5	1,457	2.6	7,426	13.4	1,773	3.2	3,431	6.2	13,054	23.5	887	1.6

(1) Source : Data supplied by railway administrations.

(2) Excluding international transit.

(3) Included in columns 19 and 20.

(4) Included in columns 13 and 14

(5) Including basic metal products.

(6) Including foodstuffs, beverages and tobacco.

(7) Period covered : 1st April to 31st March.

(8) Including road-hauled and other traffic.

(9) Including traffic on Lake Constance.

Table 1 bis. TRAFFIC BY CATEGORIES OF GOODS (1) IN THE 18 E.C.M.T. MEMBER COUNTRIES (CONTINUATION)

Railway Administration	Year	Rail traffic "Commercial" tonnage, including international transit ('000 metric tons)																			
		Foodstuffs, fish, tobacco	%	Solid fuels	%	Oil and oil products	%	Ores and ferrous scrap	%	Basic metal products	%	Wrought metal products	%	Building materials	%	Chemical products and fertilizers	%	Other goods in wagon-load lots	%	Freight sundries including express parcels	%
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
J. Z. (Yugoslavia)	1965	7,084	10.4	19,323	28.5	2,142	3.2	6,728	9.9	2,568	3.8	2,576	3.8	18,200	26.8	3,463	5.1	4,220	6.2	1,531	2.3
	1966	7,230	10.9	17,476	26.3	2,037	3.1	6,689	10.1	2,574	3.9	2,575	3.9	16,953	25.5	3,977	6.0	5,544	8.3	1,340	2.0
	1967	6,401	10.1	15,320	24.1	2,130	3.3	7,158	11.3	2,239	3.5	1,033	1.6	16,801	26.4	3,767	5.9	7,560	11.9	1,227	1.9
N. S. (Netherlands)	1965	1,901	6.9	10,904	39.8	2,665	9.7	560	2.0	170	0.6	1,482	5.4	4,124	15.1	2,395	8.7	1,788	6.5	1,397	5.1
	1966	1,722	6.8	9,524	37.9	2,602	10.3	601	2.4	182	0.7	1,536	6.1	3,320	13.2	2,392	9.5	1,936	7.7	1,345	5.3
	1967	1,772	6.9	9,169	35.9	2,535	9.9	1,173	4.6	193	0.8	1,622	6.4	3,266	12.8	2,521	9.9	1,944	7.6	1,327	5.2
N. S. B. (Norway)	1965	248	1.0	28	0.1	195	0.8	18,588	78.2	156	0.7	85	0.4	1,487	6.3	903	3.8	1,540	6.5	552	2.3
	1966	225	1.0	31	0.1	283	1.2	17,289	75.6	190	0.8	92	0.4	1,515	6.6	926	4.1	1,749	7.7	561	2.5
	1967	217	0.9	27	0.1	202	0.8	19,633	77.7	192	0.8	96	0.4	1,621	6.4	897	3.5	1,820	7.2	569	2.3
O. B. B. (Austria)	1965	6,376	14.0	7,441	16.3	2,235	4.9	5,190	11.4	858	1.9	2,645	5.8	3,843	8.4	4,908	10.8	11,366	25.0	656	1.4
	1966	6,591	14.5	6,768	14.9	2,497	5.5	4,915	10.8	688	1.5	2,798	6.2	4,000	8.8	5,110	11.3	11,369	25.1	647	1.4
	1967	5,909	13.6	6,087	14.0	2,651	6.1	4,933	11.4	693	1.6	2,472	5.7	3,793	8.7	5,403	12.5	10,829	25.0	584	1.3
R. E. N. F. E. (Spain)	1965	3,626	13.2	5,103	18.5	2,711	9.9	3,068	11.1	1,000	3.6	77	0.3	1,503	5.5	1,510	5.5	7,080	25.7	1,834	6.7
	1966	3,829	14.4	4,621	17.4	3,369	12.7	2,577	9.7	995	3.7	84	0.3	1,644	6.2	1,503	5.6	6,222	23.4	1,748	6.6
	1967	3,968	14.2	4,885	17.5	4,200	15.1	3,161	11.3	1,492	5.4	90	0.3	1,998	7.2	1,759	6.3	5,071	18.2	1,264	4.
S. J. (Sweden)	1965	2,044	3.9	794	1.5	2,392	4.5	24,924(2)	47.2(2)	3,416	6.5	2,343	4.4	7,483	14.2	2,555	4.8	5,434	10.3	1,387	2.
	1966	2,019	3.9	790	1.5	2,258	4.4	25,459(2)	49.5(2)	2,813	5.5	2,089	4.1	7,106	13.8	2,086	4.0	5,563	10.8	1,277	2.
	1967	1,873	3.7	706	1.4	2,129	4.2	25,700(2)	50.2(2)	2,607	5.1	1,993	3.9	6,544	12.8	2,018	3.9	6,398	12.5	1,195	2.
S. N. C. B. (Belgium)	1965	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1966	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1967	1,578	2.6	18,228	30.4	520	0.9	15,589	26.0	2,144	3.6	8,392	14.0	6,789	11.3	3,592	6.0	2,599	4.3	557	0.
S. N. C. F. (France)	1965	24,486	10.3	43,364	18.2	10,046	4.2	46,212	19.4	7,461	3.1	19,494	8.2	27,962	11.7	23,948	10.0	32,384	13.5	3,366	1.
	1966	22,671	9.7	40,786	17.5	11,350	4.9	43,766	18.8	7,642	3.3	19,957	8.6	26,470	11.4	24,716	10.6	32,012	13.8	3,298	1.
	1967	27,802	12.1	39,510	17.3	12,469	5.5	42,658	18.7	7,477	3.3	19,496	8.5	25,899	11.3	25.598	11.2	24,722	10.8	3,051	1.
T. C. D. D. (Turkey)	1965	.	.	.	.		.	.	.	.	.	.	.	..	.	.	.	.	.	.	.
	1966	.	.	.	.		.	.	.	.	.	.	.	..	.	.	.	..	.	.	.
	1967	.	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

(1) Source : Data supplied by the railway administrations.

(2) Including Lapland iron ore ('000 metric tons) : 1965 = 21,948 ; 1966 = 20,219 ; 1967 = 21.316.

Table 1 ter. TRAFFIC BY CATEGORIES OF COSTS HANDLED BY THE RAILWAY ADMINISTRATIONS IN THE 18 E.C.M.T. MEMBER COUNTRIES YEAR 1968

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	1
		Rail traffic																				
		"Commercial" tonnage including goods in transit ('000 metric tons)																				
N°	Administration	Foodstuffs, beverages, tobacco		Solid fuels		Oil and oil products		Mineral ores and scrap		Basic metal products		Wrought metal products		Building materials		Chemical products and fertilizers		Other goods carried in wagon-load lots		Freight sundries including express parcels		
			%		%		%		%		%		%		%		%		%		%	
1	B.R. (United kingdom)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1
2	C.E.M (Greece)	505	20.2	146	5.8	127	5.1	46	1.8	59	2.4	182	7.3	295	11.8	221	8.8	844	33.8	74	3.0	2
3	C.F.F. (Switzerland)	6,195	15.8	1,455	3.7	6,434	16.4	2,473	6.3	2,488	6.3	3,401	8.6	7,187	18.3	3,167	8.1	4,026	10.2	2,487	6.3	3
4	C.F.L. (1)	(2)	(2)	3,717	26.6	713	5.1	3,742	26.8	(3)	(3)	3,069 (4)	22.0(4)	932	6.7	804	5.8	955(5)	6.8(5)	32	0.2	4
5	C.I.E. (Ireland)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5
6	C.P. (Portugal)	804	22.4	63	1.8	91	2.5	783	21.9	10	0.3	4	0.1	113	3.2	804	22.4	333	9.3	576	16.1	6
7	D.B. (Germany)	21,104	6.9	89,071	29.2	25,341	8.3	37,857	12.4	4,667	1.5	34,947	11.4	29,183	9.6	27,940	9.2	29,739	9.7	5,515	1.8	7
8	D.S.B. (6) (Denmark)	1,591	21.7	573	7.8	110	1.5	51	0.7	2	0.0	868	11.9	900	12.3	1,025	14.0	1,588	21.7	614	8.4	8
9	F.S. (Italy)	8,724	15.6	2,870	5.1	3,160	5.7	12,610	22.6	1,465	2.6	7,255	13.0	1,629	2.9	3,470	6.2	13,993	25.1	678	1.2	9
10	J.Z. (Yugoslavia)	5,924	9.4	16,280	25.8	2,727	4.3	7,667	12.2	2,341	3.7	1,210	1.9	15,931	25.2	3,831	6.1	6,018	9.5	1,176	1.9	10
11	N.S. (Netherlands)	1,707	6.6	8,241	31.9	2,477	9.6	2,078	8.1	192	0.7	1,765	6.8	3,480	13.5	2,526	9.8	2,057	8.0	1,290	5.0	11
12	N.S.B. (Norway)	194	0.6	29	0.1	198	0.7	23,900	80.6	188	0.6	90	0.3	1,753	5.9	849	2.9	1,904	6.4	549	1.9	12
13	O.B.B. (Austria)	5,702	13.2	5,474	12.6	3,070	7.1	5,280	12.2	935	2.2	2,501	5.8	3,252	7.5	4,535	10.4	12,050	27.8	524	1.2	13
14	R.E.N.F.E. (Spain)	3,334	11.9	5,137	17.9	4,567	15.9	4,433	15.5	1,461	5.1	114	0.4	2,077	7.3	1,666	5.8	4,987	17.4	789	2.8	14
15	S.J. (Sweden)	1,862	3.3	814	1.4	2,235	4.0	30,231(7)	53.4(7)	2,794	4.9	2,114	3.7	6,558	11.6	2,167	3.8	6,699	11.9	1,098	2.0	15
16	S.N.C.B. (Belgium)	1,693	2.6	18,775	29.4	485	0.8	16,487	25.8	2,313	3.6	9,591	15.0	6,510	10.2	3,993	6.3	3,427	5.4	567	0.9	16
17	S.N.C.F. (France	21,034	9.2	39,058	17.1	13,027	5.7	44,017	19.2	7.755	3.4	20,180	8.8	25,461	11.1	25,674	11.2	30,541	13.3	2,307	1.0	17
18	T.C.D.D. (Turkey)	4,893	34.9	3,733	26.7	363	2.6	2,217	15.8	118	0.8	24	0.2	624	4.5	402	2.9	1,116	8.0	513	3.6	18

(1) Excluding international transit.

(2) Included in columns 19 and 20.

(3) Included in columns 13 and 14.

(4) Including basic metal products, columns 11 and 12

(5) Including foodstuffs, beverages and tobacco, columns 3 and 4.

(6) Year 1st April, 1967 to 31st March, 1968.

(7) Including Lapland iron ore.

Chapter II

PROBABLE TREND FOR SELECTED ECONOMIC SECTORS OF SIGNIFICANCE FOR THE RAILWAYS

1. ENERGY AND IRON AND STEEL

Rail transport has had a part to play in the production of energy for generating electricity, both for industrial and household use, because of the increased use of coal that this implied. The development of railway systems itself stimulated this increase to a large degree.

The railways have also always played an important role in the carrying of coal and coke to iron and steel plants. A separate paragraph is devoted to this last topic and to the function of the railways in relation to the iron and steel industry in general.

A. Energy

First we must determine the significance that the transport of coal and related products has for the railways in general, and then the role played by the railways in the field of energy production. Attention will then be given to the far-reaching structural changes that have affected the energy production sector and the implications of these changes for the railways themselves.

With few exceptions, coal accounts for up to 30 per cent of the total freight traffic carried by rail in the industrialised countries. The above figure more particularly applies to the countries of North-West Europe where the largest coal-fields are situated. The percentage is smaller in countries which are mainly accessible by sea, or have a long coastline, or are well equipped with inland waterways. Coal has always played a leading part in the rail-hauled freight of the E.E.C. countries except Italy.

The foregoing general comments are also applicable to coal-fired power production : the railways have always handled bulk hauls of coal to power plants and to and from seaports, just as they have catered for the scattered requirements of householders and industrial users.

The replacement of coal by oil and, to a lesser degree, by natural gas (or gas produced by industry) has radically changed this state of affairs. Nuclear energy production will bring more changes in future. According to the estimates of the O.E.C.D., by the middle of the eighties, nuclear power plants will account for about 25 per cent of total installed capacity and over 35 per cent of total electricity production in Western Europe.

The energy sector is clearly undergoing a period of rapid change. Governments are still protecting coal production on economic and social grounds, but this state of affairs can only be transitional.

Rail transport for the energy sector is already declining. The special measures which still enable it to keep going in this field are as follows : agreements for retaining coal as the basic fuel for power stations ; measures to encourage the sale of coal outside Europe and to support the sale of coal and coke in general.

In any event, "scattered traffic" coal consignments to industry (except the iron and steel industry) and for household use is likely to lose its importance in the near future.

Structural changes in the energy production sector induce the authorities concerned to review the position of entire region and make radical alterations to them accordingly. Similarly, a new approach will also be required for rail traffic.

Here, various problems will arise as regards the content and volume of freight traffic and the railways' operating methods and capacity.

operating methods and capacity.

The content and scale of coal traffic will above all depend on how coal production will be organised during the period of transition ; these may alter as a consequence of pit closures and depending on the types of coal which continue to be produced for industry and for household use. Import and export possibilities will also have an impact, especially on traffic through seaports. Policy with regard to investment in power plants (new projects or replacements) remains an important factor. The investments planned normally cover "multi-fuel" plants where oil and gas can now be used besides coal. Nearly everywhere, coal is already too dear compared with the delivered price of oil or gas. The O.E.C.D. data (see Table II) show deliveries of fuel to thermal power plants up to 1975. The O.E.C.D. considers that the quantities of coal consumed by such power plants will increase but no forecasts can be made beyond that date.

As regards the railways' operating methods and capacity, the first point is that the decline of coal carryings will mean that some of the freight stock, marshalling yards and transhipment facilities will have to be replaced by stock and facilities of more recent design to match the needs of train-load traffic. Insofar as such stock and facilities are owned by users, this will not necessarily have any implications for railway operations, but the outcome will be different if a substantial part of the stock belonging to the railways themselves is affected : for some railways, the elimination of certain traffics could have a considerable impact on the profitability of the remaining "scattered" wagon-load traffic and, in some cases, it might raise the cost of traffic in train-load lots, in which case the raise the cost of traffic in train-load lots, in which case the rate of return on the various traffics would have to be reassessed. What is more, competition from other sources of energy will induce remaining coal transport users to claim bigger reductions. New trans-shipment facilities, both faster and cheaper, will therefore be demanded. If the railways make new investments to meet these requirements, the profitability of such investments will doubtless have to be separately appraised in the light of the transitory situation of the energy production sector. As a general rule, transport costs have a considerable bearing on the overall price of coal (from 10 to 25 per cent according to the country concerned).

Coal might before improve its position on the market in this way but the differences between the delivered prices of coal, oil and oil products, and natural gas are already too wide for this to save coal from its present plight.

It may be assumed that traffic which are dying out, especially those involving bulk goods, may be replaced by others of similar kind. In the energy sector, the railways have had little opportunity to handle "substitute" traffics of this kind so far because products which have replaced coal in the energy sector - crude oil for instance - are either imported from the producing countries overseas or carried by pipelines.

The other types of traffic will be dealt with separately in the chapter headed "Oil and Oil Products" but it may be useful at this stage to mention ore traffics, these having increased substantially. These partly consist of traffics which differ from the previously existing ones ; as a general rule, it is the inland waterways which have benefited from the increase. Further reference will be made to this point in connection with the iron and steel industry.

The considerable influence of taxation on the substitution of oil for coal must also be borne in mind.

B. Iron and steel

The railways play a part not only in energy production but also in the iron and steel industry. They have always been affected by the ups and downs of the latter, the effects being felt as regards both the carriage of materials to the plants concerned and

Table II. DELIVERIES OF FUEL TO THERMAL POWER PLANTS (EUROPEAN COUNTRIES OF THE O. E. C. D.)

Unit : millions of tons coal-equivalent 7×10^6 kcal/ton

	1965		1967		1970		1973		1975		1980	
	Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity	%
Total requirements	205.0	100.0	225.0(1)	100.0	(286.5)(2)	100.0	(355.0)(3)	100.0	(414.0)(4)	100.0	(583.0)(5)	100.0
Lignite	21.0	10.2	21.7	9.6	(25.1)	8.8	(27.4)	7.7	(30.3)	7.3	(34.3)	5.9
Manufactured gas (essentially blast furnace gas)	7.6	3.7	7.1	3.2	(7.7)	2.7	(8.1)	2.3	(8.6)	2.1	(10.3)	1.7
Natural gas	3.5	1.7	5.9	2.6	(9.7)	3.4	(12.7)	3.6	(16.0)	3.9	(20.6)	3.5
Nuclear fuel	8.0	3.9	11.4	5.0	(21.9)	7.6	(38.3)	10.8	(71.2)	17.2	(216.0)	37.0
Sundries	2.4	1.3	2.9	1.3	(3.1)	1.1	(3.5)	1.0	(3.9)	0.9	(5.1)	0.9
Sub-total	42.5	20.8	49.0	21.8	(67.5)	23.6	(90.0)	25.4	(130.0)	31.4	(286.0)	49.0
Coal and oil	162.5	79.2	176.0	78.2	(219.0)	76.4	(265.0)	74.6	(284.0)	68.6	(296.0)	51.0
of which coal	120.0	58.5	121.0	57.8	(142.0)	49.5	(168.0)	47.3	(170.0)	41.1	?	-
of which oil	42.5	20.7	55.0	24.4	(77.0)	26.9	(97.0)	26.3	(114.0)	27.5	?	-

Source : O. E. C. D.

(1) Specific consumption - 2775 kcal/kWh.
(2) " " - 2700 "
(3) " " - 2550 "
(4) " " - 2500 "
(5) " " - 2400 "

Notes concerning Table II : The figures for fuel consumption in thermal power plants up to 1980 are in tons of coal equivalent with a calorific value of 7×10^6 kcal. As the calorific value of coal consumed in European thermal power plants is normally in the region of 6×10^6 kcal, the real tonnage of coal should be as follows :

Coal (million tons in real figures) :	1965	1967	1970	1973	1975	1980
	103	104	(122)	(144)	(146)	-

It must also be pointed out that some of this coal will not be carried from the collieries to power plants as many thermal power plants are installed at the pithead. The above figures also include imported coal, whether or not carried into the hinterland.

the consignment of finished products and semi-products from these plants.

Taken together, the energy and iron and steel sectors are of fundamental importance for the railways. In most countries, these two sectors account for (or once accounted for) roughly 40 per cent on average of total rail-hauled traffic. It is therefore essential to consider the trend of the iron and steel industry and its implication for rail transport.

Reports produced by the O. E. C. D. and the E. E. C. show that iron and steel production capacity is rising steadily in step with economic expansion in Western Europe.

This increase in capacity is well in excess of present demand for iron and steel products and is rather intended to meet the following needs : large-scale production so as to reduce costs and a diversified range of production in order to stand up to growing competition in Europe and elsewhere.

The new capacity is installed mainly in existing plants but it must also be borne in mind that large plants have been created or planned in the coastal areas of various countries.

This state of affairs implies a greater need for raw materials. Where increased capacity affects plants in the hinterland, it entails increased rail traffic, but due regard must be paid to competition from inland waterway transport (e. g. in the Rhine Basin).

Coal and coke carryings to the iron and steel industry are not keeping pace with the increase in capacity in this sector. They are affected by diminishing coal production in Europe, by competition from imported American coal (used mainly by iron and steel plants on the sea coast) and by the application of new processes which reduce coke consumption requirements.

Coke production in continental Europe tends to be concentrated in the following areas : Ruhr, Saar, Lorraine and,, in the United Kingdom, the Midlands.

Meanwhile, the production cost of coke is rising and this hardly improves its competitive position vis-à-vis coke imported from overseas. Policy regarding investment in new coking plants is an important factor. If steel producers have to meet their requirements from their own coking plants, coal traffic for this purpose will increase.

Sales of United States coal are helped by present European coal prices and by the level of freight rates on the North Atlantic route. Even if freight rates did not decline in future, the gap between European and American coal production costs will go on widening, and hence work to the benefit of the latter.

Among the raw materials used by the iron and steel industry, iron ore is the leading item in terms of tonnage. Here, ferrous content being now imported from overseas.

The railways have offset some of their coal traffic losses by carrying ore to steelworks in the hinterland except in cases where this latter traffic had been won by inland waterway transport.

In order to retain such traffic, specialised equipment, operating under optimum conditions for users, is essential (shuttle trains between seaports and steelworks).

In several countries, trainload operations are giving good results as regards profitability.

Where the iron and steel industry is concerned, traffic will be affected by a number of characteristic factors.

Demand for iron and steel products will go on increasing in step with economic expansion. Increased production capacity already anticipates this development, but the latter may vary widely depending on the type of product.

Production of railway rolling

stock and of steel products for the ship-building industry will not keep pace with economic expansion. Against this, the output of lighter products such as steel sheet for the motor industry will exceed the average increase in production.

The trend towards diversification in each production centre follows from the forecasts.

The semi-products sector is a special case.

Reference must also be made to another factor which has had an important bearing on international trade in semi-products. This factor is inherent in the production of iron and steel in increasingly large plants. It seems that increased capacity at a given stage of production, e. g. pig-iron or crude steel, necessarily implies an abundant supply of a particular product which cannot be absorbed at a subsequent stage such as the rolling mill. As a consequence, the product in question has to be traded with other producers. The tempo of transport operations between European iron and steel plants which follows from this state of affairs is irregular. Increased competition from producers outside Europe on overseas and European markets will hamper the disposal of the products involved. Where the transport industry is concerned this will have implications for imports and exports by sea.

The inter-penetration of European markets is a good thing for the transport industry and has already had beneficial effects on inter-European traffic (see E. C. S. C. Statistics). The share of iron and steel traffic accounted for by the railways varies widely from one country to another. Inland waterway transport successfully competes with rail in countries where it is highly developed. In most of the others, by far the largest share is still held by rail.

A distinction must be made between the distribution of iron and steel products from depots (e. g. concrete rounds) where road transport plays a predominant role, and distribution from steelmaking plant. The size and regularity of consignments also have a bearing on the choice between rail and road.

2. OIL AND OIL PRODUCTS

The increased use of oil in the last decade has brought about changes in the energy production sector and the substitution of oil and gas for coal has had an impact on the transport industry, rail transport in particular.

We must now see which aspects of oil consumption have general implications for transport. It must be borne in mind that, in the light of present trends, the crude oil carried into Europe will mainly come from overseas and go to refineries supplied directly by sea or by pipeline to inland refineries. Oil produced in Europe itself is on a limited scale and though the railways do account for some of the traffic between European oilfields and refineries, it is safe to say even at this stage that this share will never be of considerable size.

In the light of the statistics for the period 1962-1966, crude oil carryings in the E. E. C. countries went mainly through pipelines. Some of the benefit of increased oil traffic went to inland waterway transport, the share of such traffic accounted for by the railways having increased only slightly (see figure I).

There is at present no reason to believe that any new policy concerning the location of refineries will change this scheme of things for oil transport. Half of the increase in refinery capacity within the E. E. C. countries within the last few years is due to increases in existing refinery capacity, and the other half to the installation of new refineries, including those that were installed far from the European seaboard

in conjunction with the development of the European pipeline network.

There is, however, a tendency to build, on the sea-coast, large-capacity refineries capable of handling the crude oil carried from overseas in giant tankers. As related industries (e. g. chemicals) are installed alongside these, there is a concentration of activity which reduces transport needs (see also the section on chemical products).

This development will not impede the increase in refinery capacity within the hinterland which follows from economic development in general.

In the light of foreseeable developments, it seems clear that, even at long-term, the railways have little chance of getting a bigger share of crude oil traffic.

Generally speaking, the share of total rail-hauled traffic accounted for by crude oil and oil products can be regarded as insignificant since it amounts, on average, to between 5 and 10 per cent. Such transport essentially consists of oil products distributed from the refineries or carried from one refinery to another. The share of total oil products traffic accounted for by the railways is slight except in certain countries such as the Federal Republic of Germany, Switzerland and - to a lesser degree - France.

A special feature concerning oil products is that they are marketed mainly within national boundaries.

In the E. E. C. countries only 10 per cent of all the oil products consumed come from imports and exports between Member countries. A close enquiry into the reasons for this state of affairs would be outside the scope of this survey, but they partly stem from oil company policy and partly from government policy (with regard to taxation, for instance).

Such exports as do exist go mainly overseas, and in this respect shore refineries often play a part in co-ordinating supply and demand.

Oil products in the various countries concerned are mainly handled by own account carriers. Road haulage and inland waterway transport play a leading role in this field.

The factors which have a bearing on this situation are not sufficiently clear. The oil companies prefer to make their own arrangements for land transport as this enables them to price their goods carriage paid.

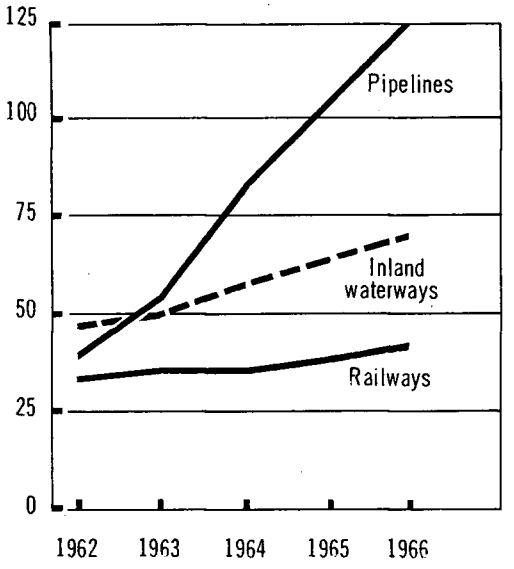
A new element, in any event, is the use of products pipelines. Some are already in existence, e. g. Paris - Le Havre, Netherlands - Germany and the N. A. T. O. network. (A representative of a German oil company claimed in 1968 that a 100 km pipeline was cheaper:

- than road or rail transport if annual capacity amounts to a million tons)

Figure I

OIL TRANSPORT WITHIN THE EEC

(Domestic and international traffic in million tons)



Source : Netherlands Central Institute of Statistics.

- than inland waterway transport if annual capacity amounts to five million tons ;
- than transport in 50,000-ton tankers if annual capacity amounts to 20 million tons).

These figures mark the boundaries within which the various branches of the transport industry can compete. It is useful to try to see more clearly how the sale of oil products is broken down. Figures supplied by the E. E. C. show that the main customers - each accounting for roughly equivalent quantities - are : "traffic" (i. e. motor vehicles and shipping), industries other than the iron and steel industry, and householders (household fuel). By contrast, consumption of oil products in other sectors such as the iron and steel industry and agriculture, is slight. On the other hand, consumption of oil products in power plants increased nearly three-fold during the period 1962-1968 (see O. E. C. D. figures in Table III). If "industry" is considered as a whole, reference must be made to the substantial increase in consumption of oil products in the chemical industry.

Sales of each type of product depend on where it is consumed : petrol and heavy diesel oil for motor vehicles and ships, various grades of fuel oil for industry and householders, and a very wide range of solid or liquid products for the chemical industry.

Both oil companies and other distributors attach great importance to distribution costs. No opportunity for rationalisation or cost saving is ever overlooked.

In this context, the role of the railways is affected by rail transport costs, by the quality of service and by sales policy. The extent to which new opportunities exist for the railways in this respect deserves further enquiry.

Table III. CONSUMPTION OF THE FOLLOWING PRODUCTS IN THE ELECTRICITY SECTOR

(Unit : 1,000 metric tons)

Year / Country	GAS/DIESEL-OIL							RESIDUAL FUEL OIL						
	1962	1963	1964	1965	1966	1967	1968	1962	1963	1964	1965	1966	1967	1968
Germany	1	2	1	1	1	1	1	642	1,099	1,631	1	2,979	2,663	2,854
Austria	-	-	-	-	-	-	-	239.8	350.5	358.3	-	269.4	290.9	440.8
Belgium	17	19	17	17	22	15	15	345	630	1,393	17	1,667(4)	1,889(5)	2,413
Denmark	13	11	2	5	7	8	2	458	630	765	5	905	928	1,421
Spain	-	-	22	-	40.2	2	2	516	465	646		1,409.2	1,858	2,600
France (1)	133	161	152	205	159	163	186	830	1,431(2)	2,797(2)	205(3)	1,848	2,441	2,134
Greece	-	-	56.6	-	110.7	149	109.9	-	-	353		477.1	754	924
Ireland	-	-	-	-	-	-	-	240	339	390	-	480	577	580
Italy	3	6	6	8	5	10	10	3,500	3,000	4,700	8	4,200	5,200	6,250
Luxembourg	-	-	0.1	-	0.3	0.3	0.4	-	-	-	-	-	-	-
Norway	0,6	0.8	-	-	--	-	-	-	0.5	1,872	-	-	-	-
Netherlands	36	34	22	19	22	23	36	788	1,252	12	19	2,708	2,419	2,541
Portugal	1	-	1	1.4	2	3	3	4.6	-	5,594	1.4	9	39	105
United Kingdom	96	290	396	580	766	445	450	6,025	5,290	100	580	6,992	7,468	6,460
Sweden	19	14	10	10	10	10	20	126	144	17	10	700	200	980
Switzerland	15	15	4	4	4	5	1	45	47		4	72	129	207
Turkey	-	-	-	-	-	-	-	-	-				615	650
Total	365,6	552.8	689.7	850,4	1,149.2	834.3	836.3	13,750.4	14,678.3	20,628.3	850.4	24,715.7	27,470.9	30,559.9

Source : O.E.C.D. oil statistics.

(1) 1963, 1964 and 1965, Gas-oil + Diesel-oil + Household fuel + light fuel oil.

(2) Paraffin distillates + Marine oil + heavy fuel oil.

(3) Gas-oil, Diesel-oil, Household fuel + light fuel oil.

(4) Including 900,000 metric tons of tar.

(5) Including 1,228,000 metric tons of tar.

3. CHEMICAL PRODUCTS

The soaring growth of the chemical industry in Europe raises the question of what impact it will have on transport generally and on rail transport in particular.

Chemicals are at present the fastest growing industry in Europe.

It is important to look into the circumstances of this state of affairs. The O. E. C. D. and E. E. C. reports show that progress is fastest for organic chemicals, including plastics, and more particularly in the sector of the chemicals industry which uses oil and natural gas as raw materials. This does not mean that the anorganic chemistry sector is making no progress, but developments such as technical innovation are less spectacular.

Before tackling the real issue, it may be useful to describe briefly the trend of production in the mineral and organic chemistry sectors.

The anorganic chemistry sector is chiefly based on : sodium chloride, sulphur, amonia, phosphate and potash.

A vast range of chemical products is drawn from these materials, e. g. fertilizers, soda-ask, caustic soda, chlorine, sulphuric acid and calcium carbide.

Production of these chemicals will rise at least as much as industrial production in general.

The production of ammonia and ammonia-based nitrogenous fertilizers is specially important. Gases and mineral oils are increasingly used instead of coal and its by-products (in some countries they account for over 50 per cent). In Europe, the decline in coal-based chemicals is in any event a general phenomenon associated with the fall in coal production.

An important factor is that in coal-based chemicals the investment and depreciation to be provided for are higher than for oil-based products, and expansion is therefore confined to the latter sector.

In addition to ammonia, chlorine deserves special mention because of its important role in the production of synthetic products.

Progress, especially technological innovation in the organic chemicals sector, has been particularly striking.

The use of oil and natural gas as a source of energy has grown enormously and this has helped to expand the sector of the chemical industry which is based on materials obtained from the processing of oil and gas. The application of new methods of organic synthesis and other processes, combined with the advances made in metallurgy (special pressure vessels), have contributed towards this development. The automation of chemical processes is also particularly relevant.

This sector includes the production of all synthetic products.

In the meantime, research and progress have brought to light new possibilities of application with the result that existing plant ages rapidly. Moreover, the economic advantages of increased capacity are very considerable in the synthetics industry and lead to the faster introduction of ever larger production units.

Another important factor here is the need to integrate production.

Hence, chemical production in this sector is concentrated at the points where oil is processed (see the section on oil and oil products).

The circumstances in which chemical production is developing give an indication of what this may mean for transport.

Clearly, the trend in the organic chemicals sector, where the move is towards integrated production from the raw material to the end product in

closely grouped production units, will not generate any traffic.

Pipelines are preferred for the transport of intermediate gaseous products such as ethylene to distant processing plant (e. g. the pipeline between the Netherlands and Germany).

Solid or liquid end products are distributed in such relatively slight quantities that they could never be treated as bulk traffics and consignments can even be said to be small since those of 15 tons are unusual.

The O. E. C. D. says that in 1967 total production of basic organic chemicals amounted to over 12 million tons, including some 9. 5 million tons based on oil and natural gas.

Since about 85 per cent of this production is used for organic synthesis in situ, the quantities to be distributed among the various production centres may be estimated to average 1 million tons at most per year.

It should be noted that the German chemicals industry is seven times - and the French four times - larger than the Dutch. International trade in chemical products is constantly expanding in the E. C. M. T. countries as a whole (see Table IV).

In view of the wide variety of end and intermediate products, it is impossible to say how far they generally call for transport. The railways have succeeded in winning the carriage of intermediate products to other processing centres.

In many cases, this could be done only by offering competitive prices, which means that special measures have to be taken for this type of transport (to avoid additional shunting and other costs). The availability or non-availability of special wagons is often a decisive consideration.

Production capacity increases erratically in the chemicals industry. As a consequence, carryings of intermediate products are very irregular and subject to many fluctuations.

When the quantities to be carried are sufficiently large the railways soon lose the traffic to pipelines if the product is gaseous or liquid.

The anorganic chemicals sector has expanded constantly and this in turn has led to increased, carryings, especially of primary products (chlorine, caustic soda lye, caustic soda) which is important for the railways.

The transport of these products is limited by the fact that they have a low market value and transport costs must be reduced to the minimum ; they are therefore only transported over short distances.

According to O. E. C. D. figures, 50 per cent of the anorganic chemicals sector's production is processed by the chemicals industry. The other half mainly consists of raw materials (e. g. sulphur dioxide) for the production of artificial fertilizers, which are discussed below.

The traffic increase under this head is due to its inclusion of the organic chemicals sector which, as we have seen has far outdistanced anorganic chemicals. Here, too, it is necessary to use special equipment. Road transport appears to meet with less investment difficulties in this respect than the railways.

One solution might be to use private wagons, but users' investment decisions are not always favourable to the railways.

Chemical fertilizers produced by the organic chemicals sector must be considered separately from those of mineral origin.

In terms of quantity, these fertilizers account for over half the chemical products carried by the railways. Production capacity is increasing rapidly. Some of the products are carried direct from production centres on the coast to overseas destinations. However, a large proportion of production is sold on the spot. The contribution of chemical

Table IV. INTERNATIONAL TRADE IN CHEMICAL PRODUCTS (S.I.T.C. - SECTION 5) AS A PERCENTAGE OF TOTAL IMPORTS AND EXPORTS IN 1958, 1962, 1965 AND 1967

Country	1958	1962	1965	1967
(a) IMPORTS				
Turkey	11.3	9.5	15.8	18.9
Finland	nd	nd	10.2	10.3
Greece	9.6	10.0	9.0	10.2
Switzerland	7.3	8.2	9.4	9.8
Austria	7.3	7.9	8.7	9.8
Spain	nd	8.6	9.0	9.2
Denmark	8.8	8.6	8.7	9.1
Ireland	7.3	7.7	8.7	9.1
Portugal	9.4	9.5	8.9	9.0
Sweden	6.8	7.7	7.7	8.4
Netherlands	5.5	6.0	6.8	7.9
France	4.0	5.6	6.8	7.8
Norway	5.2	6.6	7.9	7.5
B.L.E.U.	6.5	6.1	6.7	7.2
Italy	4.7	6.4	6.6	6.9
Iceland	4.9	5.9	6.8	6.5
Canada	5.6	6.1	6.1	5.5
Germany	3.7	4.0	4.8	5.4
Japan	nd	5.3	5.0	5.2
United Kingdom	3.2	3.9	4.9	5.1
United States	2.9	3.2	3.7	3.6
Average O.E.C.D. (Europe)	5.0	5.7	6.5	7.1
Average E.E.C.	4.8	5.3	6.1	6.8
Average EFTA	5.0	5.8	6.7	7.0
(b) EXPORTS				
Switzerland	16.6	18.9	20.0	20.3
Germany	10.7	10.9	16.1	12.4
Netherlands	8.5	8.9	10.2	12.2
United Kingdom	8.2	9.1	9.3	9.8
France	8.4	8.9	10.1	9.4
United States	7.8	8.7	8.9	9.0
Norway	9.0	8.4	9.0	8.0
Italy	6.6	7.7	8.4	7.8
B.L.E.U.	7.6	5.8	6.2	6.8
Portugal	6.2	6.8	7.0	6.6
Japan	nd	7.8	6.5	6.6
Spain	nd	4.9	8.3	6.3
Denmark	3.1	4.6	4.9	6.0
Austria	4.3	3.0	4.8	5.9
Sweden	2.7	3.0	3.5	3.8
Canada	4.6	3.4	3.6	3.5
Greece	2.2	2.5	2.2	3.2
Ireland	0.3	0.7	2.2	3.0
Finland	nd	nd	1.6	2.2
Turkey	1.5	0.5	0.7	0.8
Iceland	....	....	0.3	0.1
Average O.E.C.D. (Europe)	8.3	8.6	9.4	10,0
Average E.E.C.	9.0	9.1	9.9	10.7
Average EFTA	7.7	8.4	8.9	9.4

Source : O.E.C.D.

Note : Countries have been graded in decreasing order according to the percentage of chemical products (imported or exported) in 1967

fertilizers to increased crop and livestock production would appear to have reached its maximum.

The role to be played by the railways depends largely on the way marketing is organised since production is subject to fairly wide seasonal fluctuations.

Products may be distributed from large depots or from many small depots. Depending on distance and size of consignments, it can be a paying proposition for the railways to serve the small depots.

Rail can compete with other modes in handling traffic from large depots provided that these have no direct access to inland waterway systems. Highly centralised transport management enables the railways to obtain substantial contracts.

4. AGRICULTURAL AND HORTICULTURAL PRODUCE AND LIVESTOCK PRODUCTS

Of all sectors of the economy, crops and livestock are those most influenced by the government intervention.

National policy, and in the case of the E. E. C. Member states the Common Market policy, determine production prices and other conditions and hence the marketing of the products concerned. In the studies on future trends in this sector carried out by the O. E. C. D., for example, government policy is taken as treated as part of the data.

In the long-term forecasts, considerable changes in the movement of goods resulting from changes in government policy are not at present taken into account.

The effects of E. E. C. policy, such as that concerning the increasing disposal of French grains on the European market, can only be considered with reference to their present consequences.

With regard to the general trend in this sector, the growth of the population and rising standards of living (increased incomes) give some guidance as to the increase in demand for agricultural, horticultural and livestock products.

Account should also be taken of the tendency during a period of prosperity to consume more meat and fruit than cereals and dairy produce.

A large improvement in productivity is due to technical progress and to incentive measures taken by the State.

Increased consumption does not generally entail a corresponding increase in rail transport. But road-hauled agricultural produce has made flourishing progress.

However, a distinction must be made between types of produce and types of transport (national - international ; bulk or small quantities ; distance).

First, let us consider summer and autumn crops such as cereals, sugarbeet, potatoes and various kinds of vegetables and fruit.

The railways still often play a role by providing fast services for bulk deliveries of sugarbeet and potatoes to processing plants. For the remainder, almost all transport is by road.

A special situation arises for vegetables and fruit which come on the market in massive quantities. Thanks to their organisation the European railways are able to stand up to competition for long-distance transport. A case in point is carryings of citrus fruit.

As most produce can at present be stored, its disposal and carriage can be more evenly spread, in the form of smaller consignments. In such cases, road transport is often most suitable.

The railways and road hauliers compete on an equal footing, however, for the transport of perishable foodstuffs. For the railways, trans-shipment costs are a handicap here for short-distance hauls.

The organisation of the marketing of foodstuffs is an important factor in this respect. When there is no efficient organisation of marketing, only local and regional markets exist. On the other hand, when the wholesale and retail markets are are well organised, the railways can work out a coherent system of transport for larger areas.

More frequent consultation between the European countries, especially as regards foodstuffs, offers excellent opportunities for such a system and the TEEM trains provide a good example. It is regrettable that transport should be so much hampered by the lack of uniformity between the official regulations concerning the transport of foodstuffs (frontier controls). For the railways, delays at the frontiers are a serious hindrance to the efficient organisation of transport.

5. THE PROPER FUNCTION OF RAIL TRANSPORT AND PROBABLE FUTURE TRENDS

The sections on trends in a number of sectors show that where coal, coke, ores, oil, bulk hauls of agricultural produce etc., are concerned, the railways cannot hope to recover their former position which was fairly good. These commodities accounted for the biggest proportion of freight tonnage (1).

The quantity of raw materials to be carried for energy production and for the iron and steel industry has no chance of increasing to a large degree - not at least at the same pace as other traffics.

Steel production and overseas ore requirements will increase, but this will not be matched by the volume of traffic. It will, however, be possible to handle scheduled deliveries from collieries and coking plants still in operation to power plants and iron and steel works.

The railways will continue to carry iron ore. The share of overall rail traffic accounted for by these categories will, however decline substantially. The railways will in any case have to make themselves more competitive in this sector by improving their operating methods and reducing their costs. Such considerations will indeed have an increasingly decisive influence on the location of iron and steel plants.

The railways judge themselves to be in a good position to increase their oil products traffic, but the references to this topic in the relevant section of this chapter do suggest that, as a general rule, the quantities to be carried will not be on a very considerable scale, nor will the hauls be of very great length. This will therefore essentially consist of "scattered" traffic.

It can be gathered from what has been said above that the railways have a chance of increasing their bulk traffics, i. e. trunk hauls, in real figures. Railway systems combined with modern operating methods are particularly suitable for the carriage of large tonnages of imported ores and of building materials, but the railways are heavily handicapped in the energy sector. Due regard must be paid to the possibility of handling bulk hauls - mainly in train-load lots - involving other traffic links and other sectors of the economy.

There has however been a positive development in fast expanding sectors ; namely, chemical products, certain steel products and industrial products in general. Such products are available for transport, especially rail transport, but in smaller quantities than are usually carried for other sectors.

It has to be admitted that where the chemical products sector is concerned, large flows of traffic will be generated only on a limited number of routes, and that transport demand in this respect may fluctuate. The carriage of steel products and industrial products generally will be classifiable, according to present operating methods, in the "scattered

(1) Although, generally speaking, these rail traffic forecasts hold good for all networks, they may be subject to some reservations in respect of countries now in process of industrialisation.

traffic" category.

Although reliable data on this point are lacking (Railway Administration accounts are not generally amenable to close analysis) "scattered" hauls must, for the time being, be regarded as traffic the profitability of which cannot be taken for granted.

Generally speaking, for this form of transport, costs tend to rise more quickly than revenue.

Most of the freight traffic handled by the railways, however, is between private sidings or between private sidings and goods yards. This form of transport has so far given the railways a good deal of scope and should therefore be used to meet the increase in freight traffic mentioned above.

It is not possible with the figures available to calculate the percentage of transport between private sidings of goods in bulk for which transport demand will not increase or of other products where such demand may increase.

One can assume that most industries which will generate increased traffic already have or will have their own sidings. But it still remains to be seen whether these will be effectively employed and whether the marketing policy and operating methods of the railways are adapted in such a way that they are used to best purpose.

This problem lies with the railways alone.

The success of the railways will depend on accurate cost analysis (see the Report on this topic) and on the commercial policy they adopt.

Closer enquiry into these two aspects, though necessary, would be outside the scope of this report, but it must be pointed out that accurate cost analysis also presupposes a right relationship between government and railway administrations.

Furthermore, a successful commercial policy for rail traffic demands still more in the way of market analysis, marketing and sales co-operation than has been attempted so far.

The impulse that well-organised rail transport can give to international goods traffic should not be underestimated.

Though the railways do co-operate closely with each other in the matter of technical developments, operation and organisation, there is evidently still some need to promote greater collaboration over international traffic flows.

Closer integration of railway activities in the international transport field should therefore be urged. Emphasis must be laid on the fact that the railways also need to reorganise the operation of international freight traffic especially where "scattered" hauls are concerned.

Chapter III

EXAMINATION OF SOME STUDIES CONDUCTED AT NATIONAL LEVEL

1. Remarks

The foregoing chapter gives a summary analysis of changes that can occur in rail transport demand as a consequence of certain developments in economic sectors of particular significance for rail. This brief analysis was based on the current level of technical development in the transport field, and makes no allowance for major changes in the general transport infrastructure

Similarly, the conclusions are general insofar as they do not take account of particular geographical factors, such as a good existing network of inland waterways or considerable differences in altitude. It therefore consists mainly of a qualitative appraisal not altogether suitable for the quantitative approach on which valid forecasts could be based, but it does give some indication of the prospects for rail in the freight

traffic sector.

It was necessary to find comparative data in order to evaluate these factors, and such data is available in the form of studies relating to the development of freight traffic up to 1980, carried out in Germany by the Ifo Institute in Munich. Projection of the quantitative results up to 1985 is currently under consideration at the Ifo Institute. In France, freight traffic forecasts up to 1985 have been made in connection with the Sixth Plan.

These studies closely match the general requirements for transport forecasts as set out by the experts participating in the Fifth Round Table on Transport Economics, which discussed the following topic : ["Elaboration of models for forecasting demand and need in the transport sector" see the report in question RE/TR(69)11.]

Both studies cover the general trend of transport demand in the context of economic development, i. e. they are analyses based on econometric studies. The forecasts are supported by sectoral studies for major commodities or commodity groups and an analysis of regional traffic patterns.

A number of assumptions have been made with regard to infrastructure, general economic trends and land-use planning. There are, however, considerable differences between the two studies both in method and practice, but it would be pointless to discuss this question of methodology at greater length.

It may be useful to summarise the assumptions and findings of the two studies.

The study on the freight traffic trend in Germany is based on the following principles concerning methodology, factual considerations and statistics :

2. Methodological principles of the Ifo study on the freight traffic trend in Germany up to 1980

The three main aspects of the methodological approach adopted for the Ifo Institute's enquiry concerning the trend of freight traffic up to 1980 concern :

1) General economic factors.

2) Methods of forecasting the total volume of traffic

3) Methods of breaking down total traffic among modes of transport.

1) For freight traffic forecasts based on general economic factors, the Ifo Institute starts from the following assumptions :

- that the average annual increase in Gross National Product in real terms (1954 prices) will be 4. 5 per cent from 1970 to 1975 and 5 per cent from 1975 to 1980 ;
- that the size of the active population will change only slightly from now to 1980 ;
- that the 40-hour week will become practically the general rule for average working hours (except in a few well-defined service sectors) ;

2) The forecasts of the total volume of traffic by rail, inland waterways, road transport and pipeline were calculated in three ways and the results thus obtained were averaged. The three methods adopted were as follows :

a) Calculation of the total volume of traffic in direct correlation with Gross National Product in real terms.

b) Detailed estimates of total traffic, in the light of specific data, i. e. :

- estimate of the volume of fuel carryings based on primary energy consumption ;
- estimate of the volume of iron and steel carryings, based on output of rolled products ;
- estimate of carryings of building materials, based on building statistics ;

building statistics ;

- estimate of carryings of foodstuffs, based on personal consumption ;
- estimate of carryings of other categories of goods, based on Gross National Product in real terms.

c) Forecasts based on production and imports of nine specific categories of goods. For the production figures, the following goods were chosen :

- hard coal ;
- oil products ;
- pig iron ;
- crude steel ;
- rolled products ;
- building materials.

The import figures mainly related to the following :

- hard coal ;
- iron ore ;
- oil products.

As the results obtained by the three methods were little different, was fairly safe to take the average.

3) At the Fifth Round Table in Paris in May, Mr. Schneider outlined a method that could be used to break down overall freight traffic among modes of inland transport. After making a direct calculation of road-hauled traffic on the basis of Gross National Product in real terms, it is possible by this method to infer the share of total traffic accounted for by rail and inland waterways. The rail and inland waterway components are then calculated on the basis of tariff indices. As suitable statistical data on tariff changes are lacking, and as satisfactory results cannot therefore be obtained in this way, the study on freight traffic up to 1980 attempted - after a recent methodological adjustment - to estimate the traffic carried by each mode of transport directly on the basis of Gross National Product in real terms. At the same time, detailed estimates of traffic carried by rail, road and inland waterways were made for given commodity groups. Both methods are feasible ; the final choice depends on the statistical data available.

3. Summary of factual considerations and statistical principles concerning the IFO Institute's studies on forecasts of freight traffic trends in Germany up to 1980

1) The analysis of freight traffic in Germany up to 1980, carried out by the IFO Institute in Munich, is a projection of the status quo, i. e. the data compiled on an econometric basis stem from specific realities of transport economics which have been ascertained directly or indirectly in the light of past trends.

2) As regards general development of traffic, the IFO Institute's projection of the breakdown of freight traffic between the different modes of transport (rail, road and inland waterway transport) is based on the following considerations :

- that coal transport will continue to lose ground, especially to oil carried by pipeline ;
- that the "centre of gravity" of rail and inland waterway transport will lie in medium and long-distance bulk hauls ;
- that the foreseeable changes in the economy will work in favour of road haulage although it can be assumed that the elasticity of demand for road freight transport in relation to Gross National Product will be less than at present (less than 1) ;
- that the encouragement of combined transport and the use of private sidings may result in some traffic being switched from road to rail in the future ; such switches have been allowed for in the forecasts.

As regards inland waterways, the following assumptions have been adopted :

- there will be no substantial change in the charges made for

the use of the waterways during the period in question ;

- that projects for new waterway links which have been finally approved (e. g. the Elbe-Seiten canal and the Rhine-Main-Danube canal near Nüremberg) will be completed by 1980.

3) For methodological reasons, transit traffic through Germany has not been included in the analysis and forecasts. All the operations and quantities referred to are for traffic within Germany itself, excluding West Berlin. The Saar is included from 1960 onwards.

It should be noted that, for statistical purposes :

- "rail traffic" includes service operations and freight sundries ;
- international hauls involving foreign lorries and included in road transport from 1956 onwards, and freight sundries from 1964 onwards.

Road-hauled short distance traffic was determined for 1965 by the Federal Statistical Service in the light of a sample survey, and subsequently estimated by the Ifo Institute.

Though the results of this study are not yet published and still open to slight amendments, some conclusions may be drawn from the attached tables.

The figures shown for the railways are based only on the assumption that the effects already produced by the economic and transport policy adopted will continue. They indicate a fairly considerable increase in rail transport up to 1980, but the increase for other transport sectors is expected to be larger.

If due weight is attached to the measures already taken by the railways on their own initiative and to the further action they will take to improve their competitive position, the railway can quite conceivably raise their figure for total traffic carried beyond the forecasts. The increase in rail traffic achieved in the Federal Republic of Germany in 1969 (9 per cent as compared with 1968) illustrates the prospects (partly dependent also on economic conditions) that the railways still have before them as regards freight traffic.

4. The French study

In France, a number of railway studies have already been carried out. A study based on supply has been published, which assumes a sound nucleus of rail traffic that could provide a basis for future development (the so-called "étude noyau").

This study was referred to in compiling a more general report on the trend of freight traffic demand up to 1985.

Some assumptions made in the report may be of interest in this connection :

A. Economic growth :

Gross domestic product 2, 2½ or 3 times larger in 1985 than in 1965 (these three growth hypotheses represent annual growth rates of 3.5, 4.6 and 5.6 per cent respectively for the period 1965-1985) ;

Land-use planning :

Division of the Paris area : seven industrial regions and thirteen other "unplanned" industrial regions ; general or selective decentralisation ;

Growth on a growing scale of international trade.

B. Transport supply :

Possible development of new inland waterways ; development of the train-load system (hauls of less than 50 km and road hauls of less than 3 metric tons are not taken into account).

A distinction is made between "heavy and light" traffic, the former representing major traffic flows between specific points, the latter trunk hauls between zones, with collection and delivery services in each zone.

On the supply side, it was assumed that despite the reduction of coal and ore traffic in train-load lots (owing to the development of other sources of energy and the installation of iron and steel plants near the coast) train load operations would proceed in 1985 for sand and gravel, cement, iron and steel products, oil and oil products not carried by pipeline.

The study also deals separately with the following industries : agriculture, energy, metal-working, construction, chemicals, textiles and fertilizers. Each sector except agriculture is considered at two successive stages, as shown below :

	First processing stage	Intermediate processing stage
AGRICULTURE		No distinction
ENERGY		
METALWORKING	Iron and steel	Metal products
CONSTRUCTION	Sand and gravel cement	Construction materials
CHEMICALS-TEXTILES	Heavy chemicals Alumina-Bauxite sulphur	Various industries
FERTILIZERS	Straight fertilizers	Compound fertilizers

The value of the study cannot be fully appreciated without some details of the various ways in which the results were tested, from the analytical and economic angles alike. In this report, however, it seems sufficient to show the results obtained in the light of the foregoing assumptions.

Independently of the assumptions shown under A above, the first findings of the survey are shown in the following table :

Table V. FORECASTS OF GOODS TRAFFIC BY RAIL, INLAND WATERWAYS AND ROAD (LONG HAUL) AND BY PIPELINE IN GERMANY

Projection by the Ifo Institute, Munich (unit : millions of metric tons)

	- Quantities -			- % Change -	
	1968	1975	1980	1975-1968	1980-1975
Fuels	269.6	310	349	+ 15.0	+ 12.6
Iron and steel	169.2	188	212	+ 11.1	+ 12.8
Building materials	124.9	168	222	+ 34.5	+ 32.1
Agricultural products and by-products	84.9	120	150	+ 41.3	+ 25.0
Other goods	122.7	159	196	+ 29.6	+ 23.3
Total	771.4	945	1,128	+ 22.5	+ 19.4

Source : Ifo Institute. E. + O.E.

Table VI. PROJECTION OF GOODS TRAFFIC IN GERMANY BASED ON A STUDY BY THE IFO INSTITUTE, MUNICH

(unit : millions of tons)

Mode of transport				- % Change -	
	1968	1975	1980	1975-1968	1980-1975
Rail	370.7	401	441	+ 8.2	+ 10.0
Inland waterways	221.4	273	335	+ 23.3	+ 22.7
Road	155.8	171	217	+ 9.8	+ 26.9
Pipeline	73.6	101	135	+ 37.2	+ 33.7
Total	821.5	945	1,128	+ 15.0	+ 19.4

Source : Ifo Institute. E & O.E.

Table VII

	Road Transport 1966 50km	"Light" rail transport 1966	Train-loads 1966	Inland waterways 1966	Pipe-line 1966	"Light" transport 1966	"Heavy" transport 1966	TOTAL 1966	"Light" transport 1985	"Heavy" transport 1985	TOTAL 1985
	(1)	(2)	(3)	(4)	(5)	(1) + (2)	(3)+(4)+(5)				
Coal	4	19	22	10		23	31	54	1	22	23
Oil products	25	7	6	17	5	33	29	62	86	78	164
Sand and gravel	17	4	2	34		21	36	57	64	111	175
Lime			1				1	1		1	1
Cement	11	4	1	2		15	3	18	11	11	22
Iron ore			41	1			42	42		28	28
Alumina bauxite			2				2	2		3	3
Sulphur			2				2	2		1	1
Iron and steel products	8	16	6	2		23	8	31	44	12	56
Total (Analytical studies)	65	50	83	66	5	115	154	269	206	267	473
Agricultural products	61	25	1	10		86	11	97	176	16	192
Metal products	15	9		1		24	2	26	43	3	46
Chemical products	44	28	3	12		72	15	87	203	31	234
Fertilizers	5	11	4	4		16	7	23	15	7	22
Total (Econometric studies)	125	73	8	27		198	35	233	437	57	494
TOTAL (Analytical and econometric studies)	190	123	91	93	5	313	189	502	643	324	967
Consignments under 3 tons	66					66		66			
"Light" freight in transit		4				4		4			
Crude oil				1	68		69	69			
TOTAL ALL TRANSPORT	256	127	91	94	73	383	258	641	885	369	855

The general breakdown between "heavy" and "light" transport given in the following table, which shows the shift towards intermediate processing activities, is of great interest.

Table VIII

	1966 = 100		1985 = 100	
	Heavy	Light	Heavy	Light
First processing	31	23	26	22
Intermediate processing	7	39	6	46

As regards the various assumptions for economic growth and land-use planning, we need merely point out that "unplanned" industrial development works to the benefit of existing centres where "light" transport is concerned. The pattern of traffic flows does not make this sufficiently clear, doubtless because the figures for agricultural and industrial products overlap.

As regards "heavy" transport, allowance should be made for a major change in traffic patterns due to the tendency to establish iron and steel works, power stations and heavy chemical plants near the sea.

We will further consider the other assumptions, since the final data will not be available until the details of the Sixth Plan have been agreed.

The figures for international transport deserve separate treatment.

A major increase, up to four times the 1966 tonnage and a big change in the ratio between "heavy" and "light" traffic, are forecast in 1985. The location of industry near the sea contribute to this development as it implies a reduction in "heavy" international traffic. For "light" traffic as a whole, the percentage of total traffic accounted for by international traffic will rise from 17.6. to 32.9.

In view of the considerable importance of traffic to and from seaports service in the "light" traffic sector, this raises a fundamental problem concerning the future shape of freight traffic. The conclusion must be that transport can no longer be organised in a national context, having regard to the essentially international aspects of the above-mentioned fore-casts.

Much of the analysis consists of sectoral studies of the industries covered by the forecasts and the resulting traffic patterns.

A few conclusions which have some bearing on this report are given below.

The changes in "heavy" transport for the iron and steel industry have already been noted. They are mainly due to reductions in deliveries of domestic ores and to the smelting of imported ores in coastal areas.

The following table provides some interesting data on "light" traffic relating to iron and steel products.

Table IX - OVERALL FIGURES

	1961	1985
"Heavy" transport	6.2 MT	12.1 MT
"Light" transport (all distances)	33.3 MT	59.4 MT
Total transport	39.5 MT	71.6 MT
Road-hauled, less than 50 km	7.7 MT	15.3 MT
"Light" transport (road-hauled over 50 km)	25.6 MT	44.1 MT
Imports	3.7 MT	8.3 MT
Exports	7.0 MT	8.9 MT
International traffic	10.7 MT	17.2 MT

In due course, "heavy" transport will be eliminated in this sector, as a result of increasing concentration and rationalisation.

Between 1966 and 1985, the heavy transport capacity used for these products will rise from $\pm$ 4 to $\pm$ 6.5 MT.

Cement carryings are expected to rise as a consequence of a large increase in building activity during the period ending 1985.

There will be no relative rise in rail traffic despite an increase in real figures, with "light" transport accounting for the highest percentage, and "heavy" transport meeting strong competition from inland waterways.

Large quantities of sand and gravel are already being carried, but a substantial increase is forecast for 1985, mainly over longer distances. The development of the canal system will have a considerable impact on the distribution of traffic between railways and inland waterways, but there will be a large increase in rail traffic in any event.

As regards coal traffic, the trend mentioned in Chapter I will be confirmed.

If existing refineries are substantially developed, the transport of oil and oil products in 1985 will mainly depend on the regional markets. These will in turn depend on the existing transport infrastructure, although in some cases pipelines or improvements to the inland waterway system may play a part. The already fairly heavy volume of rail traffic will not increase appreciably.

As regards chemical products, the study mainly deals with sulphur and soda, and no increase in rail traffic in their case is foreseen.

Fertilizers are considered separately.

For the period ending in 1985, no substantial rise is expected in "heavy" traffic for these products, although for certain links train-load lots may account for a bigger share.

As to the conclusions to which the study points, it must be borne in mind that the study serves as a basis for the guidelines concerning transport to be included in the Sixth Plan. The conclusions cannot therefore be regarded as a decisive indication of actual future trends.

The trends noted are nevertheless

important for the period ending 1985 and should be compared with the long-term developments forecast in Chapter II.

The trends are :

- Growth of international trade with repercussions on traffic, especially in coastal areas, owing to deliveries of raw materials and installation of new plant. The effects of traffic to and from seaports and of intra-continental trade will also be felt inland.

- A radical change in "heavy" transport will result from the foregoing factors.

- "Heavy" traffic will increase in the following sectors : cement, sand and gravel, soda ash and iron and steel products. Thus, entirely different traffics will supplement those previously governed by ores and coal.

- The trend of rail traffic in the "heavy" transport sector will depend on decisions taken on the infra-structure for inland waterways.

- Moreover, the tonnage forecast for "heavy" rail traffic in the following sectors : agricultural products, oil and oil products not carried by pipeline largely depends on how far the organisation of distribution enables them to be carried in train-load lots.

- As regards "light" transport (as already mentioned local transport under fifty kilometres and consignments of less than three tons are not included) the relative share of rail and road will depend on the organisation of the transport system (e. g. improvement of rail services, re-adjustment of routing systems, development of container traffic and combined transport).

- In addition, the growing importance of international traffic in the "light" transport sector will make it necessary to consider the development of rail transport in an international context.

Finally, it may be useful to repeat a general comment made in the introduction to the study, namely that insufficient allowance is made for possible changes in producer/consumer relationships ; changes in financial and commercial structures are another uncertain factor. This means that rail traffic trends in France would depend to a large extent on commercial policy. The prospects of the railways could be decisevely affected by the type of service rendered.

The foregoing comments on the study of transport trends in France show that the general tendency, where rail traffic is concerned, is consistent with the conclusions in Chapter II.

Having regard to the special situation in France, where the infrastructure of the railway system is better developed than that of the waterways, the forecasts for "heavy" transport by rail show an increase in train-loads in a highly competitive market with the waterways on an increase in "scattered" wagon-load consignments which will depend on how this type of transport is organised to compete with road hauliers. As already pointed out in Chapter II, international traffic is specially relevant in this connection.

One or two points may be added to the conclusions in Chapter II : the pursuance of an active sales policy by the railways is most important, and it must be borne in mind that the conclusions of the French study are determined in particular, by the allocation of infrastructure costs to the different transport sectors on the basis of marginal social cost.

Chapter IV

CONCLUSIONS OF THE REPORT

1. The formulation of transport forecasts is first and fore-most a matter for the railway companies themselves. The government authorities should nevertheless draw up forecasts for their own purposes, especially where rail traffic is concerned, as these can be most useful for joint consultations.

2. In accordance with the conclusions of the Round Table to discuss transport forecasting models the methodological concepts and the concrete results achieved should be the subject of regular consultation between governments. Now that some reorganisation of rail freight traffic is to be effected, this will be more than ever necessary.

3. Some reorganisation of rail freight traffic is needed, especially where "scattered" traffic is concerned.

The railway companies should adapt their operating methods to the changes already taking shape in transport demand, having regard to the economic requirements implicit in the new situation.

4. It is essential to carry out a fuller study of international traffic trends.

The study should take account of the railways' stronger inclination towards integration, and special attention should be given to new combined transport techniques.

5. The role of the railway companies largely depends on how far they are allowed to practice an active commercial policy ; governments should enable them to pursue such a policy in their own countries and above all at international level.

It seems desirable that there should be consultation between governments and Railway administrations to decide upon the means to be adopted to this end.

REPORT OF THE COMMITTEE OF DEPUTIES ON THE PROMOTION OF INTERNATIONAL RAIL TRAFFIC

I. INTRODUCTION

At its 29th session, held on 11th June, 1969 at Stockholm, the Council of Ministers held a wide-ranging discussion, on the basis of the report [CM(69)8] submitted by the Committee of Deputies, on the directions which the E. C. M. T. 's work should take in matters of general transport policy. In several respects this discussion marked the beginning of a new stage in the work of the Conference. It emphasized not only the role of co-ordination and synthesis which the Ministers wished the E. C. M. T. to play, but also clearly showed the strong desire they felt that the studies so far carried out should conclude in concrete proposals likely to lead to the practical measures called for by that policy in well-defined fields.

In this connection the Council decided on a series of priority measures all directed eventually at improving the functioning of international transport in Europe, a primary objective of the E. C. M. T. Among these measures, which formed part of a programme of work extending over a two-year period, the Council included the promotion of international rail traffic, stressing the primary importance which it attached to this matter, firstly from the standpoint of improving the financial situation of the railway undertakings - a problem already studied from various aspects in the Conference - and secondly from a wider standpoint, with the aim of gradually achieving a land transport system in which each of the competing elements can develop according to its intrinsic advantages, in conditions that are carefully controlled and harmonized among the various Member countries.

As soon as the Council had taken its decision of principle, the Committee of Deputies laid down the procedures for carrying out the new mandate. As a first stage the Deputies thought it would be useful to consult with national Delegations in order to determine more precisely what were the elements for action by the Conference in this field.

The many replies received to this preliminary enquiry have already shown, despite the many subjects treated, that there are two main lines along which the work can proceed :

1) removal of the various administrative obstacles now hindering international rail traffic ;

2) action by the authorities to encourage the railways themselves to intensify their collaboration in technical, and above all commercial, matters (1).

Even if the work were confined to the two main lines mentioned above, it was recongnised that this would involve a very wide range of measures, some of which were already being studied in other international organisations, in particular in the United Nations Economic Commission for Europe, the International Union of Railways and also, as far as the Six were concerned, the European Economic Community.

(1) All the various elements comprised in these two lines of action are described in greater detail in document CS(69)17.

In order to avoid overlapping, therefore, it was important to take into consideration at the outset, when preparing this report, the work being done by the international organisations concerned, then to set out the present position, taking account of progress made or agreements of principle already reached elsewhere, and lastly, to select the points on which the Ministers of Transport could usefully take action which would enable other bodies to complete their work in the most favourable conditions.

It also became clear that some of the questions raised in this context were such as to come strictly within the field of transport policy and would accordingly call for action by Ministers in the interests of effective promotion of international rail traffic.

A more detailed examination of all the problems from this standpoint was entrusted by the Committee of Deputies to a Group of Rapporteurs consisting of the Delegations of Switzerland (in the Chair), Germany, Italy and the Netherlands, with the Delegation of Spain joining the Group very shortly afterwards.

The main tasks of the Group were : to analyse the conditions in which international rail traffic is carried on, to make contact with the bodies concerned, and to decide on the basis of this information what action should be recommended to the authorities as having priority.

When the Chairman of the Group had an opportunity to submit an interim oral report to the Council at its 30th session on 16th December, 1969, a further discussion took place at Ministerial level which confirmed the direction proposed for this work and also made it possible to clarify to some extent several of the points under study.

Apart from this, the discussion also showed that the measures envisaged could only embrace a part of an overall strategy which should be directed, in a wider field and a more distant future, towards research into the nature and content, with possibly a new conception, of the future European railway networks, taking into account especially technological innovations and developments. It was agreed that the Conference should also consider these aspects, but for practical reasons it was decided that the relevant studies would be conducted independently without affecting the mandate of the Group already constituted.

It must accordingly be recognised that the questions dealt with in the present report, basic thought they are, are essentially for the short or medium term, dealing rather with organisational questions than with matters involving invesment, and relating exclusively to traditional railway techniques. For this reason the report also inevitably takes up again some of the traditional problems of railway operations, which have already been studied in part for a long time in other organisations. Their inclusion seems justified, however, in such a general presentation, not only for reasons of co-ordination and synthesis which must, as was explained at the outset, guide the work of the Conference on general transport policy, but with the particular aim of providing responsible Ministers with all the elements needed for them to take the desired action in a coherent and effective manner.

With this in mind, Chapters II and III below deal successively with questions of customs and other controls affecting international rail traffic. These two Chapters come under the heading of measures for simplification of administrative formalities, while Chapters IV and V, which are concerned with the encouragement of co-operation between the railways in the technical and commercial fields, deal with improvements to be made in the passenger and freigth transport markets respectively. In conclusion, Chapter VI is a recapitulation of all the proposals submitted to the Council for positive action.

Part A

MEASURES TO SIMPLIFY ADMINISTRATIVE FORMALITIES

Among the difficulties traditionally encountered by international rail traffic, which are nowadays a handicap to its optimal development which is all the more serious since they prevent the introduction of operating methods designed to meet the requirements of interdependent modern economies as far as possible at the European level, mention must firstly be made of the series of administrative formalities usually required by government authorities at frontiers. It is in fact at the frontiers that railway techniques are at an appreciable disadvantage compared with other competing methods of transport, road and air transport in particular, since passengers and freight transported in large quantities in a train are involved in a collective operation the result of which is that the first passenger or consignment to complete the formalities has to wait until they are completed for the last passenger or consignment, which is not the case, or at least not to the same extent, with road vehicles or aircraft.

From the user's point of view, rail transport suffers from delays at frontiers which increase the total journey time for no valid technical reason ; when there are a number of frontiers to be crossed, the railways' own efforts to accelerate trains are largely or even completely invalidated because of the many often lengthy stops throughout the journey. Users do not, moreover, attribute these inconveniences to their real source - government regulations - but simply to the railway organisation.

All the other possible considerations surrounding this subject always lead to the same conclusion : that the administrative formalities at frontiers are not only an artificial and abnormal obstacle to the flow of international traffic from the standpoint of customers, and at their expense, but also contribute to an accumulation of rolling-stock at frontier stations, thus preventing optimal utilisation of the equipment.

The formalities taken into consideration are the following :

- customs inspections affecting both passengers and freight ;
- health, veterinary and quality controls carried out on entering the country ;
- police checks on international travellers ;
- technical inspections carried out by the railway administration.

While it is still in fact necessary in most cases to carry out the formalities mentioned above, all suitable means of lightening or avoiding them should be sought so as to create more favourable conditions for internal rail transport operations.

Consideration of the practical scope of various problems led the Group of Rapporteurs to concentrate its work on the first two types of controls mentioned above, which are therefore dealt with in greater detail in the following Chapters, whereas the other two categories, for which satisfactory solutions are being found, do not call for any special comment in the context of this report.

II. THE PROBLEM OF CUSTOMS EXAMINATION

1. Characteristics of the problem

Throughout the history of railways, customs examinations have formed the major part of the administrative formalities affecting international movements by rail in Europe ; especially when they are carried out at the frontier, they have many disadvantages, the effects of which may be summarised as follows :

Passenger traffic :

(i) Customs examinations are sometimes carried out twice at each frontier, which seriously inconveniences the public, especially when it is remembered that these examinations are in addition to those carried out by the police.

(ii) Examinations during the night are particularly inconvenient for travellers.

(iii) The despatch of registered luggage on international journeys does not give passengers any guarantee that it will be available to them at their destination, as only certain important stations have customs offices, and these are usually only oper for part of the day, while they may also find that their registered luggage has been forwarded to a station other than that of their destination, if the latter does not have a customs office.

(iv) The differences between the customs legislation of the various countries - with which travellers are not always familiar - also give rise to difficulties, the ultimate effect of which is to make the railways unattractive.

Freight traffic :

(i) The time for which wagons and consignments are held at frontier stations is often excessive, firstly because of the limitations on hours of work for customs clearing operations, and secondly because of the occasional need to unload freight or shunt wagons into customs sidings for detailed inspection.

(ii) Freight in transit is often stopped at the frontiers of countries which are not importing it, although simpler procedures have been laid down for such cases.

(iii) The payment of additional duty is sometimes required when customs examinations are done outside the normal hours of work.

(iv) The customs formalities are not only fairly complex and rigid, but in addition are not harmonized as between one country and another, especially in the matter of payment of duties or deposits to obtain clearance.

(v) Customs clearing points other than at frontiers are not sufficiently numerous, making it necessary to direct freight to the most important stations, at which there are very often difficulties caused by the simultaneous arrival of several consignments and the resulting congestion.

(vi) The infrastructure of frontier stations often makes it impossible to carry out the formalities adequately for all trains arriving at the frontier, causing long delays to rolling stock at peak periods.

(vii) The checking of freight loaded in large containers often makes it necessary for a wagon to be taken out of the train - a comparatively long and complicated operation - to enable containers with only end doors to be opened.

2. Analysis of work accomplished

The list of points given above does, however, call for some explanation in the sense that some of the disadvantages no longer apply systematically to all international rail traffic in Europe, but often arise according to local conditions. Their practical importance consequently varies greatly according to what route is considered. It should also be pointed out that the various authorities concerned have been very active in studying the problems of customs examination procedures, and ways of remedying them, in recent

years. Substantial progress has also been made compared with the situation in the past, especially in connection with passenger traffic, in which conditions generally appear to be fairly satisfactory today thanks to simplifications introduced either generally or through bilateral agreements between neighbouring countries.

This observation is less true for freight traffic, a field in which the authorities are engaged in looking for suitable solutions to the difficulties still outstanding. Here too, progress has admittedly been made and the work accomplished is already bearing fruit. There are nonetheless a number of general or particular problems calling for energetic action by governmental authorities.

If we try to list the results achieved so far, reference must first be made to the fairly close international co-operation existing in Europe in customs matters thanks to the work of the European Communities, the Customs Co-operation Council, and the United Nations Economic Commission for Europe, which has usually carried on a liaison with the International Union of Railways.

As far as the Common Market countries are concerned, the procedure already introduced for transit within the Community now makes it possible for trains to cross the frontiers freely on journeys from one to another of the Six countries. Mention may be made of an event which took place in January 1970 that is a genuine landmark - the despatch of the first international freight train running under Community transit regulations and linking Paris with Rotterdam without any frontier stops at a commercial speed of over 60 kilometres per hour. Work is also going on at Brussels on substantial simplifications to the procedure for despatch under customs seal, which are expected to come into force before 1st April, 1971.

As for the measures taken on a wider European scale to accelerate or reorganise customs operations, particular mention must be made of the following conventions concluded under the aegis of the Inland Transport Committee of the United Nations Economic Commission for Europe :

a) international convention to facilitate the crossing of frontiers by travellers and their luggage transported by rail (1952) ;

b) international convention to facilitate the crossing of frontiers by merchandise transported by rail (1952).

In this context, mention may also be made of two other conventions, one concerning the spare parts used in repairing E. U. R. O. P. wagons (1958), and the other relating to the system of palettes used in international transport (1960), both of which had the effect of avoiding formalities and the payment of guarantees, duties or taxes.

The conventions mentioned under (a) and (b) above each contain an annex consisting of an international customs declaration form (T. I. F.), designed for use under international transit regulations. This document, which is amended from time to time as requirements change, is used not only by the contracting parties to the two conventions - to which some of the E. C. M. T. Member countries have not adhered - but also by most of the other European countries in accordance with the recommendation of the Economic Commission for Europe.

In addition, the E. C. E. Working Party on customs questions affecting transport has been informed of certain procedures worked out in the Netherlands and the Federal Republic of Germany. These procedures have made it possible to abolish the requirement in those countries for the international customs declaration form on the T.I. F. model for freight covered by an international waybill on entry, this being possible as a result of agreements between the customs and railway administrations in virtue of which the latter have undertaken to guarantee the re-despatch of marchandise or its submission to customs and

thus ensure that all operations are carried out in accordance with customs requirements. Inspired by this example the Working Party adopted, in 1966, Resolution N° 17 recommending governments to take steps to make simplifications comparable to those made in the two countries just mentione for freight transported by rail under cover of an international waybill established abroad, especially in the following cases :

1) direct transit, leaving the country by rail ;

2) despatch to customs offices within the country, including ports.

Meanwhile some countries have taken effective measures in the terms of Resoltuion N° 17, while others have introduced comparable simplifications and others again have expressed their intention of doing so. In all, the majority of the Member countries of the E. C. M. T. have thus already introduced substantial simplifications in this respect or have firmly decided to do so.

It may be hoped that the provisions of Resolution N° 17 will shortly be extended to cover exports.

These measures of simplification, which can be adapted with all the desired flexibility to the conditions of each country, make it possible to use railway accounting documents for customs examination purposes and consequently to abolish specifically customs documents and examinations, for the types of transport covered by Resolution N° 17. The result is a reduction in the number of formalities and in delays at frontiers.

3. Proposals for action

The definition of what precise action should be taken in the light of this survey calls first of all for a clear distinction between the passenger and freight sectors.

Concerning the passenger sector, while there are still major inconveniences on crossing certain frontiers, the abolition of these calls rather for ad hoc measures than for concerted international action. The most practical and effective way of dealing with these cases would seem to be the conclusion of bilateral agreements between neighbouring countries on each problem (for example : the combining of the police and/or customs examinations to be carried out by the authorities on each side of the frontier, etc.).

As far as the freight sector is concerned the importance must firstly be stressed, for the reasons mentioned above, of support for Geneva Resolution N° 17 by the Ministers of Transport, who should see to it that its implementation is extended to all the E. C. M. T. Member countries.

The adaptation of customs clearance operations for freight to the requirements of modern railway operating on a European scale also calls, however, for a series of other measures, particularly on certain international routes where serious inconvenience is still encountered. In order to overcome this as far as possible, an attempt must be made to find the method of alleviating it that is most appropriate to the nature of the difficulties.

As the cases are in fact quite varied, the Group of Rapporteurs is obliged to deal with the question in a somewhat abstract manner, making purely indicative proposals designed to give general guidance as to the work to be done, some of these proposals being irrelevant to several countries but of greater significance for others. In this connection the Group suggests that the following possibilities be examined :

1) Customs frontier formalities should systematically be made more flexible, in particular by :

a) introducing as far as possible in practice the principle of customs clearance within national territory, making the procedure more general

whereby freight is despatched to suitably sited customs offices within the country, measures which would in themselves appreciably ease the situation by avoiding prolonged waits at frontiers ;

b) arrangements corresponding to those for transit among the six countries of the Common Market should be extended to all the E. C. M. T. Member countries, so that movements of freight should be exclusively on the basis of examinations at the customs offices of the point of departure and the destination ;

c) in cases where the procedure of examination at a frontier station has to be retained, the railway and customs documents relating to the consignment should be sent to those stations before the wagon arrives, to enable customs formalities to be completed more quickly ; it should also be agreed that wagons may leave a frontier station before the formalities are complete on the understanding that the administrative documents may follow the merchandise to which they relate.

2) Measures should be taken to ensure that the strength and hours of work of staff carrying out customs examinations are adapted as well as possible to the timing of international rail movements, which implies that :

a) the strength of customs officials available must take greater account of variations in the volume of traffic, especially at peak periods ;

b) the working hours of these officials should correspond to those of the railways (which operate continously throughout the 24 hours) ;

c) in addition, in stations where the customs office is not continously open, railway staff should have authority delegated to them by the customs so that they may examine and clear luggage not containing any dutiable articles.

3) The infrastructure at frontier stations and terminal stations whithin the country should when necessary be better adapted to the evolution and groth of international rail traffic so that there is adequate equipment (track, platforms, equipment for loading and un unloading, depots, etc.) for customs clearance operations to be carried out more rapidly.

Finally, the Group of Rapporteurs draws particular attention to the problems raised not only by customs examinations but by all the administrative procedures applying to international transport by rail containers. As these problems are being dealt with in greater detail in the Group on combined transport, it should suffice here to recall that the customs Convention on containers of 18th May, 1956 concluded under the aegis of the Inland Transport Committee of the United Nations Economic Commission for Europe is at present being revised. This revision provides, among others, for a simplified-type approval procedure for containers.

It remains, however, to recommend that the railway systems be empowered to guarantee also the additional journey carried out on road vehicles in the case of container transport in the same way that road hauliers are entitled to guarantee the parts of a journey for which containers are transported by rail as part of a mainly road journey.

III. THE PROBLEM OF THE OTHER EXAMINATIONS AFFECTING INTERNATIONAL RAIL TRAFFIC

1. The practical scope of the problem

While reference has been made above to the many inconveniences arising from customs formalities, the same difficulties arise in similar fashion in connection with the various other examinations mainly affect certain merchandise and produce such as nuclear fuels, live animals, products of animal origin (such as meat, hides and skins), animal fertilizers, fertilizers and fodder of animal origin, plants, fruits, vegetables and cereals.

In fact, the problem with which this Chapter is concerned is on the whole

much more serious, as the task of bringing greater flexibility and harmonization to the widely differing national regulations in Europe still leaves much to be desired, whereas as we have already seen, some progress has been made in the customs field in recent years.

In this connection it is to be regretted that there is no international body similar to the Customs Co-operation Council which would be responsible for co-ordinating work on health and veterinary inspections. Moreover in the Common Market countries, with the prospect of abolition of customs frontiers, this type of control is taking on added importance as it will in the long run probably be the only remaining administrative formality on traffic within the Community. In trade with and among the other E. C. M. T. countries however, these inspections also hamper international traffic - particularly by rail - when frontier stops are prolonged owing to the cumulative effect of several examinations carried out separately for different purposes, but with the same practical disadvantages.

Work has been started on this question, so far under the aegis of the European Economic Community and the United Nations Economic Commission for Europe. The following paragraphs give a brief summary of the present situation.

2. Work done in the European Economic Community

a) Veterinary inspections

The veterinary examinations which always take place at the frontier on live animals are for the purpose of preventing the introduction of animal epidemics into the country concerned. Within the European Economic Community there is already a principle applied to imports of cattle and pigs making veterinary examinations at the frontier compulsory in a first stage, as in the past, even in the case of transport between one Common Market country and another. It is therefore not to be expected that such inspections can be abolished in the near future, even for trade within the Community. For the moment, the alternative of recognition of health certificates of the exporting country has been abandoned because of the possibility of diseases whose presence cannot be known for certain when the animals are despatched (incubation period, contamination during transport).

b) Meat health inspections

The purpose of these health inspections is to protect the population against disease germs in meat for human consumption. In this connection some directives have been laid down in the European Economic Community. Although the Common Market countries are aiming at liberalisation of trade in fresh meat among themselves, on the basis of reciprocal recognition of health certificates issued by the exporting country, these directives still provide for frontier controls to be maintained in future even for traffic within the community.

It must also be mentioned that the Commission of European Economic Community is at present preparing a directive applicable to countries outside the Community ; the Six countries are unanimous in believing that it is impossible to abolish inspection on entry into the Community when meat is being imported from other countries.

In this connection it should be pointed out that the relationship between the Community and other countries in the field we are studying gave rise to a discussion of principle among the Group of Rapporteurs. The discussion showed how advantageous it would be to introduce a procedure whereby the views and fundamental positions of third countires could at least be taken into consideration before negotiations being carried on within the Common Market were completed. In order to institute such a procedure - which would also be desirable in connection with other problems - the E. C. M. T. is, in virtue of the

co-ordinating role it has acquired, a particularly suitable forum in which there could be dialogue and exchanges of views in the sense we have indicated between the countries of the European Economic Community and the other Member countries of the Conference.

Lastly, to revert to the subject of actual health examinations, the methods used in practice by certain countries for merchandise sent by rail appear to deserve special mention as they open the way to possible immediate improvement in this matter, without prejudging solutions to be found in the longer term. In these countries the customs authorities, after checking the health certificate issued by the despatching country, direct the consignments concerned under customs seal as soon as they have crossed the frontier to a meat inspection centre within national territory at which inspection of the actual merchandise is carried out. The exporters may however choose the place at which the inspection is to be made, and it is therefore not impossible even in these cases that the administrative procedure involved may be added to all the formalities to be carried out at frontier stations.

In any event there is no likelihood of a general abolition of such inspections in the near future, even for trade within the Community.

c) Plant health inspections

The inspections carried out on certain plants or parts of plants are for the purpose of protecting domestic flora from harmful organisms, i. e. dangerous disease carriers and parasites, or to limit their spread which is regarded as a constant source of danger. These controls have their legal basis in the domestic legislation of various countries, but such a basis is still lacking at the level of the European Economic Community. Since the recent adoption of directives in this matter, however, it is to be hoped that a gradual abolition of inspection will come about during the next two to three years as far as inter-Community trade is concerned, with recognition of health certificates issued by the despatching country. There is however no reason to expect that such controls can be abolished for trade with countries outside the Community.

The same observations could be added here concerning the desirability of consultations between the Six and other countries when new regulations are being prepared for the Community.

d) Quality controls for fruit and vegetables

These controls are intended to see that quality standards are complied with in trade in fruit and vegetables. As far as inter-Community trade in these goods is concerned, the Common Market countries are required by Regulation N° 158 of the Council dated 25th October, 1966 to ensure that the commonly agreed quality standards are applied in practice with the help of controls carried out on the domestic market.

In virtue of Regulation N° 80 of the Council, observance of the Community's quality standards is compulsory also for fruit and vegetable imports from third countries, and these must consequently be verified with the help of frontier controls in the first importing country of the Community.

In these circumstances the Group emphasizes the advantage, from the point of view of alleviating delays, of having these controls carried out as a rule by sampling at the point of customs clearance.

3. Work done by the United Nations Economic Commission for Europe.

After the Working Parties on :

- transport of perishable goods ;
- customs questions affecting transport ; and
- the Railway Transport Sub-Committee of the Inland Transport Committee of the Economic Commission for Europe.

had done some preliminary work on the question of delays due to examinations of the international traffic, the Inland Transport Committee decided as early as 1960 to appoint a Group of Rapporteurs to examine the possibility of simplifying quality, veterinary, health and plant health inspections carried out at frontiers.

The first meeting of this Group, held in 1966, finally led to the drawing up of an inventory of the situation. Concerning the difficulties encountered at certain frontier posts, affecting both rail and road transport and due to the controls carried out at these frontiers, it was agreed that the U.I.C. and the I.R.U. would at a later meeting submit a report setting out, on the base of actual cases, various circumstances involving delays and disturbance to transport of live animals and vegetables and other agricultural products.

A further meeting of the Group of Rapporterus held in 1967 brought no new elements to the problem of how the controls were applied. Following a broad discussion the Group of Rapporteurs drew up some proposals on the basis of which the Internal Transport Committee asked governments progressively to arrange for health inspections of imported fruit and vegetables to take place within the country, as far as possible and in accordance with national regulations, and even possibly to recognise certificates issued by exporting countries.

In addition, as far as health control formalities at frontiers (for live animals and food products of animal origin) were concerned, the Group of Rapporteurs received a proposal setting out the principle to be adopted in simplifying such formalities. More detailed consideration of this question finally led the Inland Transport Committee to adopt a Resolution (N°. 212 of 13th February, 1969) in which governments are recommended in particular :

- to promote, as necessary, harmonization of the work of customs and veterinary services at frontier posts of adjacent countries ;
- to provide, when appropriate, that customs and health or veterinary inspections be carried out in the same installation, either at the frontier or within the country.

By the same Resolution governments were invited to communicate to the Executive Secretariat the measures taken in implementation of the provisions just mentioned.

In addition, the work of the Group of Rapporteurs with special responsibility for simplification of the formalities dealt with in the present Chapter was suspended pending the results of the work being undertaken by the European Economic Community. Some progress having been made meanwhile in this matter in Brussels, it now seems highly desirable to arrange for the work in the United Nations Economic Commission for Europe to continue, since that Organisation more than any other is the most suitable framework for seeking a solution to these questions on a truly European scale.

4. Proposals for the Council of Ministers

The present state of work on veterinary and health inspection procedures clearly suggests that no substantial alleviation of these formalities can be expected in a foreseeable future in Europe. On the contrary, the more progress is made in gradually harmonizing and simplifying customs examination procedures, the more it is to be feared that the controls we are considering here will remain as the only real obstacle to the smooth working of international rail traffic.

The various countries admittedly have a legitimate desire to make all the necessary arrangements to protect their own flora and fauna from infection. It is nonetheless important to consider how far this objective could be attained by

methods other than those now practised.

One might hope to begin by establishing closer co-operation in this matter between the Member countries of the E.C.M.T., if not all the European countries - a prior condition for making general progress - which should be based on the results, comparatively modest though these are so far, of the work of the European Economic Community and the United Nations Economic Commission for Europe, and also on the modernised procedures already in force in certain countries.

Because of the complexity of the questions to be dealt with, the Group of Rapporteurs feels it best to group its proposals to the Council of Ministers under a number of general headings which could guide further work.

It is accordingly recommended that :

1) work on this question should be resumed in the Economic Commission for Europe as soon as possible, and continued with perseverance, taking into account agreements meanwhile reached between the countries of the European Economic Community, with the purpose of harmonizing and as far as possible relaxing, the regulations of the various European countries on inspection of food products of animal and vegetable origin ;

2) the member countries of the Common Market should, when drawing up their regulations, take into consideration as far as possible the position of other countries belonging to the E.C.M.T, and should set up a permanent system of consultation with those countries within the Conference ;

3) in particular, inspections should as far as possible take place away from frontier stations, within the country, and should coincide with customs clearance operations ;

4) the Member countries should lay down uniform principles for carrying out plant health and quality controls, particularly in regard to the recognition of certificates issued by exporting countries, for transit and for imports, the duration of validity of such certificates depending on the nature of the products being transported, and any detailed arrangements for carrying out sample checks (a percentage of goods to undergo inspection, or any other statistical criterion) ;

5) as a subsidiary question, in the absence of a general agreement in Europe, the Member countries should examine the possibility of reaching understandings on the basis of regional agreements or agreements between countries whose national regulations are already sufficiently similar, enabling all possible improvements to be made in the conditions now imposed on international rail traffic ;

6) the Member countries should pay particular attention in their discussion of measures to be taken, to the conditions of transport of large containers by unit trains designed to provide especially regular and rapid transport of international consignments.

Part B

MEASURES TO STIMULATE CO-OPERATION BETWEEN THE RAILWAYS IN THE TECHNICAL AND COMMERCIAL FIELDS

Whereas the measures considered in the preceding part concerned the relaxation of administrative obstacles created by governmental authorities, the following chapters deal with a field concerning the railways themselves in which their commercial interests are directly involved and where the role of governments must be confined mainly to encouraging new formulae for exploi-

ting fully the advantages inherent in railway techniques in international traffic, with a view to promoting the optimum use of these techniques ont the European continent in the context of the transport economy as a whole.

From this standpoint, the idea of promotion of international traffic implies two approaches in principle : one is technical, and concerns the concept of a veritable European railway network harmonized as to its principal elements and consisting of the major lines of communication with standardized equipment, while the other is concerned with a stronger commercial organisation (which may even be integrated for certain specific activities) of the international service provided by the railways.

With regard to the technical problems, the Group thought it advisable to consult the U. I. C. in order to prepare a map showing the lines which are of international interest for present traffic, with their main characteristics, especially as regards the restrictions imposed by local under-equipment (limitation of train tonnage, axle-loads, speeds, etc.) This map would initially simply illustrate the status quo but might become more dynamic if it were later used as a basis for working out a future international network able to deal with communication requirements between the various regions of Europe both in the centre and on the periphery, through a carefully balanced system allowing for the introduction of new high-speed techniques and possibly providing for inter-continental connections in East-West communications (links with the Trans-Siberian line and with the new lines constructed in the Near and Middle East). Consideration will have to be given in this second stage to the way in which the definition of such a network might at the same time, by analogy with the major international European highway and waterway networks, constitute an obligation on the countries concerned to equip these main lines according to uniform standards.

Still on the technical level, it will probably also be necessary for the Ministers of Transport to encourage greater concertation between the railways as regards their basic options and on the nature, scope and timing of their investments, with a view to facilitating the search for uniform solutions. Such concerted efforts should be made in particular in the matter of rolling stock, automation of the various processes of railway operation, safety devices (including remote control of trains) and more generally speaking the application of new technology.

However, in view of the limits to the work it can do within the time allowed, the Group feels it must inevitably confine itself here to simply mentioning these problems without going into the details of the topics referred to, which, like the preparation of the map of major international lines, should be tackled in the second stage of study.

As regards the aspects of commercial co-operation between the railways, the philosophy of the present report is based on two fundamental observations. There is first the fact that the present system of operation is still mainly characterised by the preoccupation of each network with its activities in the national framework and that it has never taken on the industrial dimensions appropriate commercially to a really trans-national scale, which can no doubt be explained by the singular phenomenon that the railways are the only form of transport which do not export their services across national frontiers. The second no less important observation inevitably reaffirms the generally accepted principle of the independent administration of the railways and implies their own responsibility in the matter concerned, so that the role of government departments should be to determine the main objectives.

Nonetheless, while the railways enjoy independence at national level, they can derive real benefit from encouragement from the Ministers of Transport towards stronger co-operation at interna-

tional level. This applies particularly in the tariff fiels, a vast complex some of whose aspects will be discussed in the chapters that follow, but it is also valid more generally with regard to the efforts made to achieve greater commercial co-operation, where there are of course certain difficult stages and where the critical threshold is sometimes blocked at the level of the undertakings themselves so that the encouragement to cross it has to come from the governmental administration.

This is the overall context of the selective measures described in the following chapters. While these measures certainly need to be supplemented at a later stage of the work, they have been chosen with a view to making tangible progress as rapidly as possible in practice.

IV. THE PASSENGER TRANSPORT MARKET

Obviously, any commercial activity carried on on modern lines should be based first on the fundamental needs of the existing or potential clientèle and therefore guided by market conditions.

With this in mind, various Member countries have carried out surveys among users. This consultation could be regarded as a first stage which should be supplemented by a more scientific type of study ; to this end, the U.I.C. should be asked to undertake motivation studies which leave aside the present characteristics of supply and concentrate on the characteristics of demand, i.e. they endeavour to find out present and future users' wishes, even when these are still more or less unconscious, concerning all forms of international transport in order to determine how the railways can in future meet these wishes through new concepts of operation.

The above-mentioned surveys have made it possible to collect, notably through the official tourist agencies and their branches, a number of constructive criticisms of fundamental interest which could be grouped under general headings (attractiveness, convenience, tariff structure). However, it is perhaps preferable to enumerate all the wishes expressed on behalf of users without classifying them in order of importance, in order to avoid selecting abstract criteria only, such as speed, comfort, quality of service, etc., which cannot possibly be in dispute, and also for the purpose of later taking up those items in the catalogue of possible improvements which would not be the subject of proposals for concrete action by the E.C.M.T. in the first stage. In point of fact, psychological factors play a very important part in the promotion of passenger transport, and measures of apparently secondary importance can sometimes have a decisive influence on passengers' choice of the railways as against competing forms of transport.

1. List of desires obtained from a survey among bodies representing users

(i) Despatch and transfer of luggage : the measures proposed range from the transport of luggage in departure, arrival and connection stations (provision of mechanical devices, separate routing, perhaps underground, by the railway itself, etc.) to complete railway responsibility from one end of the journey to the other, free of charge for up to 20 or 30 kg in international traffic ; reference is also made to the speeding up of the registration and delivery of luggage, grouping of luggage by destination on certain trains with centralised delivery on the platform (the "Settebello" system) and the possible introduction of a door-to-door service.

(ii) Structure of timetables : a greater number of fast comfortable trains not only between major cities ("Inter-city") but also to the main tourist resorts ; extension of the system of interchangeable or varying gauge axles to sleeping cars ; trains comprising through-coaches for the whole journey covered by organised groups ; regular time intervals on certain services ; a greater number of car-sleeper trains ; promotion of train cruises ;

reduction of the stopping times of international trains in the same way as for the Trans-Europ-Expresses.

(iii) Air-conditioning on all international trains and essential improvements in cleanliness and hygiene.

(iv) For relatively long journeys provision of additional "free" seats in sightseeing coaches, lounge bars, sale of newspapers, etc.

(v) Fares : preparation of an ad hoc international tariff which is not simply the result of combining national tariffs (possibly with a differential based on competitive conditions on particular lines) ; extension of the Eurailpass (*) to European users and to second-class passengers ; door-to-door fares including other forms of transport (combined train-air-bus tickets) ; standardization of fare conditions and reductions (standard age-limits for the 50 per cent reduction for children and the 25 per cent reduction for adolescents, standard reduction for return journeys, standard ratio between first and second class fares, standardization of the period of validity of international tickets), with a view in particular to facilitating passengers' budgeting for travel expenses and their choice between the various forms of transport ; introduction of lower "off-season" fares and general application of special fares for families.

(vi) Simplification, standardization and acceleration of the reservation procedure ; inclusion of the reservation fee in the cost of the ticket.

(vii) Simplification and standization of fare reduction and refund procedures without charge.

(viii) Improvement of restaurant-car services : additional low-cost menus, introduction of new methods (made-up meal trays, self-service), inclusion of meals in the cost of transport for certain night trains (e.g. the "Palatino") or for long distances ("mobile hotel" concept).

(ix) Competitiveness of sleeping-car charges as compared with hotel rooms ; reduced fares for families on car-sleeper trains.

(x) Improvements in passenger information concerning delays, connections, etc., especially by means of loudspeakers in the carriages instead of the often unintelligible announcements made on stations.

(xi) Publicity in newspapers and periodicals, with the actual fares for certain currently popular intineraries.

(xii) More attractive stations, including ancillary services (customs offices) ; escalators to platforms, hotel reservation service, station hotels.

(xiii) Internationally standardized and, where appropriate, increased rates of commission for travel agencies.

(xiv) Introduction of rail connections with the major airports, not only for access to urban centres but also providing trains for air passengers direct to other cities and to tourist resorts.

2. Trends revealed by the survey and guidelines for future action

a) Priority factors

It is interesting in this connection to sum up the desires most frequently expressed in the survey whose main findings are described above and compare them with those obtained from a survey carried out by the Swiss Delegation among the foreign branches of its National Tourist Office :

- Generally attractive conditions : increased speed, greater comfort, tariff simplification, cleaner carriages.
- Convenience : light trains at

(*) European tourist ticket for the use of persons permanently resident in certain non-European countries.

regular intervals, more through-coaches for group journeys, easier connections, handling of luggage under similar conditions to air travel.

- Fare structure : standardization of the age-limits for reductions for children, greater standardization of international fares, sale of the Eurailpass in Europe.
- Improved restaurant-car services, lower prices, new car-sleeper services, introduction of train cruises.
- Competitiveness of night services : fixed overnight sleeping-car charges, greater comfort, more "couchettes" for long journeys.
- Special services and other suggestions : introduction of "inclusive" rates, free transport of luggage, improvements to the seat reservation system, improved passenger information especially by loudspeakers on trains, more dynamic and specific publicity.

b) Comparisons with other forms of transport

The following criteria of comparison may be applied to land transport :

- Inland waterway navigation offers its own conditions of relaxation and does not call for any competitive measures from the railways.
- The private car has something of the same characteristic (individual transport with no obligations as to timetable and itinerary, constant privacy throughout the journey) ; but the railways can compete with it by offering certain services (elimination of long access journeys thanks to car-sleeper trains ; possibility of "radiating" at the place of destination by hire-cars provided at stations ; reduction of the cost of transport per passenger unit thanks to the general application of reductions for children, adolescents and families ; new facilities for despatching luggage from one end of the journey to the other).
- Transport by motor coach is competitive as compared with the railways insofar as it does not offer the intrinsic advantages of the private car mentioned above ; its major asset is for group travel with the "inclusive" formula, where passengers and luggage are taken care of throughout the journey and at all stops. More participation by the railways in inclusive tours and the promotion of cruise trains might be effective means of retaining or attracting this type of clientèle.

But the user's preferred standard of comparison is air travel ; this observation is almost unanimous and the order of priority for future action must be based on it.

The railways' policy should be to make the most of the advantages of the train over the aeroplane, bearing in mind that competitiveness depends on the length of the journey in terms of time and the cost of transport (this latter factor can in some cases increase the competitive distance of the railways if they can offer much more attractive fares) but also to a large extent on the degree of modernisation of the service which is offered to customers. This applies both to the attractiveness of rolling stock (including its cleanliness and the information and relaxation facilities provided for the user) and to the degree of modernisation of the buildings at termini, a field in which the railways are very often the victims of their own past. On the other hand, the advantages of the railways include easier access to terminal buildings, the reservation of specific seats for continetal journeys, the elimintation of waiting time before departure and, above all,

the freedom of movement which the passenger should be able to enjoy on a train. In this connection, comparison of the total time for a journey by rail or air (which in the latter case includes the journey to the airport and waiting time before departure, etc.) may well overlook an important psychological factor : i.e. that the passenger on a train remains confined to the same seat throughout the journey especially on trains which have no carriages with a lateral corridor, apart from a possible meal in the restaurant car. After a number of hours' travel the advantage of having a specific seat may become a source of annoyance ; this remark raises the problem of the provision of additional "free" seats on long-distance trains (lounge cars, sightseeing car as on the "Rheinglod", etc.), on condition that the inclusion of these coaches does not compromise the profitability of such trains.

Provided that the intrinsic advantages of the railways are put to proper use, the main purpose of promotion measures should be to offer the user a "jouney without a hitch" on advantageous terms, especially for families.

3. Action recommended

When action is being planned to promote international railway passenger traffic, emphasis should first be put on the importance attaching to the impetus which ought to be given to greater co-operation between the railways at technical and commercial levels. It should also be pointed out that if the action planned in the context of this co-operation is to be carried out on modern lines it must allow as much as possible for the fundamental desires and, where necessary, complaints of users.

Generally speaking, two main groups of problems emerge from all the considerations set out above : those which have to do with the system of tariff-fixing and necessitate the simplification as well as the greater harmonization of that system, and those which concern the complete organisation of international traffic.

However, owing to the extent of the problems mentioned and with a view to obtaining concrete results quickly through E.C.M.T. action in certain specific fields that are considered to be most urgent in the present context, it is necessary to proceed by stages and to choose three priority measures, for example, which might be adopted at Council of Ministers level, while at the same time continuing to study subsequent action.

a) As already mentioned, it would be highly desirable to go into the matter of standardizing the bases and terms of international passenger transport fares. Those concerning the age-limits for the reductions granted for children are especially important. The opinions of Member countries may of course differ as to whether this is a matter for which the railways themselves or governments are responsible. In fact, it is quite apparent that at multilateral level the International Union of Railways comes up against obstacles which are difficult to overcome owing to the great variety of commercial policies and national interests involved. The E.C.M.T. could give a decisive impetus to the solution of this problem and in sponsoring it prove the efficiency of European intergovernmental co-operation. In accordance, with the general transport policy principles which inspire all of the E.C.M.T.'s work, such a measure should be considered essentially from the point of view of commercial promotion and the boost which this ought to give to international rail traffic. In view of the competition from the private car and air travel, standardization of the age-limits for reductions granted for children is not only the first element of a dynamic policy to persuade families to use the railways, but also the first step towards the tariff simplification which is indispensable if the user is to be able to calculate easily the cost of rail journeys and to choose between the various itineraries for the same international route.

Comparison with air travel and between E. C. M. T. Member States shows the following picture at present :

	50 per cent reduction for accompanied children
a) I. A. T. A.	2 to 12 years old
b) Railways	
C. I. V. (*)	5 to 10 years old
Germany	4 to 10 years old
Austria	4 to 15 years old
Belgium	4 to 12 years old
Denmark	4 to 12 years old
Spain	4 to 12 years old
France	4 to 12 years old
Greece	4 to 12 years old
Ireland	4 to 14 years old
Italy	4 to 14 years old
Luxembourg	4 to 10 years old
Norway	4 to 15 years old
Netherlands	4 to 12 years old
Portugal	4 to 12 years old
United Kingdom	4 to 14 years old
Sweden	4 to 12 years old
Switzerland	6 to 16 years old
Turkey	4 to 12 years old
Yugoslavia	4 to 12 years old

The aim might be to fix a standard age-limit of 6 to 16 for all European international lines. It might be objected to this of course that it could entail a loss of earnings for the railway companies, but recent experience in certain countries with the application of fare reductions for particular categories of passengers leads rather to the conclusion that a step in this direction is much more likely to be reflected in a positive balance both as regards the utilisation of capacity offered and finally the financial result.

b) The consultation mentioned at the beginning of the present chapter shows that when comparing the advantages and disadvantages of the various forms of transport, users put special emphasis on the convenience of luggage transport by air and motor-coach as compared with carriage by rail. In rail travel, the passenger very often decides not to register his luggage because of the time the operation takes at the ticket office and the fear of delays in transport and the additional charges ; he therefore resigns himself to taking his luggage with him with all the difficulties that this entails in the carriage and at connection stations. In view of the special structure of railway operation (intensity and diversity of traffic, short intermediate stops, etc.), the problem is a very complex one ; it nonetheless calls for priority action if the intention is to implement a promotion policy based on the major motivations influencing the passenger's choice. Concrete proposals can only be made on the basis of an overall study by the International Union of Railways ; this organisation is of course already examining the various aspects of the problem, but the desire of governments to reach a new solution in the near future must be proved at governmental level by an E. C. M. T. decision.

c) The survey has shown that the surcharge made for the use of sleepers is considered to be too high on many routes and compromises the competitiveness of the railways as compared with air travel.

In view of the forthcoming expiration of the contract between the railway companies and the International Sleeping Car Company, priority should also be given to a review of the tariff structure in this field. The aim should be to charge a fixed price per night instead of a charge calculated according to distance ; this price should correspond to that for a night in a first-class hotel in the case of single compartments and in a moderately-priced hotel for two - or three-bed compartments.

V. THE FREIGHT TRANSPORT SECTOR

The data concerning the expansion

(*) The lower limit may be lowered to 4 years ; the upper limit may be higher.

of international freight transport show a slower rate of increase for the railways than for road and inland waterway transport.

Yet it is important that the railways should hold their ground on the international transport market and improve their position as much as possible, the advantages of rail transport being mainly apparent on long-distance hauls. In Europe, "long-distance" is usually synonymous with "international".

It must therefore be seen whether the railways can keep their footing on the international freight market, which is itself at a fast expanding stage, whether they can improve their position on the lines indicated and, if not, why not.

If we take this last point first, it may be appropriate to recall the whole series of problems relating to administrative formalities that are set out in Part A of this paper. As already pointed out, these problems chiefly affect the freight transport sector, and that is why emphasis must again be laid on the resulting hindrances for railway operations and the measures recommended to deal with them. This has a crucial bearing on the promotion of international traffic, especially in the field discussed below, and it should always be kept in mind even in cases where the following comments are more specifically directed to other outstanding issues.

These other issues deserve careful attention from the Minister of Transport nonetheless, especially as the distinction that used to be made between the operating conditions laid down by government authorities for international rail traffic on the one side, and the development of marketing activities which theoretically fall within the railways' own responsibility on the other, is found to be a somewhat arbitrary one in the light of the true situation in most countries : important restrictions on the commercial freedom of the railways still remain, especially in the freight transport sector, as a consequence of government measures or attitudes.

In this connection, one need only mention the limitations on the railways' independence as regards price formation, the possibility of making agreements on rebates, quite apart from the constraints to which the railways are still subject.

1. Development of a fresh approach to commercial co-operation between networks

Notwithstanding the inter-relationships involved in decisions to be made jointly by governments and railways for the promotion of international freight traffic, it seems advisable that the leading role in this respect should go to the railways. It is on them that lies the main responsibility for working out new marketing strategies and the corresponding practical arrangements taking all the necessary steps to put them into effect and striving constantly for international co-operation in such a way as to overcome the division of activities and interests which have hitherto too often been hedged in by national boundaries.

With reference to this point, the railways should refrain from taking unilateral operating measures which might affect other European networks without consulting or at least notifying them soon enough beforehand to enable them to provide for necessary adjustments.

More generally speaking, as in the case of passenger traffic, the new commercial strategy to be applied at international level should be devised on the basis of a market study covering shippers and exporters in the European countries so as to determine, in the light of users' wishes and requirements, the criteria with which international rail services would be expected to comply in future. To get an overall picture of the prospects, the study should cover - as in the case of passenger transport - the entire economic sector concerned, irrespective of the shares accounted

for at present by competing modes and regardless of the existing characteristics of the service provided.

This no doubt implies investigations of very wide scope in order to give clearer guidelines as to what should be done in a variety of fields ranging from price formation, improvements to quality of service, acquisition of new equipment (and more particularly specialised equipment), diversification of railway activities, etc.

All these questions are interconnected for it is quite conceivable that some users are not prepared to pay for a railway service of better standard, which would imply something like a cleavage between so-called "cheap transport" (boats and trains) and so-called "high quality" transport (lorries and aircraft). But it must also be borne in mind that some improvements in quality of service may entail higher productivity ; for instance, quicker hauls mean a better wagon turnround and a bigger specialised fleet reduces handling costs.

It must in any event be emphasized that the harmonization of marketing policies and instruments is all the more important because the railways are faced with increasingly strong competition. Despite the efforts made in this respect by the railways, notably within the U.I.C., it must be regretted that international co-operation between them is not commensurate with the needs of the market situation, and it thus becomes part of the E.C.M.T.'s concern to stimulate such co-operation.

The facilities offered by road haulage - the main competitors of the railways - could give useful guidance for the kind of co-operation under review. Briefly, the advantages of road haulage freight transport, as compared with rail, lie in the fact that, even for international traffic, the user has to deal with only one "opposite number" who not only provides a fast door-to-door service, but also applies a through-charge for international hauls, is able to inform the user of the terms of carriage at once - without previous and sometimes lengthy consultations with some foreign correspondent - and, above all, can guarantee a fixed delivery date beforehand, which is what seems essentially to determine the user's choice.

Without looking into the details of all this, and without anticipating the result of a market study on the subject, a number of points on which progress could be made if railway co-operation were strengthened can already be traced. Such points include :

- institution of international goods rates (a problem dealt with at greater length in Section 2 below) ;

- various improvements to the quality of service for international traffic, as regards the technical and commercial organisation of the services concerned, their smooth operation, their speed, the guarantees given beforehand as to their performance and, more especially, the promotion of door-to-door services together with the application of combined transport techniques as required.

Generally speaking, stress should be laid on the measures to be taken in fields where the railways are able to handle traffic which is justified from an economic and commercial angle. Hence it is on the basis of the reorganisation of freight transport which the European railways are at present engaged upon, that the policy of the E.C.M.T. should be determined, due regard being paid to the tendency towards the concentration of freight transport on unit-trains and large rakes.

2. Action concerning international goods rates

Since 1947, the railways have been seeking, within the U.I.C. framework, to unify their commercial arrangements. Their efforts were long hampered by the heterogeneous practice (as regards nomenclatures, price formation and price levels, reduced rates, tonnage provisions, etc.) and by differences of

opinion on fundamental principles ("ad valorem" differential pricing, the taking into account of costs, marginal cost systems, etc.) which are still not entirely settled at theoretical level.

As a result of these efforts, the principles of a common philosophy with regard to rates was published in 1967. This only gives guidance in the tricky process of reform but has already been of much help in bringing different views more closely into line.

As regards international freight rates, the "welding" together of domestic rates calculated from scratch at each frontier is still practised. In cases where a rebate might be obtained, there has to be agreement between those concerned, and this delays notification of the rate to the customer. This raises the problem of good telecommunications between commercial services but especially that of the delegation of authority to one of the networks involved.

The railways have, however, developed alongside this a system of through rates and have been applying for some years various co-operation arrangements covering individual agreements, "framework" tariffs, special rates for frontier traffic, "large container" rates, etc. Thus, most networks are involved in a whole series of international tariff measures of specific kinds which do indeed have a great advantage in that rates are adapted to the actual competitive situation, i.e. a situation which (as a consequence of the great flexibility of road-haulage rates) varies with each traffic flow, but this on the other hand involves a sizeable amount of administrative work. The possibilities of applying a uniform international tariff have been examined from various angles by railway administrations and governments alike. The main effort in this direction lately was centred on the careful study of a new formula involving the introduction of a so-called "reference" tariff, on a tapering scale from end to end irrespective of the domestic rates in force in each country, which is usually known as the "European Single Tariff" (Barème Européen Unique). This formula follows from a study conducted by the railways of the Common Market countries jointly with Austria and Switzerland to determine the conditions for creating a common tariff structure generally applicable to international freight traffic. This work has led to the development of a "General European Tariff for the Carriage of Goods in Wagon-Load Lots" Tarif Général Européen pour le Transport de Marchandises en Wagons Completes (T.E.W.) which four railway administrations (i.e. the Belgian French, Italian and Luxembourg railways) have decided to put into force for traffic between them as from 1st July, 1970.

In view of the novelty of this tariff it may be useful to give a brief account of its essential features :

- The T.E.W. provides for only two schedules, entirely unconnected with domestic rates, which apply to goods carried in axle wagons and bogie wagons respectively. The rates are expressed in gold francs. They are not related to the nature of the goods carried, the only determining factor being total length of the international haul and tonnage of the wagon-load.

The T.E.W. is designed only for trade between participating countries and applies to end-to-end hauls between a very large number of stations in the four countries concerned. Its application remains optional and must therefor be claimed explicitly by the consignor. The latter can still be charged in accordance with special international rates where these are cheaper, or even on the basis of "welded" domestic rates for each of the countries involved, if he so desires.

- With few exceptions, the T.E.W. applies to goods of all types, handed over to the carrier with a through waybill for consignment in wagon-load lots by slow train. It is not applicable to goods covered by the Treaty of the E.C.S.C. goods subject to special requirements, goods consigned in large containers

and various consignments such as perishable goods and livestock which are not normally carried by slow train.

In short, this is a tariff of entirely new design and experience in the coming years will show whether it measures up to market requirements and whether it indicates the right course to adopt. Studies are still proceeding, especially in order to see the conditions under which this tariff might later embrace more railway networks.

3. Action to be recommended

E. C. M. T. policy concerning all the problems which have a bearing on the subject under review should be determined with an eye to the measures that will be most effective. The issues are so numerous and so complex that a choice will have to be made in order to decide on the steps required to achieve concrete progress within a reasonably short time.

The proposals put forward on this point are classified below in two categories : the first involves direct responsibilities lying upon governments and railway administrations alike ; the second more particularly concerns steps to be envisaged with regard to the railways in fields where their co-operation is found to be inadequate.

a) In view of the obstacles that are due to government measures or attitudes, the aim of E. C. M. T. policy - apart from the easing of administrative controls at frontiers, which has been dealt with at length in Part A of this Report - should essentially be freer and simpler price formation so that the railways may be able to apply an aggressive commercial policy on the international freight transport market.

This means, in particular :

- That the railways should mutually authorise each other to grant rebates on their own rates when this is seen to be commercially necessary, that is to say within the limits warranted by the competitive situation and by costs.

Some railways do indeed already delegate authority enabling the railway administration which negotiates the deal to grant rebates of this kind, whilst others have made arrangements for consultation whereby decisions can be taken at once. However, these possibilities are too restricted because some governments allow only a narrow margin of rebate. Private contracts at international level, providing for prices adapted to the competitive situation could improve these possibilities. What is more, an arrangement of this kind would be most beneficial for the flexibility and effectiveness of price formation for international transport by rail.

- That the introduction and wider extension of international through-rates must be encouraged. Such rates are already being applied to some extent, but they should be more widely adopted as they enable shippers to have a better understanding of price formation.

- That the investment policy of governments with regard to the railways should be co-ordinated, for this facilitates the quest for remunerative lines of communication. This implies exchanges of information on projects and forecasts which are likely to have a bearing on railway infrastructures (e. g. construction of major structures, alignments for high-speed train services, etc.).

- That the railways must be given more freedom to enable them to take part in activities and organisations aiming to develop door-to-door transport and also in any activity not solely involving railway techniques (i. e. the possibility of diversification and the possibility of further integration). The commercial freedom of the railways in this respect is still too often hampered by legal or administrative restraints.

b) In view of the obstacles resulting from inadequate co-operation between railways, which is often due to

their activities and interests being confined within the boundaries of their respective countries, the policy to be adopted within the E.C.M.T. might be :

- To induce the railways to undertake joint market studies for international freight transport and take the findings into account for their sales policy.

- To encourage the railways to create, in the light of the market studies mentioned above, suitable marketing organisations for international freight traffic by rail, if necessary in the form of jointly owned subsidiaries (specialising, for instance, in particular traffics such as ore, new cars, grain, etc.) in order to improve both the financial results and the standard of service,

- To ask the railways to adapt the service they offer in the field of international transport to match the requirements of users and to concentrate on an improved standard of service. In this connection, consideration should be given to the following aspects :

  - equipment requirements (more particularly with regard to specialised equipment) ;
  - construction of equipment ;
  - improvements in international co-operation as regards the administrative side of the transport process ;
  - simplifying the system of rates for international railway freight see also item (a) mentioned above ;
  - encouraging international co-ordination of the development of automatic train control systems ;
  - stimulating the standardization of rolling stock and, as far as possible, the grouping of orders for this equipment.

VI. GENERAL CONCLUSIONS

1. Since general transport policy is based on the premise that each mode of transport, with proper regard for its technical and economic characteristics, should be assigned the role it is best able to perform (principle of complementarity), the promotion of rail traffic, rather than an absolute goal, must be regarded as an objective to be attained as determined by the inherent advantages of rail transport. Measures must therefore consist in improving railway service in such fields and at such connections where it is still or newly able to compete with other modes ; in this context, however, the parameters, including the distance factor, vary over time as technical advances are made and the resulting railway policy is one of high-speed transport.

2. With this objective in view, the Ministers of Transport must develop, jointly with the networks, a global strategy for promoting international rail traffic that can smoothly be integrated into the transport economy as a whole, whether at the present stage or in the more distance future, one which seeks to determine the nature and substance of the European railway system, while taking particular account of any foreseeable technological innovations.

As a result of its co-ordinating role, the E.C.M.T. will be called upon to make a thorough study of future aspects which are inherent to the promotion of international railway traffic. For practical reasons, however, in the initial phase of the work dealt with in this paper, it has seemed expedient to examine concrete steps that might be undertaken with the facilities now available, hence calling for the use of standard railway techniques.

3. Two guidelines accordingly emerge in planning the work required for the first set of activities :

- one is to reduce the administrative barriers of various kinds which now hinder international rail traffic ;

- the other consists in relying on the public authorities to encourage the networks themselves, in such a way that greater co-operation from a technical and commercial standpoint can be

stimulated.

4. Generally speaking, in planning action the overall trend of the international transport market should be considered and the real needs of users be taken into widest possible account.

5. From a statistical standpoint, adequately detailed information on rail transport is thus lacking, and to an even greater extent on road and inland waterway transport, which would enable the situation on the international market to be throughly analysed and any changes to be followed. The only possible basis for reference at the present stage is that provided by foreign-trade statistics. While these do offer some indication of the total volume of traffic between European countries, they do not show such leading parameters as average distances covered by international traffic or a breakdown of such traffic into main categories. No data are therefore available concerning the prime components required for devising an adequate instrument for obtaining information, one which might serve for testing the temperature of the market, as it were.

6. Moreover, from a yet broader standpoint, in order to work out an up-to-date commercial philosophy, a thorough knowledge of the customer's basic requirements is needed - whether in existing or latent form - and scientifically conducted market surveys must be the guide. A point which here must be stressed is the essential value of studies to determine the motivations of the passenger trade, as well as others covering shippers and exporters in the goods sector. In either case, such surveys should disregard present supply features and concentrate on demand ; the object should be to ascertain the desires, as yet little perceived, of the present and future users of all competing modes of international transport, so as to determine how far the railways of the future can meet these needs by developing fresh commercial concepts.

As part of the action undertaken by the government authorities in conjunction with the networks, therefore, a suitable step would be for the Ministers of Transport to request the railways, as a group under the U. I. C., to cause such market surveys to be undertaken.

7. With more especial reference to the administrative procedures which are still apt to interfere seriously with international railways operations, an attempt has been made in this paper to describe the situation as it now stands, whether as to the nature and scope of present difficulties or in regard to work now being conducted and the progress which can be expected, particularly in the light of action by appropriate international organisations.

Two essential points must be noted in this connection. First, the position from the practical standpoint widely differs from country to country. The result is that international connections are not inconvenienced to the same extent, and difficulties which arise may be of a local nature or may occur for some individual type of train, notably in the goods sector. While some substantial measure of relief may therefore have been obtained in a sizeable number of countries, the obstacles in others still call for strong measures on the part of government authorities, which in the final analysis are responsible for the systems that have been established. Secondly, it is realised that the customs health and veterinary inspection systems which have grown out of such age-long European traditions cannot be changed overnight in order that the requirements of modernised railway operation can better be met.

A realistic policy must therefore be selective, and any desired improvements achieved step by step. It must moreover be conducted on two levels - first in a national context, the Minister of Transport approaching his colleagues in the Finance, Agriculture, Public Health and Interior Departments as needed in order to reach agreements for relaxing administrative formalities in every possible way ; at the other

level, action takes place in the international forum, where the duty of the Ministers of Transport gathered in the E. C. M. T. is to identify priorities in regard to work launched by the E. C. E. / U. N. and urge that the work be steadily and promptly taken in hand, in order to co-ordinate and streamline the regulations of the various European countries concerning customs procedure and animal and plant inspection.

8. As a guideline in regard to the tasks requiring most urgent attention, it is recommended that :

a) solutions be promoted enabling controls at frontier stations to be gradually abolished and shifted insofar as possible to locations within the national territory ; that all administrative formalities relating to a specific shipment in international traffic be conducted at one and the same time ;

b) standard principles for conducting the controls in question be defined, particularly in regard to the recognition of certificates issued by exporting countries and as to practical arrangements enabling a sampling procedure to be used for inspection purposes ;

c) provision be made for instituting a system like the community transit system of the Six Common Market countries which would be applicable to all E. C. M. T. Member countries, in which movements of freight would be based on examinations exclusively conducted at the customs offices of the point of departure and destination;

d) an active search be made for solutions adapted to such transport conditions as by large containers on unit trains especially designed to ensure regular, fast international service.

9. In order to intensify their international co-operation by the railways, on the other hand, promotional action by the Ministers of Transport might mainly consist in tackling a number of technical and commercial problems, care being taken not to question the networks' own responsibility in this regard. The most useful line of discussion by government authorities would here seem to lie in examining questions which cannot be brought beyond the critical threshold at international level except through direct action by the Ministers of Transport.

In this connection two promotional subjects especially appear to call for discussion by the Ministers - one connected with technical aspects and the other with commercial activities.

10. From a technical standpoint, a concept which should be given practical effect is that of a true European network of railway lines whose main components would be harmonized and which would consist of major lines of communication provided with standardized equipment. In this regard, it is suggested that jointly with the U. I. C., the E. C. M. T. draw up a map identifying the lines of international interest according to uniform criteria. Such a map, which during the initial stage would simply illustrate the status quo, could however take on a more dynamic quality in that it could later serve as a basis for defining a future international network capable of meeting communication requirements between the various regions of Europe, in which account would be taken of the introduction of new high-speed techniques and provision made for connections at trans-continental scale.

The Council of Ministers requests the Committee of Deputies to proceed with the drawing up of this map within a time scale which will allow a start to be made shortly on the first phase of the action proposed above.

Again from the technical aspect, a no less important consideration is that the Ministers of Transport seek to encourage a more closely concerted approach by the railways in choosing their basic options, and in regard to the type, scope and timing of their investment programmes, so that the projects which are carried out, if not uniform, at European scale are at least mutually compatible. This concerted approach should be adopted not

only in regard to such problems as rolling stock, a matter in which the E. C. M. T. has already actively helped in promoting standardization, but also in regard to such questions as the automation and cybernetics of railway operation, and, more generally, the introduction of technological innovations.

11. From a commercial standpoint, the E. C. M. T. is primarily concerned with problems of international rates and the organisation of door-to-door international transport.

A set of complex questions is here involved which it has not been possible to deal with in any exhaustive detail owing to the limited time allowed for preparing this paper. The conclusions therefore offered are based on the premise that, in the initial phase of activity, a number of clearly specified points had best be selected so that tangible results may be achieved in the near future, whereas the study of many other problems will have to be deferred until a subsequent stage of the work.

For these reasons, it is suggested that the Council of Ministers adopt decisions of principle in regard to the questions described hereafter, which deal in turn with the passenger sector and the freight sector.

- In the matter of passenger transport this would be to :

a) request the Committee of Deputies promptly to prepare a proposal if possible in conjunction with a draft resolution, inviting the railways to standardize the age limit in international traffic at which accompanied children are granted a 50 per cent reduction ;

b) request the U. I. C. to submit concrete proposals which the Council could examine at its December 1971 Session, and which, through the medium of appropriate technical and tariff measures, could solve the problem of responsibility for the transfer and routing of luggage by eliminating present drawbacks for the railway user and by more closely imitating the facilities offered by airlines ;

c) give effect to the suggestions contained in this Report as regards a new structure for sleeping-car rates, so as to improve the competitiveness of night railway travel, in the light of hotel rates which are charged.

- In the matter of freight transport, in order that price formation can be gradually liberalised and simplified and so that the conditions needed for promoting a more active commercial policy among railways can be introduced, the action suggested would be to :

a) instruct the Committee of Deputies to draft, with due regard to relations between governments and railways, a proposal for harmonizing the delegation of authority form governments to railways as regards the margins of reduction to be granted on their own rates, and the terms applicable to individual contracts at international level, involving prices adapted to the competitive situation ;

b) request the U. I. C. to persist in their efforts to extend international through-rates and generalise as far as possible use of the "European Single Tariff" formula ;

c) invite the U. I. C. to work out a standard formula for the E. C. M. T. Member countries, to be applied progressively, which would guarantee a time of routing and delivery to customers on specified links in international freight traffic, such as to constitute a firm commitment by the railways, taken by the contracting network on behalf of all the other networks involved in the traffic.

12. Finally, the Council of Ministers would instruct the Committee of Deputies :

- to implement the priority measures contained in the conclusions to this paper ; and

- to continue the study of other problems having to do with the promotion of international rail traffic so that new proposals for concrete action can later be submitted.

COUNCIL OF MINISTERS

THIRD REPORT ON RECENT TRENDS IN ROAD ACCIDENTS

1. INTRODUCTION

At a meeting of the Council of Ministers in June 1965 it was decided to prepare a report every 2 years analyzing recent trends in road accidents in Member countries. The first report in the series, dealing with trends between 1955 and 1964, was presented to the Council in May 1966 and the second report dealing with trends up to 1966 was presented in June 1968. This report, the third in the series, covers the years to 1968, the delegate for the United Kingdom again being the rapporteur.

Questionnaires were circulated to each Member country at the end of 1969 requesting information for 1967 and 1968. The time additional details of pedestrian casualties by age and comparable population figures were requested for the years 1965-1968. For this third report month by month accident figures were also any major road safety events during the same period.

2. CONCLUSIONS FROM FIRST TWO REPORTS

(i) The overall picture in the period between 1961 and 1966 was of increasing road deaths and injuries in almost all countries, the increase in 1964 being particularly high.

(ii) Although the absolute number of deaths and injuries increased, the rate per thousand motor vehicles licensed tended to fall in most countries.

(iii) The tendency for the casualty rate per vehicle to fall was probably largely due to the increasing proportion of four-wheeled vehicles, and the decreasing proportion of the more vulnerable motor cycles and scooters.

(iv) Car users account for the largest proportion of road casualties in most countries and in recent years most of the increase in casualties has consisted of car users.

(v) The number of pedal cyclist casualties was greatly reduced in most countries, probably largely as a result of considerable reductions in the number of pedal cycles in use.

(vi) While there have been large increases in the number of pedestrians killed and injured, proportionately, the increases have not been nearly as great as the increase in the number of motor vehicles on the road. It was also found that higher vehicle densities (expressed as number of vehicles per head of population) are correlated with lower car user casualty rates per car licensed. This would seem to indicate increased road safety awareness among drivers, as well as perhaps more road safety measures in the more highly motorized countries.

(vii) It was estimated that road deaths in E. C. M. T. countries numbered nearly 66,000 in 1966 and that total casualties were likely to be on average from 10 to 13 per cent higher in 1968 than in 1966, unless effective new road safety measures are taken.

3. CASUALTY CHANGES IN 1967 AND 1968

The main changes in the road

casualty figures between 1966 and 1968 can be seen in Tables 1 and 2 below. Only four countries (Greece, Great Britain, Sweden and West Germany) showed a decrease in road deaths over the two-year period, while 8 countries - Austria, Ireland, Luxembourg, the Netherlands, Portugal, Spain, Switzerland and Yugoslavia - had increases of more than 10 per cent over the same period.

The total number of persons killed and injured on the roads also increased in most countries, though more moderately with only 3 countries - Norway, Portugal and Yugoslavia - showing an increase of more than 10 per cent over the 2 years. Great Britain, Luxembourg and the Netherlands were the only countries reporting fewer casualties in 1968 than in 1966, and Great Britain was the only country to show reductions in both deaths and injuries over the 2 years . (Owing to a change in the system of accident data collection in the Netherlands, their decrease in reported casualties is of little significance). (1) In Sweden while deaths fell dramatically by 18 per cent in 1967, they showed a similarly substantial rise of 17 per cent in 1968. Yugoslavia had an increase of 26 per cent in road deaths and an increase of 22 per cent in injuries between 1966 to 1968, continuing a trend of exceptionally high casualty increases.

In E. C. M. T. countries as a whole the number of persons killed as a result of road accidents rose by 5.5 per cent in 1967 and by a further 2 per cent in 1968. These increases are broadly comparable with the increases that have occurred every year since 1961, except for 1964, which, as previously noted, was unusually high.

4. TRENDS IN VEHICLE POPULATIONS

The increase in vehicle numbers, so marked a feature of the last 2 decades, was continued in 1967 and 1968, and Table 3 (see page 187) shows that increase compared with 1961. The increase in total vehicles over the 7 years to 1968 range from 43 to 290 per cent with a median increase of 62 per cent. The rate of increase for cars over the same period was faster and ranged from 55 to 463 per cent with a median of 119 per cent, representing an average annual increase of 12 per cent. "Other vehicles" mainly goods vehicles, have been increasing less rapidly at an average annual rate of 7 per cent (although the rate of change here may be affected by possible changes in definition of "other vehicles"). Motor cycles and scooters have been decreasing steadily with a median decrease of 47 per cent since 1961 ; this represents an average annual de decrease of 9 per cent. Only 3 countries - Portugal, Spain and Yugoslavia - have shown an increase in motorcycles and scooters. The number of mopeds has shown little change over the 3 years to 1968, 1966 appearing to be the peak year when the median increase was 24 per cent up on 1961.

5. TRENDS IN CASUALTIES AND CASUALTY RATES 1961-1968

5.1 All classes of road user

Changes in numbers of casualties from year to year are subject to a number of factors including weather and economic conditions which vary from one year to another. By studying the change in the accident situation over a number of years (in this case from 1961 to 1968), a more reliable view of the general trend can be gained.

(1) This drop in the Netherlands, is the consequence of a change introduced at the beginning of 1967 in the manner in which the police records particulars of road accidents, as a result of which accidents that cause relatively slight injury are no longer reported. So the 1967 figure for injuries was considerably lower than that for 1966, particularly in built-up areas (see also point 5.8).

Table I. ANNUAL PERCENTAGE CHANGES IN THE NUMBER OF PERSONS KILLED

	1962	1963	1964	1965	1966	1967	1968
Austria	- 1	+ 12	+ 8	- 7	+ 18	+ 13	+ 2
Belgium	+ 5	+ 4	+ 12	+ 3	- 7	+ 5	+ 3
Denmark	- 4	-	+ 11	+ 13	+ 1	+ 6	....
France	+ 9	+ 1	+ 11	+ 9	-	+ 6	....
Germany	- 1	-	+ 14	- 4	+ 7	+ 1	- 3
Great Britain	- 3	+ 3	+ 13	+ 2	-	- 8	- 7
Greece	....	....	+ 19	+ 7	+ 9	- 4	- 7
Ireland	+ 2	- 3	+ 3	+ 4	+ 6	+ 10	+ 7
Italy	+ 8	+ 2	- 3	- 6	- 1	+ 5	+ 5
Luxembourg	+ 10	+ 11	+ 10	- 19	- 1	- 2	+ 32
Netherlands	+ 4	- 4	+ 18	+ 4	+ 5	+ 10	+ 2
Norway	- 4	+ 6	+ 1	+ 12	+ 5	+ 8	-
Portugal	+ 9	- 2	+ 15	+ 2	+ 12	+ 6	+ 9
Spain	+ 11	+ 12	+ 16	+ 13	+ 15	+ 13	+ 5
Sweden	+ 4	+ 8	+ 7	± 0	-	- 18	+ 17
Switzerland	- 1	- 4	+ 5	- 7	- 1	+ 12	- 1
Turkey	+ 17	+ 14	+ 4	+ 2	+ 22	+ 5	....
Yugoslavia	- 7	+ 4	+ 25	+ 19	+ 23	+ 2	+ 23
Median	+ 3.5	+ 3	+ 11	+ 4	+ 5	+ 5.5	+ 3

Table 2. ANNUAL PERCENTAGE CHANGES IN THE NUMBER OF PERSONS KILLED AND INJURED

	1962	1963	1964	1965	1966	1967	1968
Austria	- 2	+ 5	+ 5	- 2	+ 6	+ 6	- 2
Belgium	-	+ 2	+ 15	+ 1	- 6	+ 1	+ 2
Denmark	+ 2	- 3	+ 12	+ 5	+ 1	- 2	....
France	+ 7	+ 5	+ 10	+ 10	-	+ 4	....
Germany	- 4	- 1	+ 5	- 3	+ 5	+ 1	+ 1
Great Britain	- 2	+ 4	+ 8	+ 3	- 1	- 6	- 6
Greece	....	....	+ 18	+ 6	+ 12	- 10	-
Ireland	+ 1	- 13	+ 10	+ 9	- 4	+ 13	....
Italy	+ 3	+ 3	+ 1	- 5	- 2	+ 4	+ 6
Luxembourg	+ 4	-	+ 5	- 3	- 15	+ 8	- 7
Netherlands	+ 1	+ 1	+ 16	+ 5	+ 5	- 6	+ 2
Norway	+ 3	+ 8	+ 5	+ 2	+ 10	+ 13	+ 1
Portugal	+ 1	+ 5	+ 8	+ 7	+ 3	+ 8	+ 3
Spain	- 4	+ 12	+ 13	+ 20	+ 7	+ 6	+ 3
Sweden	- 2	+ 4	+ 7	- 5	- 9	- 3	+ 10
Switzerland	- 1	- 12	+ 2	- 7	+ 3	+ 3	+ 2
Turkey	+ 15	+ 4	+ 10	+ 2	+ 13	....	....
Yugoslavia	+ 4	+ 15	+ 24	+ 22	+ 17	+ 6	+ 15
Median	+ 1	+ 4.5	+ 10	+ 2.5	+ 3	+ 4	+ 2

Table 3. INDICES OF VEHICLE POPULATION 1961=100

Country	Mopeds		Motor-Cycles and Scooters		Cars		Others		All Vehicles	
	1964	1968	1964	1968	1964	1968	1964	1968	1964	1968
Austria	114	118	79	48	148	223	126	154	120	145
Belgium	100	85	66	27	133	208	111	175	115	148
Denmark	...	...	84	50	144	203	123	138	130(a)	165(a)
France	112	...	49	...	128	...	165	...	123	...
Germany	61	47	54	30	155	219	119	138	115	143
Great Britain	125	118	89	64	138	177	109	110	125	153
Greece	...	...	...	...	...	...	...	...	...	...
Ireland	6	6	116	96	137	181	115	126	127	153
Italy	133	176	73	46	191	335	129	236	142	180
Luxembourg	108	62	85	52	109	155	...	...	120	143
Netherlands	116	149	89	53	174	325	126	164	129	191
Norway	122	125	85	59	151	225	141	154	128	162
Portugal	...	...	147	195	142	274	...	158	140(a)	245(a)
Spain	...	...	152	189	182	455	163	333	162(a)	289(a)
Sweden	...	...	61	33	128	155	112	123	119(a)	139(a)
Switzerland	291	501	82	64	145	204	143	176	142	192
Turkey	...	...	186	...	151	...	208	...	181	...
Yugoslavia	...	...	121	378	182	563	120	219	139(a)	390(a)
Median	115	121.5	85	53	145	219	126	157.5	128	162

(a) Excludes mopeds

(b) Included with motor-cycles and scooters

Table 4 (see page 189) shows that in most countries deaths and total casualties were higher than in 1961. For fatalities the median increase was 33 per cent, that is an annual increase of about 4 per cent and for the total number of persons killed and injured the median increase was 15 per cent - an annual increase of 2 per cent. Thus the annual increase in deaths is proportionately twice as high as the annual casualty increase as a whole, and in all but 3 countries - Great Britain, Italy and Norway - deaths have increased proportionately more than total casualties since 1961. However, both increases are smaller than the 7 per cent annual increase in motor vehicles mentioned above.

Death rates and total casualty rates per thousand motor vehicles licensed have shown a general fall. This follows the long term trend from 1955 onwards and is mainly due to the decline in use of two wheeled vehicles. Death and total casualty rates are shown in Table 4 but the rates for different countries are not strictly comparable in that there are considerable differences from country to country in the proportions of the different kinds of vehicles, in the proportion of visiting traffic, in the proportion of the population living in towns, and in other geographical features which affect the nature of the road system. Also it is not known to what extent the definition of an accident injury is comparable in all countries, but the figures for deaths in the tables shown have been adjusted where necessary (i. e. for Austria, Belgium, Italy, Portugal and Spain) to represent estimates of numbers of people who died within 30 days of an accident. Differences in the legal requirements for reporting accidents may also vary between countries.

In most countries the largest proportion of casualties consists of users of cars (see Table 5 page 190) and in many countries they form over half of the casualty total. In the Netherlands, the largest proportion (37 per cent) consists of moped riders and the proportion of pedal cyclist casualties (13 per cent) is higher than in any other country. Apart from Belgium, the Netherlands is the only country whose pedal cyclist casualties exceed **10 per** cent of the total and are greater than their pedestrian casualties. In all countries pedestrians form a substantial part of the road casualty scene, proportions varying from 10 per cent (Belgium) to 40 per cent (Portugal). Although the pedestrian share of casualties is smaller than that of car users, an important consideration is that a far greater proportion of pedestrian casualties are fatal. Nevertheless, in recent years, the greatest proportion of road casualties have been car occupants and it is in this category that the bulk of the casualty increase has taken place.

A detailed analysis of casualties by class of road user is given.

5. 2 Users of cars.

Table 6 (see page 191) shows that between 1961 and 1968 car occupant casualties have increased in every country and in 5 countries - Austria, Belgium, Italy, Netherlands, Portugal and Yugoslavia - have more than doubled. The median increase in fatalities was 79 per cent and for total casualties 71 per cent. However, both fatality and casualty rates per vehicle licensed fell in every country except Austria, Luxembourg and Sweden ; it should however be stressed that when compared with extremely reduced figures, an inevitably high rate is reflected. It is interesting to note that although Yugoslavia has shown the greatest increase in casualties (183 per cent) it has also shown the largest decrease in casualty rate per car licensed (50 per cent).

5. 3 Moped riders

On the basis of the figures given in Table 7 below for fatality rates and total casualty rates per vehicle licensed, and comparing with similar rates in Tables 6 and 8 (see pages 191-193) moped would appear to be at least as safe as

Table 4. ALL CLASSES OF ROAD USERS CASUALTY AND CASUALTY RATES, 1968

	Deaths (a)	Index 1961=100	Deaths per 1000 vehicles	Index 1961=100	Total Casualties	Index 1961=100	Casualties per 1000 vehicles	Index 1961=100
Austria	2,481 (b)	151 (b)	1.2 (b)	100 (b)	68,492	118	33	80
Belgium	2,790 (b)	130 (b)	1.1 (b)	188 (b)	97,943	115	38	79
Denmark	.....	...	...	...	....	...	..	..
France	.....	...	...	...	....	...	..	..
Germany	16,636	114	1.1	85	485,354	105	31	74
Great Britain	6,810	99	0.5	71	349,209	100	25	69
Greece	740	...	2.2	...	20,116	...	61	..
Ireland	447	135	0.9	90	10,163	...	20	..
Italy	10,496 (b)	59 (b)	0.8 (b)	32 (b)	243,842	108	19	60
Luxembourg	106	138	0.9	100	2,266	89	19	64
Netherlands	2,907	146	0.7	78	65,005	125	15	65
Norway	479	131	0.5	83	10,875	151	11	93
Portugal	2,368 (b)	160 (b)	3.8 (b)	69 (b)	23,969	134	38	57
Spain	4,944 (b)	210 (b)	1.4 (b)	73 (b)	82,953	170	23	59
Sweden	1,262	117	0.5	84	24,290	101	10	73
Switzerland	1,405	102	0.7	50	33,599	89	18	46
Turkey	.....	...	...	...	....	...	..	..
Yugoslavia	2,703	225	3.0	59	41,427	259	46	69
Median	-	133	-	80.5	-	115	-	66

(a) Within 30 days of accident

(b) Adjusted to standard basis

Table 5. PERCENTAGE DISTRIBUTION OF CASUALTIES IN 1968 BY CLASS OF ROAD USERS

Country	Users of Cars	Moped Riders	Users of Motor Cycles and Scooters	Users of Other Motor Vehicles	Pedestrians	Pedal Cyclists	All Road Users
Austria	47	19	5	5	16	8	100
Belgium	56	13	4	6	10	11	100
Denmark	..	..	..	..	..	..	...
France	..	..	..	..	..	..	...
Germany	60	4	6	5	16	9	100
Great Britain	52	1	15	(a)	24	8	100
Greece	46	17	5	1	29	2	100
Ireland	58	13	(b)	(a)	22	7	100
Italy	45	12	15	5	17	6	100
Luxembourg	77	(c)	7	(a)	12	4	100
Netherlands	31	37	4	3	12	13	100
Norway	47	6	9	8	23	7	100
Portugal	34	22	4	(a)	40	(b)	100
Spain	40	4	17	14	22	3	100
Sweden	68	8	4	1	11	8	100
Switzerland	46	11	13	4	19	7	100
Turkey	..	..	..	..	..	..	...
Yugoslavia	39	1	16	12	24	8	100

(a) Cars and other vehicles combined. (b) Combined with mopeds. (c) Combined with pedal cyclists

Table 6. USERS OF CARS - CASUALTIES AND CASUALTY RATES, 1968

Country	Deaths (a)	Index 1961=100	Deaths per 1,000 cars	Index 1961=100	Total casualties	Index 1961=100	Casualties per 1,000 cars	Index 1961=100
Austria	1,001 (b)	271 (b)	0.9 (b)	122 (b)	32,278	209	31	94
Belgium	1,398 (b)	214 (b)	0.8 (b)	100 (b)	54,573	201	30	97
Denmark	...	...	..	...	....	...	..	..
France	...	...	..	...	....	...	..	..
Germany	7,333	177	0.6	75	297,340	176	25	80
Great Britain	2,294	148	0.2	67	181,148 (c)	132 (c)	14 (c)	77 (c)
Greece	255	...	..	...	9,249	...	..	..
Ireland	166 (c)	164 (c)	0.4 (c)	75 (c)	5,945 (c)	...	13 (c)	..
Italy	3,801 (b)	105 (b)	0.5 (b)	33 (b)	108,712	229	13	69
Luxembourg	69 (c)	223 (c)	0.7 (c)	120 (c)	1,749 (c)	110 (c)	17 (c)	62 (c)
Netherlands	1,070	276	0.5	83	20,229	267	10	82
Norway	178	...	0.3	...	5,127	166	8	..
Portugal	688 (c, b)	177 (c, b)	1.2 (c, b)	75 (c, b)	8,055 (c)	165 (c)	14 (c)	69 (c)
Spain	1,726 (b)	...	1.1	...	33,182 (b)	...	20	..
Sweden	703 (c)	163 (c)	0.3 (c)	112 (c)	16,574 (c)	122 (c)	7 (c)	82 (c)
Switzerland	450	134	0.4	67	15,392	124	13	62
Turkey	...	...	..	...	....	...	..	..
Yugoslavia	766	181	1.7	31	15,997	283	35	50
Median	-	179	-	75	-	171	-	77

(a) Within 30 days of accident (b) Adjusted to standard basis. (c) Cars and other vehicles combined.

Table 7. MOPED RIDERS - CASUALTIES AND CASUALTY RATES, 1968

Contry	Deaths (a)	Index 1961=100	Deaths per 1,000 mopeds	Index 1961=100	Total Casualties	Index 1961=100	Casualties per 1,000 mopeds	Index 1961=100
Austria	273 (b)	148 (b)	0.6 (b)	150 (b)	13,133	110	27	93
Belgium	192 (b)	94 (b)	0.5 (b)	100 (b)	12,582	83	34	97
Denmark	...	...	...	...	...	...	..	..
France	...	...	...	...	...	...	..	..
Germany	657	55	0.7	117	21,053	36	21	76
Great Britain	62	60	0.1	33	4,575	77	10	65
Greece	93	...	...	...	3,358	...	..	..
Ireland	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
Italy	982 (b)	99 (b)	0.5 (b)	56 (b)	29,658	230	16	131
Luxembourg	(d)	(d)	...	...	(c)	(c)	..	..
Netherlands	538	122	0.3	100	24,073	139	13	93
Norway	33	...	0.3	...	676	...	5	..
Portugal	(d)	(d)	...	...	(d)	(d)	..	..
Spain	190 (b)	...	...	...	3,336	...	..	..
Sweden	111	80	...	...	2,021	72	..	..
Switzerland	126	148	0.3	30	3,645	142	9	28
Turkey	...	...	...	...	...	...	..	..
Yugoslavia	58	161	...	...	407	62	..	..
Median		99	-	100	-	83	-	93

(a) Within 30 days of accident.

(b) Adjusted to standard basis

(c) Included with scooters and motor cycles.

(d) Included with pedalcycles.

Table 8. USERS OF MOTOR CYCLES AND SCOOTERS - CASUALTIES AND CASUALTY RATES, 1968

Country	Deaths (a)	Index 1961=100	Deaths per 1,000 Motor Cycles and Scooters	Index 1961=100	Total casualties	Index 1961=100	Casualties per 1,000 Motor Cycles and	Index 1961=100
Austria	140 (b)	47 (b)	1.0 (b)	100 (b)	3,630	30	26	62
Belgium	64 (b)	21 (b)	0.9 (b)	75 (b)	3,468	23	51	87
Denmark	...	..	..	...	....	..	..	..
France	...	..	..	...	....	..	..	..
Germany	771	38	1.5	125	29,349	37	57	126
Great Britain	815	57	1.1	91	53,604	60	63	98
Greece	19	..	0.3	...	914	..	15	..
Ireland	57 (c)	130 (c)	1.3 (c)	130 (c)	2,295 (c)	..	29	..
Italy	1,247 (b)	23 (b)	0.9 (b)	50	37,370	43	28	95
Luxembourg	8	62	1.5	115	151 (c)	33 (c)	28 (c)	..
Netherlands	92	44	1.0	83	2,374	40	26	75
Norway	26	27	0.6	120	926	92 (f)	20	38 (f)
Portugal	68 (b)	117 (b)	1.3 (b)	59 (b)	927	80	18	41
Spain	586	..	0.5	...	14,506	..	11	..
Sweden	36	56	0.8	200	2,028	51	22	155
Switzerland	163	77	1.0	111	4,255	55	27	87
Turkey	...	..	..	...	....	..	..	..
Yugoslavia	272	174	..	...	6,532	198	..	..
Median	-	56	-	105.5	-	47	-	87

(a) Within 30 days of accident. (b) Adjusted to standard basis. (c) Includes mopeds (f) Scooters & mopeds included

cars and much safer than motor cycles. However, these low rates are partly due to the fact that their average distance travelled per year is much lower than for cars, and partly because is general few passengers are carried. Driver and rider fatality and casualty rates per million kilometres travelled are higher for mopeds than for all vehicles other than motorcycles and scooters.

In most countries moped rider casualties and casualty rates have shown a small decrease since 1961, but deaths and death rates have shown no clear trend ; there are about as many countries showing rises as showing falls. Only in Italy, the Netherlands and Switzerland did the total casualties show a substantial rise. It would appear that the number of mopeds in use and casualties to their riders will in future show a slight decline in most countries.

5.4 Users of Motorcycles and scooters

During the period 1961-1968, casualties to users of motor cycles and scooters have shown an average decrease of 53 per cent (about 10 per cent annually) with deaths also falling by 44 per cent (about 8 per cent annually). The fall in deaths and casualties as a whole was widespread, Yugoslavia being the only country to show a significant rise. Since the death and casualty rates per vehicle licensed have not shown a comparable decrease, most of the fall can be attributed to the decline in use of this form of transport. As these vehicles generally have a substantially higher accident rate than cars, this trend has been tending to offset to some extent the increasing number of casualties to car users. However, substantial casualty savings from this source cannot continue much longer. Only in 5 countries - Great Britain, Italy, Spain, Switzerland and Yugoslavia - do casualties to users of motorcycles and scooters still represent more than 10 per cent of all casualties. And without these savings the rise in total casualties will soon be much more marked, especially if there is no halt to the rapidly increasing number of car user casualties.

5.5 Users of other motor vehicles

The data in this category probably mainly refer to users of goods vehicles and buses, but since they may well cover different groups of people in different countries, the rate for any one country in Table 9 below should not be closely compared with those for other countries. The indices for each country, however, are of interest. The absolute numbers of casualties and deaths do not appear to have shown much change, but the rates per vehicles licensed have shown considerable falls both for deaths and for total casualties.

5.6 Pedestrians

Although the number of motor vehicles rose between 1961 and 1968 by a median figure of 62 per cent (equivalent to about 7 per cent per year), pedestrian deaths (see Table 10, on page 196) have shown a median increase of only 24.5 per cent (just over 3 per cent per year) with total casualties showing little change. This may be partly due to the acclimatization of pedestrians to the increasingly motorized state of the roads. A special study of pedestrian casualties by age group is made in section 6 below.

5.7 Pedal cyclists

There are a number of countries showing increases in pedal cyclist deaths but apart from Portugal and Yugoslavia total pedal cyclist casualties in 1968 were lower than in 1961, probably due to their declining use (see Table 11, on page 197).

5.8 Built-up and non-built-up areas

Both previous reports noted the tendency during the years 1955-1966 for casualties to increase more quickly in non-built-up areas than in built-up areas, and this trend was substantiated even more markedly in 1967 and 1968.

Table 9. USERS OF OTHER MOTOR VEHICLES - CASUALTIES AND CASUALTY RATES, 1968

Country	Deaths (a)	Index 1961=100	Deaths per 1000 other motor vehicles	Index 1961=100	Total casualties	Index 1961=100	Casualties per 1000 other motor vehicles	Index 1961=100
Austria	162 (b)	132 (b)	0.4 (b)	86 (b)	3,676	119	10	77
Belgium	142 (b)	100 (b)	0.4 (b)	57 (b)	6,035	122	17	69
Denmark	...	...	...	..	...	...	..	..
France	...	...	...	..	...	...	..	..
Germany	725	98	0.3	75	22,855	91	10	67
Great Britain	486	107	0.3	97	(c)	(c)	(c)	(c)
Greece	51	...	...	..	289	...	..	..
Ireland	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
Italy	551 (b)	55 (b)	0.5 (b)	25 (b)	11,431	72	10	30
Luxembourg	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
Netherlands	111	111	0.4	80	2,093	88	7	54
Norway	44	...	0.2	..	873	...	5	..
Portugal	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
Spain	639 (b)	...	1.0 (b)	..	11,216	...	18 (b)	..
Sweden	...	...	0.1	..	(c)	...	(c)	..
Switzerland	68	76	0.6	40	1,311	88	11	44
Turkey	...	...	...	..	...	...	..	..
Yugoslavia	387	678	2.9	264	5,128	1,091	38	499
Median	-	103.5	-	77.5	-	91	-	67

(a) Within 30 days of accident. (b) Adjusted to standard basis. (c) Cars & other vehicles combined.

Table 10. PEDESTRIANS - CASUALTIES AND CASUALTY RATES, 1968

Country	Deaths (a)	Index 1961=100	Deaths per 100,000 population	Total casualties	Index 1961=100	Casualties per 100,000 population
Austria	742 (b)	139 (b)	10.1 (b)	10,558	110	144
Belgium	690 (b)	124 (b)	7.2 (b)	10,196	97	106
Denmark	...	...	..	...	...	...
France	...	...	..	...	...	...
Germany	5,342	110	8.9	75,166	92	125
Great Britain	2,762	102	5.1	83,651	116	156
Greece	304	...	3.5	5,894	...	67
Ireland	173	147	..	2,227	...	...
Italy	2,690 (b)	60 (b)	5.0 (b)	40,805	99	75
Luxembourg	24	96	7.2	262	85	79
Netherlands	589	125	4.6	7,618	99	60
Norway	155	144	4.1	2,463	161	65
Portugal	1,004 (b)	148 (b)	10.6 (b)	9,600	127	101
Spain	1,573 (b)	194 (b)	4.8 (b)	18,488	...	131
Sweden	260	93	..	2,650	80	...
Switzerland	474	111	7.9	6,401	94	106
Turkey	...	...	..	...	...	...
Yugoslavia	947	261	4.7	10,066	260	50
Median	-	124,5	-	-	99	-

(a) Within 30 days of accident

(b) Adjusted to standard basis

Table II. PEDAL CYCLISTS
CASUALTIES AND CASUALTY RATES 1968

Country	Deaths (a)	Index 1961=100	Total casualties	Index 1961=100
Austria	163 (b)	126 (b)	5,217	90
Belgium	304 (b)	111 (b)	11,089	90
Denmark	...	...	...	..
France	...	...	...	..
Germany	1,808	116	45,591	86
Great Britain	391	61	26,230	59
Greece	18	...	412	..
Ireland	51	74	696	..
Italy	1,225 (b)	53 (b)	15,846	72
Luxembourg	5 (d)	167 (d)	104	60
Netherlands	507	130	8,618	77
Norway	43	80	790	99
Portugal	608 (b, d)	173 (b, d)	5,387 (d)	124 (d)
Spain	229 (b)	...	2,225	..
Sweden	152	90	2,017	89
Switzerland	124	53	2,595	38
Turkey	...	...	...	..
Yugoslavia	273	172	3,237	162
Median	-	111	-	89,5

(a) Within 30 days of accident

(b) Adjusted to standard basis

(d) Mopeds included

Since 1961 casualties in every country have increased more rapidly in rural areas. As a result of the change in the manner in which the police record particular the general trend shown for the Netherlands in 1966 is interrupted in 1967 but reappears after that year (see also point 3). This may be due to the comparatively slow rate of increase in pedestrian casualties which are more common in urban areas. Traffic may also have been increasing faster in rural than in urban areas, where road congestion is generally more severe.

6. PEDESTRIAN CASUALTY RATES BY AGE GROUP FOR THE YEARS 1965-1968

It was earlier observed that pedestrians form the second largest group of road user casualties in all member states together (see Table 12, on page 199 and on average they accounted for nearly a fifth of total casualties. The risk to pedestrians of being injured in an accident varies with age. Both the elderly and the young pedestrian have high casualty rates and it is instructive to compare changes in their casualty rates with those of other pedestrians. An analysis of the trends in pedestrian casualty rates per 100,000 population in different age groups has accordingly been made for this report.

6.1 The rates for all ages

In section 5.6 it was noted that between 1961 and 1968 there was little change in total pedestrian casualties, although deaths have increased by 17.5 per cent. However, in more recent years during that period there has been some tendency for total pedestrian casualties to decrease. Table 12 shows that since 1965 the pedestrian casualty rate per 100,000 population has tended to fall in 6 countries out of 13, and to rise in only 3 of them. This has occurred in the face of increasing traffic in every country.

6.2 The rates for children

The study of child pedestrian casualties is especially important in that children, more often than any other age-group (except perhaps the elderly), are likely to be restricted to walking as a means of transport. Table 13 on pages 200 and 201 indicates that in relation to population children in most countries tend to have higher (often much higher) pedestrian casualty rates than the adult population between the ages of 25 and 64.

Five countries were able to supply casualty figures for the three specified age-groups for children in Table 13 and for the sake of clarity, their casualty rates have been shown at the head of this table. In every case the rate per 100,000 population is much the highest for the 6-9 age-group. In this group and in the 10-14 age-group an equal number of countries have rising and falling rates. But in the 0-5 (pre-school) age-group the rate is tending to rise in 6 countries out of 10 and is falling in only one.

6.3 The rates for youth and adults

Most countries supplied casualty data for the 3 age-groups above 14 years and the casualty rates per 100,000 population are also shown in Table 13. The rates for the 15-24 and the 25-64 age groups are generally very similar and lower than any of the rates for the child groups. On the other hand the rates for the elderly (those aged 65 and over) are much higher.

Evidently in the adult age-groups there is a strong tendency for the pedestrian rates to decrease. In 8 out of 13 countries the elderly rate has been falling, and increasing in only 3. Similarly in the 25-64 group the rate has been falling in 9 countries and rising in 2 ; while in the 15-24 group it was falling in 7 countries and rising in 3. Thus, in contrast to the children, it would seem that in most countries adult pedestrians are learning to adjust themselves to living with motor vehicles, even though the number of vehicles is rising continuously. It should be noted, however that those countries whose adult pedestrian rates are rising include those where the number of motor vehicles is

Table 12. PEDESTRIAN CASUALTY RATE PER 100,000 POPULATION

Country	1965	1966	1967	1968
Austria	146	148	147	144
Belgium	116	109	109	106
Denmark	87	88	76	...
France	99	87	...	...
Germany	129	131	128	125
Great Britain (x)	51	52	51	51
Greece	69	78	67	67
Ireland (x)	...	44	...	...
Italy	76	77	75	75
Luxembourg	105	91	102	79
Netherlands	70	71	63	60
Norway	51	59	63	65
Portugal	92	90	100	100
Spain	61	57	124	131
Switzerland	110	108	109	106
Yugoslavia	36	41	43	50

(x) Killed and seriously injured only.

.. Not available.

Table 13. PEDESTRIAN CASUALTY RATE PER 100,000 POPULATION (xx)

Country	Aged 0-5 years				Aged 6-9 years				Aged 10-14 years			
	1965	1966	1967	1968	1965	1966	1967	1968	1965	1966	1967	1968
Belgium	124	119	126	129	257	238	250	242	127	127	119	113
Great Britain (x)	69	72	76	76	122	128	130	133	64	68	70	72
Netherlands	144	141	126	123	178	180	157	153	60	65	60	55
Switzerland	95	156	103	90	415	341	377	436	93	82	131	97
Yugoslavia	17[a]	22[a]	23[a]	25[a]	53[f]	68[f]	70[f]	85[f]	30[g]	35[g]	39[g]	46[g]
Austria	h	h	h	h	193[h]	189[h]	199[h]	200[h]	h	h	h	h
Denmark	107[a]	129[a]	95[a]	..	126[c]	95[c]	128[c]	..	c	c	c	c
France	b	b	..	..	109[b]	109[b]	..	..	68	69	..	..
Germany	160	163	179	175	264[d]	274[d]	284[d]	279[d]	d	d	d	d
Greece	29	32	32	37	71[d]	83[d]	71[d]	73[d]	d	d	d	d
Ireland (x)	..	b	..	..	..	71[b]	..	..	..	39	..	..
Italy	48	69	78	75	99[d]	96[d]	95[d]	96[d]	d	d	d	d
Luxembourg	h	h	h	h	205[h]	183[h]	213[h]	161[h]	h	h	h	h
Norway	h	h	h	h	82[h]	95[h]	98[h]	112[h]	h	h	h	h
Portugal	64[a]	62[a]	81[a]	84[a]	110[c]	107[c]	123[c]	108[c]	c	c	c	c
Spain	51[a]	46[a]	..	..	69[c]	64[c]	..	..	c	c	..	..

(x) Killed and seriously injured only.

(xx) In some cases the population has been estimated to match the casualty age groups supplied.

.. Not available.

Table 13 (Cont'd). PEDESTRIAN CASUALTY RATE PER 100,000 POPULATION

Country	Aged 15-24 years				Aged 25-64 years				Aged 65 years and over			
	1965	1966	1967	1968	1965	1966	1967	1968	1965	1966	1967	1968
Austria	118	117	109	106	104	106	102	99	239	254	250	226
Belgium	96	91	89	87	83	74	74	71	157	152	152	139
Denmark	52	50	45	..	57	61	46	..	196	214	156	..
France	72	74	..	..	74	72	..	..	142	141	..	..
Germany	109	112	102	99	84	84	75	73	177	176	168	158
Great Britain (x)	35	38	37	36	25[i]	27[i]	25[i]	24[i]	84[j]	83[j]	77[j]	72[j]
Greece	70	75	63	60	66	76	64	62	122	128	118	123
Ireland (x)	..	38	..	..	..	31	..	..	..	52	..	..
Italy	64	68	65	66	60	58	55	56	109	107	105	106
Luxembourg	e	e	e	e	19[e]	15[e]	16[e]	13[e]	118	87	108	80
Netherlands	40	43	30	28	35	37	32	31	118	118	106	97
Norway	39	45	49	44	28	36	37	35	76	85	92	95
Portugal	72	77	81	89	82	75	78	82	112	117	133	122
Spain	40	50	..	..	50	48	..	..	118	105	..	..
Switzerland	60	57	59	56	74	70	70	68	212	198	203	185
Yugoslavia	34	40	40	44	34	37	39	46	61	67	67	78

a) 0 - 4 years
b) 0 - 9 years included in a single item
c) 5 - 14 years
d) 6 - 14 years
e) 15 - 64 years
f) 5 - 7 years
g) 8 - 14 years
h) 0 - 14 years included in a single item
i) 25 - 59 years
j) 60 and over

rising most rapidly (for example, Yugoslavia).

7. MONTH-BY-MONTH ACCIDENT-CHANGES(*), 1965-1968

Each country's 48-month series of road accident figures for the years 1965-1968 has been used to obtain seasonally adjusted figures (**) in index number form ,with base value of 100 representing an average month in 1965. Graphs of the index numbers were then plotted for some selected countries and the reported "road safety" events have been entered at the appropriate point on the time scale. Even with seasonal adjustment the index seems to show some considerable variability (presumably due to chance and elements such as weather, special events, political and economic climate, etc.). The variability is even more marked with fatal accidents, the numbers involved being small (***) However, some interesting results are apparent and a selection of countries are considered in detail below.

7.1. Belgium

The new regulation on driving licences in May 1965 could perhaps have played some part in accident reduction because the general trend was downwards between then and September 1966. This trend may also have been contributed to by the enforcement of new regulations on security and installation of road signalling in December 1965. Two further events in 1967 (on-the-spot fines and breathalyser test) were not clearly connected with any reduction in the accident index, although there was a fall of about 5 per cent between January 1967 and April 1968. While only a few month's accident data are available after the introduction of "Highway Code Enforcement by the Police" in June 1968, a fairly sharp fall occurred in the last 3 months of the year. On the whole, enforcement of a considerable number of road safety regulations may have contributed to the major road accident reductions in the 4-year period. The accident index only twice rose above the base value in the period 1966-1968 and ended well below. The number of licensed vehicles was 27 per cent higher in 1968 than in 1965.

7.2 Great Britain

The accident index shows a downward trend from 1966 onwards. The trend is gradual until Septembre 1967 after which a sharp reduction occurred, with the indices for late 1967 and for 1968 being well below the base value. The early decrease may be partly attributed to the introduction of a 70 m.p.h. speed limit on previously de-restricted roads. The sharp reductions in October, November and Decembre 1967 and the subsequent low levels can be largely attributed to the introduction of the "breathalyser". In the two years following the "breathalyser test" about 70 per cent of the casualty reductions were achieved between 10 p.m. and 4 a.m., the time when drinking and driving is likely to be at its worst.

7.3 Greece

There was a considerable increase in the accident level from early 1965 to mid-1966 (which was unchecked by the road safety campaign of October 1965) with a peak in July 1966. However, throughout 1967 the accident index fell rapidly to below the 1965 level. This could have been associated with the limitation of the number of hours travel per day for lorries, agricultural vehicles, etc. (in December 1966) which make up a large proportion of traffic

(*) In analysis of this type it was considered preferable to use accident rather than casualty data.

(**) The method of seasonal adjustment is outlined in an annex to this report

(***) No graphs for fatal accidents are included.

in Greece. In mid-1968 accidents began to rise again, becoming at the end of the period about 8 per cent higher than the base value, while motor vehicles increased by more than 30 per cent.

7.4 Sweden

A falling trend is evident from January 1965 to mid-1966. This may partly be a result of the compulsory a annual inspection of vehicles more than 3 years old which began in January 1965. The accident index begins to rise again in mid-1966 but falls off again in 1967 (following new restrictions on pedestrians on 1st January, 1967). The index rose again following the change-over to right-hand traffic, but at the time of change, the index was at the lowest level for the whole period 1965-1968. Strictly enforced speed restrictions introduced at the time of the change were lifted some weeks afterwards. Motor vehicles in 1968 had increased by 16 per cent compared with 1965.

7.5. General

Every country selected had reductions following certain of their road safety events, and although there is no clear indication of any acciden reductions following the intermittent road safety campaigns carried note by Great Britain and Greece, it is of interest to note that in Great Britain the reductions after the introduction of the breathalyser took place when police enforcement was accompanied by intensive publicity. There is also apparent in most countries a "delayed effect" with reductions and downward trends starting or becoming stronger several months after the actual event. Perhaps, the public becomes more aware of new regulations only after they have been in force for a new months, or publicity may be concentrated more on the period after events have taken place.

It should be emphasised that the remarks in the preceeding sections are only tentative for it is probable that there are in each country a number of other factors (both known and unknown-that could influence changes in accident trends. But by eliminating, as far as possible, the seasonal variation and inspecting the resulting month-to-month accident index the trends become clearer. In some of the countries not mentioned above the accident level appears to have been held steady for a period of two years after which a definite upward or downward trend emerges. In other instances a downward trend over many months is replaced by a lasting upward trend. From the available evidence it is not clear what are the causes of these changes, but perhaps in the countries concerned some explanations could be advanced for these "turning points".

A possible use for this type of analysis is to compare countries where a similar type of regulation has been introduced (e.g. breath test, overall speed limit, tyre tread regulation). If a similar regulation has appeared to bring about a change in the accident trend in one country but not in another, then it might be worth-while for enquiries to be made as to whether relevant conditions differed, in the respective countries (e.g. in details of the regulations, in the degree of police enforcement or in the amount of publicity).

The index graphs for all the countries show that between January 1965 and December 1966, 7 out of 14 countries had upward and only 2 had downward trends. Similarly between December 1966 and December 1968 there were 7 upward and 2 downward trends (although the countries showing upward and downward trends were not all the same in each period). It is worth noting that throughout 1968 the accident index for Belgium, Great Britain, Luxembourg and Sweden was generally below 100 (the average for 1965).

8. IN SUMMARY

a) The percentage increases in total casualties in 1967 and 1968 were comparable with the years 1961-66, apart from 1964 when the increase was

particularly severe.

b) Car users account for the largest proportion of casualties in most countries and in many form over half of the total. Most of the increase in casualties in recent years has consisted of car users.

c) Between 1961 and 1968 motor vehicles increased on average by about 7 per cent per annum, and cars in particular by about 12 per cent.

d) The average annual increase in total casualties during the same period was about 2 per cent. Deaths have been rising more rapidly increasing by about 4 per cent per annum.

e) Car user casualties increased annually by about 9 per cent and pedestrian casualties by about 2 per cent.

f) There were considerable casualty reductions among users of motorcyles and scooters, and pedal cyclist casualties continued to fall in most countries. However, within the next few years these casualties are likely to reach a minimum level and total casualties may then tend to rise at a faster rate than at present, unchecked by this reducing influence.

g) Adult pedestrian casualty rates per 100,000 population appear to be declining in most countries in face of rising traffic. This may well be due to their adjustment to modern traffic conditions. However, casualty rates among child pedestrians are more often increasing, particularly among children of under school age.

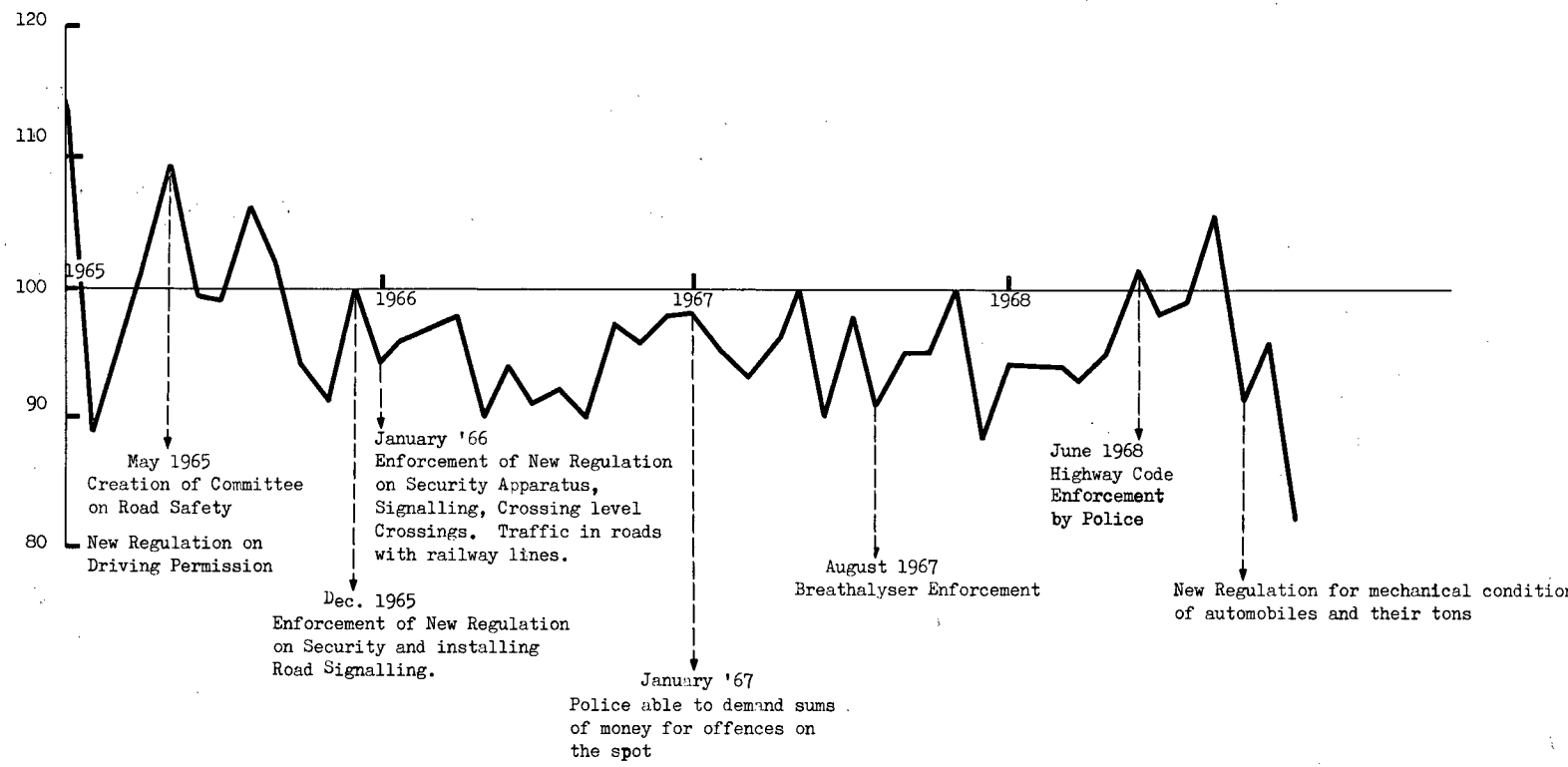
h) In Great Britain, the seasonally adjusted monthly series of accidents show a considerable fall and subsequent low accident levels following the introduction of the "breath test". In a number of other countries, viz, Belgium, Greece, Sweden, there were some sharp changes in the accident trends which appear to be associated with certain administrative measures. However, these changes in trend may possibly be merely coincidental and only first-hand knowledge of countries' internal circumstances can confirm causal connections between them and the administrative measures.

Annex I

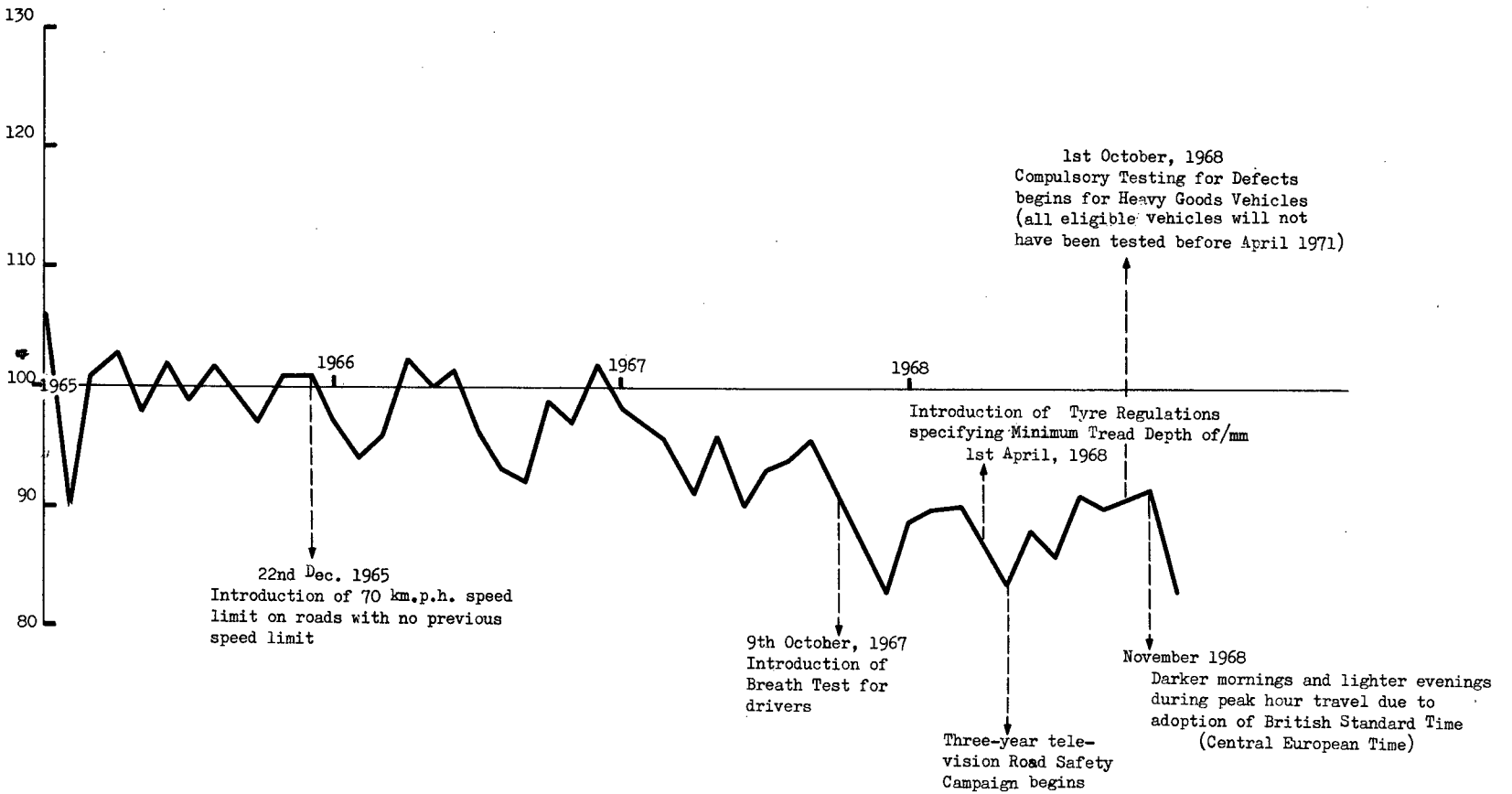
COUNCIL OF MINISTERS

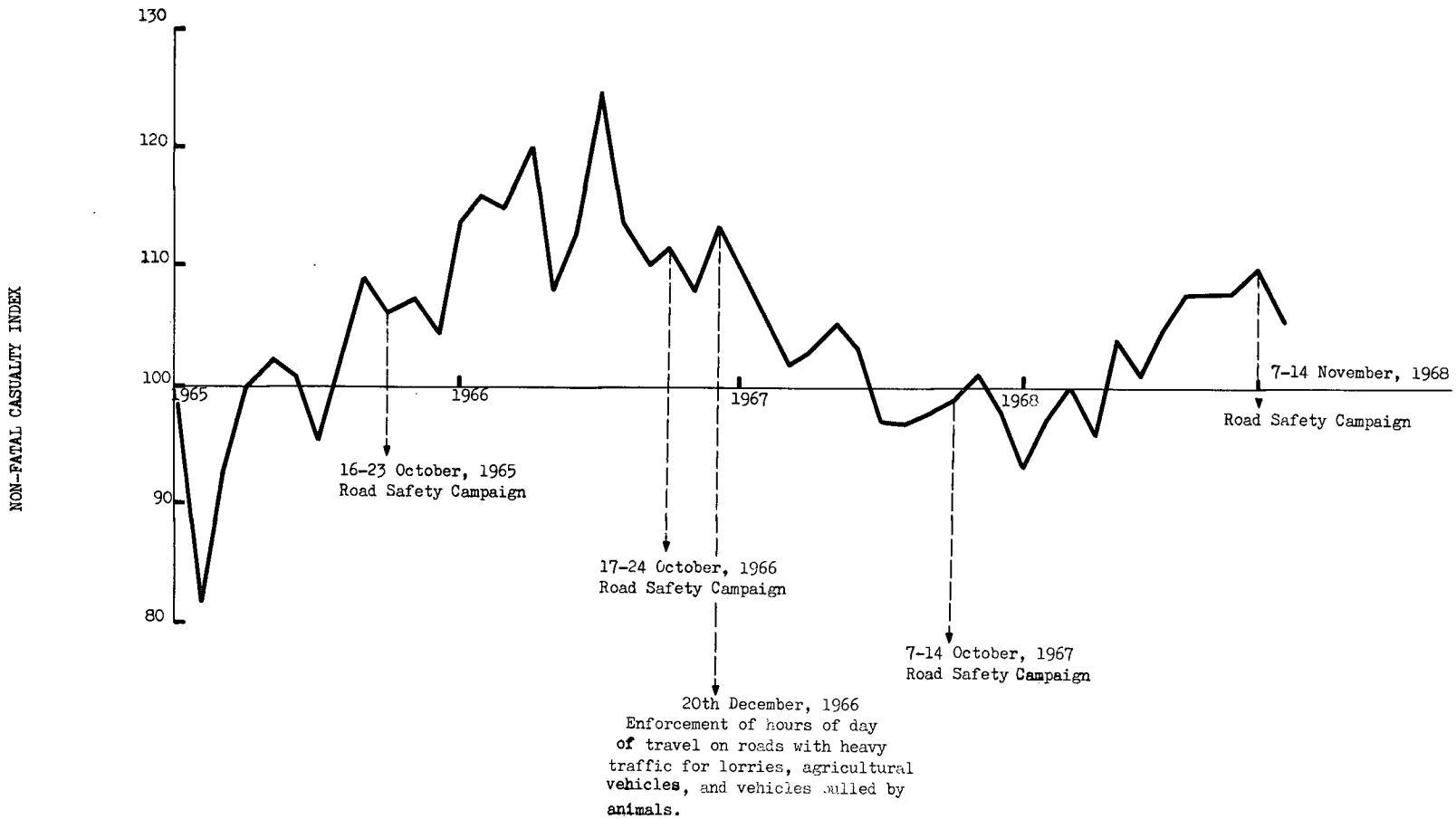
THIRD REPORT OF THE ROAD SAFETY COMMITTEE ON RECENT TRENDS IN ROAD ACCIDENTS

GRAPHS

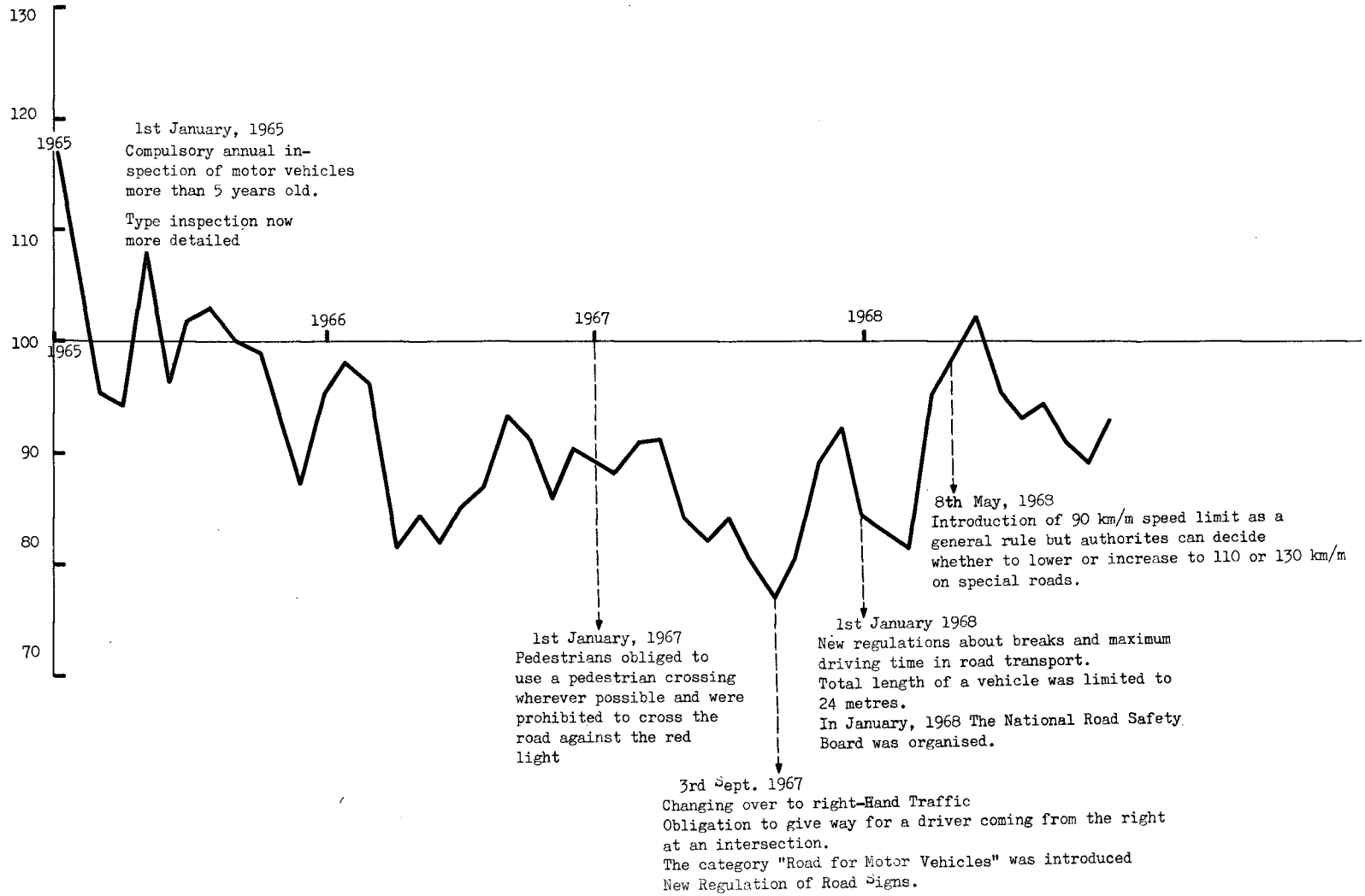

NON-FATAL CASUALTY INDEX
120
110
100
90
80
1965
1966
1967
1968
May 1965
Creation of Committee
on Road Safety
New Regulation on
Driving Permission
Dec. 1965
Enforcement of New Regulation
on Security and installing
Road Signalling.
January '66
Enforcement of New Regulation
on Security Apparatus,
Signalling, Crossing level
Crossings. Traffic in roads
with railway lines.
January '67
Police able to demand sums
of money for offences on
the spot
August 1967
Breathalyser Enforcement
June 1968
Highway Code
Enforcement
by Police
New Regulation for mechanical condition
of automobiles and their tons

GREAT BRITAIN




NON-FATAL CASUALTY INDEX
130
120
110
100
90
80
1965
1966
1967
1968
16-23 October, 1965
Road Safety Campaign
17-24 October, 1966
Road Safety Campaign
20th December, 1966
Enforcement of hours of day of travel on roads with heavy traffic for lorries, agricultural vehicles, and vehicles pulled by animals.
7-14 October, 1967
Road Safety Campaign
7-14 November, 1968
Road Safety Campaign

SWEDEN


NON-FATAL CASUALITY INDEX
130
120
110
100
90
80
70
1965
1965
1966
1967
1968
1st January, 1965
Compulsory annual inspection of motor vehicles more than 5 years old.
Type inspection now more detailed
1st January, 1967
Pedestrians obliged to use a pedestrian crossing wherever possible and were prohibited to cross the road against the red light
3rd Sept. 1967
Changing over to right-Hand Traffic
Obligation to give way for a driver coming from the right at an intersection.
The category "Road for Motor Vehicles" was introduced
New Regulation of Road Signs.
1st January 1968
New regulations about breaks and maximum driving time in road transport.
Total length of a vehicle was limited to 24 metres.
In January, 1968 The National Road Safety Board was organised.
8th May, 1968
Introduction of 90 km/m speed limit as a general rule but authorites can decide whether to lower or increase to 110 or 130 km/m on special roads.

ANNEX I

PERSONS KILLED, PERSONS KILLED OR INJURED, TOTAL NUMBER OF MOTOR VEHICLES

1961 - 1968

Year	Austria	Belgium	Denmark	France	Germany	Great Britain	Greece	Ireland	Italy	Luxem-bourg	Nether-lands	Norway	Portugal	Spain	Sweden	Switzer-land	Turkey	Yugos-lavia
PERSONS KILLED																		
1961	1,640	1,072	841	9,101	14,543	6,908	..	332	8,908	77	1,997	365	738	1,808	1,083	1,381	1,822	1,204
1962	1,622	1,127	810	9,928	14,445	6,709	..	340	9,683	85	2,082	351	802	1,998	1,123	1,370	2,123	1,122
1963	1,811	1,207	808	10,027	14,513	6,922	598	330	9;839	94	2,007	371	789	2,230	1,127	1,310	2,422	1,168
1964	1,959	1,351	893	11,105	16,494	7,820	713	341	9,198	103	2,375	376	704	2,580	1,189	1,382	2,526	1,461
1965	1,829	1,392	1,010	12,150	15,753	7,952	760	356	8,990	83	2,479	423	920	2,802	1,313	1,284	2,564	1,737
1966	1,876	1,291	1,020	12,168	16,868	7,985	825	378	8,904	82	2,612	446	1,030	3,222	1,313	1,268	3,134	2,145
1967	2,125	1,359	1,077	13,585	17,084	7,319	796	416	9,381	80	2,862	480	1,087	3,635	1,077	1,424	3,299	2,195
1968	2,157	1,395	..	..	16,636	6,810	740	447	9,809	106	2,907	479	1,184	3,803	1,262	1,405	..	2,703
PERSONS KILLED OR INJURED (IN THOUSANDS)																		
1961	58.1	84.9	22.5	222.2	462.5	349.8	..	5.4	226.7	2.5	52.2	7.2	17.9	48.8	24.0	37.7	12.1	16.0
1962	57.2	85.4	23.0	239.3	442.9	341.7	..	5.5	234.1	2.6	52.6	7.4	18.0	46.7	23.6	37.2	13.9	16.6
1963	59.8	87.2	22.3	251.0	438.8	356.2	15.9	4.8	240.6	2.6	53.2	8.0	18.9	57.4	24.3	32.6	14.4	19.1
1964	62.8	99.9	24.9	274.8	462.7	385.5	18.7	5.2	239.0	2.8	61.6	8.4	20.6	59.0	26.0	33.2	15.8	23.7
1965	61.8	100.8	26.1	302.4	449.2	397.9	19.8	5.7	226.5	2.7	64.4	8.6	21.0	71.0	24.9	30.8	16.2	28.8
1966	65.3	95.0	26.5	302.3	473.7	392.5	22.2	5.4	222.1	2.3	67.9	9.5	21.6	76.2	22.7	31.9	18.3	33.8
1967	69.1	96.1	25.9	314.9	479.1	370.0	20.0	6.1[b]	231.0	2.4	64.0	10.8	24.0	80.8	22.1	33.0	17.9	35.9
1968	68.5	97.9	...	...	485.4	349.2	20.1	10.2[b]	243.8	2.3	65.0	10.9	24.0	83.0	24.3	33.6	..	41.4
TOTAL NUMBER OF MOTOR VEHICLES (IN THOUSANDS)																		
1961	1,421	1,760	1,141[a]	12,901	10,940	9,514	..	327	7,018	82	2,244	600	267[a]	1,223[a]	1,778[a]	983	190	229[a]
1962	1,528	1,761	862[a]	13,821	11,356	10,110	146	355	7,804	66	2,462	662	298[a]	1,464[a]	1,892[a]	1,131	211	251[a]
1963	1,620	1,894	926[a]	14,836	12,018	10,981	..	382	8,993	69[a]	2,668	713	379[a]	1,709[a]	2,769[a]	1,257	221	278[a]
1964	1,710	1,983	1,409	15,850	12,583	11,894	..	415	9,958	99	2,928	771	389[a]	1,985[a]	2,122[a]	1,392	249	318[a]
1965	2,014	2,049	1,478	17,110	13,559	12,478	..	447	10,551	92[a]	3,155	820	432[a]	2,322[a]	2,233[a]	1,510	274	382[a]
1966	2,084	2,164	1,653	18,457	14,445	12,836	258	459	10,674	96[a]	3,472	870	469[a]	2,736[a]	2,324[a]	1,633	808	444[a]
1967	1,982	2,287	..	22,667	15,004	13,446	392	476	11,763	109	3,825	921	542[a]	3,148[a]	2,383[a]	1,747	..	664[a]
1968	2,057	2,603	..	..	15,599	13,788	389	500	12,612	117	4,290	974	623[a]	3,538[a]	2,469[a]	1,888	..	394[a]

a) Excluding Mopeds

b) Including those slightly injured

ANNEX II

DEATH RATE : CASUALTY RATE (PER 1,000 MOTOR VEHICLES)

1961 - 1968

Year	Austria	Belgium	Denmark	France	Germany	Great Britain	Greece	Ireland	Italy	Luxem-bourg	Nether-lands	Norway	Portugal	Spain	Sweden	Switzer-land	Turkey	Yugos-lavia
								DEATH RATE										
1961	1.2	0.6	0.7	0.7	1.3	0.7		1.0	1.3	0.9	0.9	0.6		1.5[a]	0.5[a]	1.4	9.6	5.1[a]
1962	1.1	0.6	0.8[a]	0.7	1.3	0.7		1.1	1.2	1.2[a]	0.8	0.5		1.4[a]	0.5[a]	1.2	10.1	4.3[a]
1963	1.1	0.6	0.8[a]	0.7	1.2	0.6		1.0	1.1	1.3[a]	0.7	0.5		1.3[a]	0.4	1.0	11.0	4.0[a]
1964	1.1	0.7	0.6	0.7	1.3	0.7		0.8	0.9	1.0	0.8	0.5		1.3[a]	0.5[a]	1.0	10.1	4.4[a]
1965	0.9	0.7	0.7	0.7	1.2	0.6		0.8	0.9	0.9[a]	0.8	0.5		1.2[a]	0.5[a]	0.8	9.4	4.5[a]
1966	0.9	0.7	0.7	0.7	1.2	0.6		0.8	0.8	0.8[a]	0.8	0.5		1.1[a]	0.5[a]	0.8	10.2	4.8[a]
1967	1.1	0.6	..	0.6	1.1	0.5		0.9	0.8	0.7	0.7	0.5		1.1[a]	0.4[a]	0.8	..	3.2[a]
1968	1.0	0.5	..	..	1.1	0.5		0.9	0.8	0.9	0.7	0.5		1.0[a]	0.5[a]	0.7	..	3.0[a]
								CASUALTY RATE										
1961	40.9	48.2	19.7	17.2	42.3	36.8		16.5	31.8	30.5	23.3	12.0		39.9[a]	11.9[a]	38.3	63.7	66.8[a]
1962	37.4	48.5	22.9[a]	17.3	39.0	33.8		18.0	30.0	39.4	21.4	11.2		31.9[a]	11.1[a]	32.9	65.9	61.3[a]
1963	36.9	46.0	21.1[a]	16.9	36.6	32.4		14.5	26.9	37.7	19.8	11.2		29.7[a]	8.8	25.9	65.2	63.2[a]
1964	36.7	50.4	17.7	17.3	36.8	32.4		12.5	24.0	28.3	21.6	10.9		28.6[a]	11.1[a]	23.9	63.5	68.0[a]
1965	30.7	49.2	17.7	17.7	33.1	31.8		12.8	21.5	29.3	20.4	10.5		29.5[a]	10.2[a]	19.1	59.1	74.6[a]
1966	31.3	43.9	17.1	16.4	32.8	30.6		11.8	20.8	24.0	19.6	10.9		26.9[a]	9.0[a]	19.5	59.4	75.5[a]
1967	34.9	42.0	..	13.9	31.9	27.5		12.8	19.6	22.0	16.7	11.7		24.8[a]	8.5[a]	18.9	..	51.4[a]
1968	33.3	37.6	..	..	31.1	25.3		20.4[b]	19.3	19.5	15.2	11.2		22.5[a]	9.0[a]	17.8	..	45.8[a]

a) Excludes mopeds and moped casualties

b) Includes those slightly injured.

PERSONS KILLED BY CLASS OF ROAD USER

ANNEX IIIA

1961 - 1968

Year	Austria	Belgium	Denmark	France	Germany	Great Britain	Greece	Ireland	Italy	Luxem-bourg	Nether-lands	Norway	Portugal	Spain	Sweden	Switzer-land	Turkey	Yugos-lavia
PEDESTRIANS																		
1961	533	279	238	2,088	4,845	2,717	..	118	2,231	25	471	108	339	624	281	426	731	363
1962	519	318	216	2,372	5,097	2,681	..	122	2,333	31	485	117	346	574	281	435	834	360
1963	624	307	225	2,272	4,994	2,740	212	106	2,537	19	477	132	326	651	336	428	978	401
1964	706	316	257	2,577	5,729	2,986	279	135	2,264	23	520	151	386	825	286	489	992	490
1965	652	340	292	2,874	5,855	3,105	..	128	2,390	17	578	152	405	833	327	446	1,092	660
1966	683	367	278	2,748	6,052	3,153	298	140	2,394	17	604	174	438	971	297	447	1,346	745
1967	689	364	350	3,120	5,822	2,964	305	175	2,361	28	601	179	464	1,082	195	463	1,280	807
1968	645	345	205	..	5,342	2,762	304	173	2,514	24	589	155	502	1,210	260	474	..	947
PEDAL CYCLISTS																		
1961	129	137	154	905	1,559	645	..	69	1,162	3	390	54	94	..	168	233	6	159
1962	108	142	164	853	1,507	583	..	66	1,173	5	422	51	96	225	157	189	72	158
1963	134	157	153	819	1,596	589	26	70	1,154	2	403	43	98	150	164	166	29	152
1964	153	137	155	843	1,787	583	..	59	1,132	4	476	37	104	167	147	141	25	249
1965	129	173	159	828	1,643	543	..	58	1,126	4	431	51	117	158	171	142	28	197
1966	131	138	155	763	1,785	514	22	62	1,052	10	504	35	118	150	152	115	14	252
1967	172	150	162	838	1,797	463	15	68	1,110	6	507	51	105	178	128	99	19	231
1968	142	152	111	..	1,808	391	18	51	1,145	5	507	43	304	176	152	124	..	273
MOPED RIDERS																		
1961	185	102	135	1,887	1,201	104	..	b	496	5	440	b	82	..	139	85	..	36
1962	215	95	103	2,020	860	98	..	b	568	5	412	b	95	c	131	76	..	50
1963	207	105	100	1,978	753	79	c	b	679	7	424	b	103	62	132	81	c	62
1964	249	135	116	2,259	844	88	..	b	762	11	449	31	107	75	102	96	c	75
1965	212	108	126	2,362	632	77	..	b	731	..	491	38	132	107	125	95	c	23
1966	218	96	146	2,387	733	84	128	b	781	c	468	23	158	126	120	109	c	23
1967	251	107	150	2,497	717	68	97	b	891	c	560	36	186	131	84	135	c	73
1968	237	96	..	..	657	72	93	b	918	c	538	33	c	146	111	126	..	58
USERS OF SCOOTERS AND MOTOR CYCLES																		
1961	300	156	99	770	2,046	1,440	..	44	2,711	13	208	98	29	..	64	213	23	156
1962	232	129	99	574	1,493	1,225	..	49	2,365	2	149	72	40	423	46	229	32	172
1963	269	95	74	389	1,200	1,200	152	43	2,074	10	113	69	23	507	49	205	24	122
1964	226	103	82	279	1,057	1,347	..	35	1,869	12	147	21	27	566	40	183	35	170
1965	175	54	50	254	801	1,167	..	49	1,517	12	115	21	29	586	38	135	66	260
1966	112	54	52	190	769	1,050	47	51	1,342	11	120	24	32	621	31	153	80	298
1967	123	37	61	184	785	852	34	37	1,293	10	117	21	22	583	33	146	d	201
1968	122	32	..	..	771	815	19	57	1,165	8	92	26	34	451	36	163	...	272

PERSONS KILLED BY CLASS OF ROAD USER

ANNEX III A (Continued) 1961 - 1968

Year	Austria	Belgium	Denmark	France	Germany	Great Britain	Greece	Ireland	Italy	Luxem-bourg	Nether-lands	Norway	Portugal	Spain	Sweden	Switzer-land	Turkey	Yugosla-via
USERS OF CARS																		
1961	370	327	191	3,011	4,152	1,548	..	101	1,803	31	388	105[a]	123	..	431	335	1,062	423
1962	412	379	188	3,567	4,741	1,635	..	103	2,561	42	520	111[a]	159	443	441	377	1,185	382
1963	444	457	225	4,081	5,194	1,771	208	111	2,729	56	478	127[a]	177	500	466	362	191	431
1964	494	589	250	4,604	6,285	2,213	..	112	2,787	53	666	136[a]	196	611	614	385	244	430
1965	518	658	338	5,329	6,062	2,479	..	121	2,663	50	732	161[a]	144	702	576	405	201	266
1966	593	571	337	5,538	6,773	2,588	330	125	2,824	44	791	190[a]	204	886	641	385	312	451
1967	741	630	354	6,348	7,220	2,472	345	136	3,190	36	950	139	233	1,122	574	511	2,000	518
1968	870	699	...	...	7,333	2,294	255	166	3,552	69	1,070	178	344	1,328	703	450	..	766
USERS OF OTHER VEHICLES																		
1961	123	71	23	440	740	454	..	a	505	a	100	a	71	..	a	89	a	67
1962	136	64	40	542	747	487	..	a	683	a	94	a	66	333	67	64	a	a
1963	133	86	31	488	776	543	a	a	666	a	112	a	62	360	70	68	1,200	a
1964	131	71	33	543	792	593	..	a	384	a	117	a	84	336	a	88	1,230	47
1965	143	59	45	503	760	581	..	a	563	a	132	a	93	416	76	61	1,177	331
1966	139	65	52	542	756	596	a	a	511	a	125	a	80	468	72	59	1,382	376
1967	149	71	a	508	743	500	..	a	536	a	127	54	71	539	63	70	d	365
1968	141	71	...	...	725	586	51	a	515	a	111	44	a	492	a	68	..	387

a) Cars and other vehicles are combined

b) Mopeds, scooters and motor cycles are combined

c) Mopeds and pedal cyclists are combined

d) Motor cycles, cars and other vehicles are combined

PERSONS KILLED OR INJURED BY CLASS OF ROAD USER

ANNEX IIIB

1961 - 1968

Year	Austria	Belgium	Denmark	France	Germany	Great Britain	Greece	Ireland	Italy	Luxem-bourg	Nether-lands	Norway	Portugal	Spain	Sweden	Switzer-land	Turkey	Yugos-lavia
							PEDESTRIANS											
1961	9,614	10,460	3,390	33,412	81,714	72,299	..	1,287	41,287	310	7,689	1,531	7,564	..	3,298	6,820	4,114	3,870
1962	9,269	9,973	3,622	35,457	78,099	72,241	..	1,365	40,949	357	7,506	1,687	7,512	11,120	3,441	6,903	4,672	4,029
1963	9,756	9,818	3,654	36,336	76,684	75,129	5,098	1,333	42,150	336	7,211	1,782	7,839	12,581	3,470	6,146	5,081	4,607
1964	10,807	10,542	3,810	38,866	79,243	80,481	5,803	1,245	42,140	348	8,219	1,874	8,219	13,450	3,594	6,351	5,688	6,716
1965	10,577	11,045	4,138	42,640	76,385	85,067		1,296	40,270	351	8,561	1,889	8,500	16,994	3,405	6,397	6,003	6,846
1966	10,793	10,458	4,211	42,770	78,230	85,623	6,704	1,257	40,823	298	8,909	2,220	8,388	17,397	3,065	6,336	6,537	8,062
1967	10,804	10,491	3,665	42,417	76,631	84,279	5,855	1,419[e]	40,269	341	7,889	2,351	9,419	18,544	2,538	6,512	6,284	8,540
1968	10,558	10,196			75,166	83,651	5,894	2,227[e]	40,805	262	7,618	2,436	9,600	18,488	2,650	6,401		10,066
							PEDAL CYCLISTS											
1961	5,797	12,268	4,471	18,049	53,286	44,615	..	979	21,986	174	11,223	801	2,026	..	2,270	6,763	186	2,000
1962	5,164	11,914	4,146	17,239	47,116	40,668	..	773	20,989	191	10,250	777	1,958	3,854	1,966	4,963	390	2,004
1963	5,179	11,802	3,715	16,704	45,677	37,890	768	667	19,619	137	9,855	833	2,123	2,656	2,087	3,780	260	2,291
1964	5,244	13,392	3,962	17,194	47,706	37,624	..	610	18,197	124	10,672	805	2,175	2,723	2,145	3,379	243	2,805
1965	4,865	12,946	3,763	17,560	43,025	34,972	..	606	17,060	157	10,713	728	2,108	2,982	1,897	2,896	290	2,686
1966	5,314	11,664	3,785	16,436	44,180	30,149	541	524	16,370	151	10,283	708	1,996	2,656	1,946	2,736	198	2,872
1967	5,437	11,495	3,362	15,837	46,317	27,836	397	537[e]	16,138	142	8,730	829	1,978	2,465	1,671	2,631	107	3,009
1968	5,217	11,089			45,591	26,230	412	696[e]	15,846	104	8,618	790	5,387	2,225	2,017	2,595	..	3,237
							MOPED RIDERS											
1961	11,964	15,229	3,352	53,701	58,376	5,926	..	b	12,889	b	17,301	1,765	2,304	..	2,788	2,564	b	759
1962	10,985	14,972	3,213	60,175	27,566	5,345	..	b	15,769	b	17,499	1,530	2,505	c	2,506	2,249	..	1,163
1963	11,944	14,393	2,803	60,409	32,282	5,641	c	b	18,790	b	18,123	1,556	2,597	1,625	2,431	2,338	c	1,534
1964	12,518	16,377	3,201	69,038	32,419	7,043	..	b	20,024	174	21,881	580	2,820	2,237	2,495	2,840	c	2,118
1965	12,368	14,672	3,092	73,834	25,262	6,459	..	b	20,048	b	22,673	585	3,021	2,662	2,219	2,834	c	330
1966	12,830	13,020	3,386	72,975	23,398	5,560	5,229	b	21,663	b	24,997	607	3,361	2,579	1,933	3,141	c	300
1967	13,737	13,065	3,630	73,339	22,667	4,947	3,455	b	25,137	b	24,039	662	3,722	2,916	1,918	3,344	c	1,794
1968	13,133	12,582			21,053	4,576	3,358	b	29,658	b	24,073	696	c	3,336	2,021	3,645	..	3,358
							USERS OF SCOOTERS AND MOTOR CYCLES											
1961	12,206	14,816	4,273	27,687	76,351	89,375	..	813	87,218	463[b]	6,007	b	1,164	..	2,015	7,709	361	3,295
1962	10,353	12,407	4,010	20,007	58,786	81,268	..	866	75,035	404[b]	5,269	b	1,027	13,797	1,164	8,391	337	3,309
1963	9,613	10,154	3,411	14,165	47,081	76,769	5,151	620	67,191	832[b]	4,833	b	934	15,653	1,324	6,509	295	3,643
1964	7,951	9,842	3,341	11,421	39,463	84,240	..	870	62,043	150[b]	4,825	915	984	17,435	1,209	5,839	379	4,079
1965	6,062	7,157	2,784	9,311	30,921	76,955	..	806	49,091	289[b]	4,142	813	1,023	19,332	955	4,696	348	6,579
1966	5,210	5,263	2,510	7,017	29,365	67,683	1,740	838	45,014	216[b]	3,692	865	894	18,760	792	4,566	526	6,865
1967	4,370	4,344	2,115	6,044	28,677	58,668	1,041	746[e]	41,133	192[b]	2,889	941	868	16,879	816	4,393	d	4,753
1968	3,630	3,468			29,349	53,604	914	1,295[e]	37,390	151[b]	2,374	926	927	14,506	1,028	4,255	..	6,532

ANNEX IIIB (Contd.)

Year	Austria	Belgium	Denmark	France	Germany	Great Britain	Greece	Ireland	Italy	Luxembourg	Netherlands	Norway	Portugal	Spain	Sweden	Switzerland	Turkey	Yugoslavia
							USERS OF CARS											
1961	15,449	27,173	5,931	78,314	165,764	137,551	..	2,345	47,389	1,589	7,570	3,092	3,110	..	13,610	12,402	7,488	5,651
1962	18,084	30,149	6,899	94,280	195,764	142,174	..	2,496	59,780	1,659	9,336	3,362	3,264	10,997	12,940	13,077	8,611	5,688
1963	19,838	34,121	7,612	110,216	210,987	168,750	4,849	2,337	71,498	1,814	10,371	3,826	3,750	13,022	13,905	12,243	2,146	6,577
1964	22,855	42,514	9,351	124,808	239,094	176,111	..	2,480	85,212	1,961	13,293	4,186	4,180	15,776	16,555	13,322	2,642	8,549
1965	24,124	48,228	10,996	145,378	248,523	194,484	..	2,974	84,690	1,880	15,597	4,593	4,502	20,533	15,347	12,719	3,112	7,588
1966	27,628	48,142	11,274	148,885	274,297	203,442	..	2,993	86,857	1,606	17,487	4,915	5,050	25,055	14,149	13,704	2,569	10,999
1967	31,208	50,855	13,157[e]	166,276	281,569	194,248	2,553	3,408[e]	96,994	1,768	18,205	4,837	6,959	28,263	14,208	14,853	11,554	13,169
1968	32,278	54,573	..	..	291,340	181,148	5,945[e]	5,945[e]	108,712	1,749	20,229	5,127	8,055	33,182	16,574	15,392	..	15,997
							USERS OF OTHER VEHICLES											
1961	3,101	4,962	1,095	11,057	24,979	a	..	a	15,941	a	2,378	a	1,767	..	a	1,482	a	470
1962	3,300	5,980	1,083	12,092	25,602	a	..	a	21,610	a	2,742	a	1,724	6,891	1,244	1,579	a	365
1963	3,443	6,870	1,135	13,151	26,100	a	a	a	21,350	a	2,830	a	1,637	6,843	1,130	1,622	6,641	443
1964	3,444	7,230	1,203	13,438	24,741	a	..	a	11,413	a	2,672	a	1,904	7,348	a	1,501	6,847	463
1965	3,520	6,738	1,304	13,683	25,127	a	..	a	15,364	a	2,680	a	1,819	8,546	1,108	1,300	6,465	4,805
1966	3,567	6,438	1,291	14,184	24,230	a	..	a	11,383	a	2,553	a	1,914	9,719	858	1,425	8,542	4,705
1967	3,557	5,881	a	11,028	23,271	a	..	a	11,311	a	2,212	1,121	1,842	11,777	927	1,251	d	4,681
1968	3,676	6,035	..	..	22,855	a	289	a	11,431	a	3,093	873	a	11,216	a	1,311	..	5,128

a) Cars and Other Vehicles are combined

b) Mopeds, motor scooters and motor cycles are combined

c) Mopeds and pedal cyclists are combined

d) Motor cycles, cars and other vehicles are combined

e) Including those slightly injured

NUMBER OF MOTOR VEHICLES BY TYPE OF VEHICLE

1961 - 1968

ANNEX IVA

Year	Austria	Belgium	Denmark	France	Germany	Great Britain	Greece	Ireland	Italy	Luxembourg	Netherlands	Norway	Portugal	Spain	Sweden	Switzerland	Turkey	Yugoslavia
MOPEDS																		
1961	416,684	435,438	368,954	4,200,000	2,114,398	396,100	..	a	1,081,469	13,000	1,275,000	102,550	..	..	..	85,000	..	..
1962	439,769	446,484	..	4,400,000	1,642,050	897,400	..	25,464	1,200,837	..	1,300,000	111,529	..	..	..	143,644	..	..
1963	459,467	445,998	..	4,700,000	1,528,943	434,700	..	a	1,340,220	..	1,450,000	119,469	..	..	750,000	201,876	..	..
1964	475,683	434,996	407,000	4,700,000	1,298,332	497,000	..	a	1,443,364	14,000	1,475,000	124,657	..	..	..	247,719	..	..
1965	490,320	417,543	412,000	5,070,000	1,207,574	500,300	..	a	1,529,521	..	1,500,000	128,245	..	..	..	293,872	..	..
1966	496,423	394,066	417,000	5,350,000	1,100,000	464,567	..	a	1,599,521	..	1,578,200	128,758	..	..	..	322,439	..	..
1967	496,579	379,024	400,000	5,800,000	1,054,000	482,200	..	a	1,720,000	8,000*	1,700,220	128,329	..	..	..	377,860	..	..
1968	489,747	370,716	402,000		1,001,000	469,210	..	a	1,900,000	8,000*	1,900,000	127,830	..	..	..	425,889	..	a
MOTOR CYCLES AND SCOOTERS																		
1961	288,406	255,000	114,046	820,000	1,723,340	1,394,100	..	45,594	2,992,004	10,262	170,257	79,004	26,359	677,228	144,726	249,575	11,076	84,140
1962	267,205	199,290	109,815	590,000	1,294,240	1,381,900	37,498	22,804	2,794,487	10,306	162,617	76,988	27,405	803,264	126,039	240,563	12,816	91,005
1963	248,868	185,000	104,210	400,000	1,197,955	1,320,500	..	49,529	2,888,578	9,226	155,717	72,288	37,527	916,821	107,343	219,361	15,832	97,977
1964	227,535	168,493	95,233	400,000	925,511	1,244,000	..	52,173	2,196,035	8,770	151,000	67,446	38,742	1,026,743	87,774	205,195	20,549	102,168
1965	204,123	122,000	84,768	180,000	900,000	1,111,400	..	51,968	2,586,348	8,714	139,805	60,543	41,398	1,124,645	64,400	191,665	25,488	109,545
1966	180,835	97,200	75,637	150,000	750,000	941,883	53,865	47,091	1,710,700	6,521	129,261	54,157	44,191	1,212,496	51,401	181,364	34,362	108,838
1967	159,840	83,452	65,382	1,500,000	594,033	867,550	58,224	45,631	1,550,000	6,170	120,000	50,148	47,726	1,259,062	52,000	169,714	50,000	180,956
1968	139,649	68,574*	57,475		512,000	758,860	62,554	44,064	1,350,000	5,350	90,000	46,244	51,479	1,279,902	47,500	158,903	..	318,425
CARS																		
1961	474,538	870,000	469,952	6,158,200	5,342,940	6,049,000	..	186,302	2,443,873	50,993	615,500	275,113	164,146	358,926	1,304,251	579,014	52,381	78,085
1962	556,757	914,566	547,841	7,008,000	6,334,926	6,634,700	56,893	210,989	3,006,839	45,502	729,651	321,767	183,215	440,611	1,424,049	667,364	60,731	97,942
1963	627,582	1,050,000	605,486	7,800,000	7,304,580	7,460,400	..	232,744	3,864,150	49,689	865,516	364,166	341,466	529,700	1,556,005	748,038	72,034	112,534
1964	702,034	1,158,483	675,167	7,900,000	8,274,163	8,335,100	..	254,494	4,674,644	55,724	1,072,500	415,530	350,359	652,297	1,665,782	839,378	79,114	141,790
1965	790,675	1,281,241	744,416	8,800,000	9,267,423	9,017,500	..	281,448	5,468,981	61,686	1,272,898	465,243	390,588	807,317	1,792,700	919,110	91,300	179,672
1966	881,642	1,435,767	813,136	9,600,000	10,302,080	9,599,895	122,479	296,372	6,356,545	67,370	1,502,226	515,879	321,204	1,052,506	1,884,000	1,006,642	106,642	237,236
1967	964,929	1,503,117	887,950	11,200,000	11,015,813	10,213,310	144,434	314,434	7,311,385	72,000	1,725,000	569,199	400,823	1,334,837	1,937,000	1,081,386	..	355,100
1968	1,056,290	1,813,099	955,337		11,682,556	10,722,390	169,139	336,615	8,178,505	79,000	2,000,000	619,039	449,695	1,633,973	2,017,600	1,189,474	..	439,892
OTHER VEHICLES																		
1961	241,464	200,000	187,909[a]	1,722,800	1,759,085	1,674,800	..	94,745	500,499	7,501	182,881	115,556	76,671	187,352	328,886	69,759	78,682	61,750
1962	264,514	200,296	204,522[a]	1,823,000	1,884,859	1,696,400	51,812	46,886	802,235	9,710	185,575	119,768	86,967	219,835	341,928	79,911	89,760	59,733
1963	284,539	213,500	216,295[a]	1,936,000	1,983,920	1,765,200	..	47,456	856,609	9,804	197,089	122,225	b	262,652	355,321	87,912	132,152	66,076
1964	304,755	221,510	231,846[a]	2,850,000	2,084,779	1,818,400	..	108,596	643,596	20,290	230,000	162,971	b	306,060	368,590	99,576	163,298	73,974
1965	528,775	227,865	236,668[a]	3,060,000	2,183,757	1,848,823	..	113,713	965,869	21,426	242,691	166,242	b	390,306	376,300	105,698	154,342	92,501
1966	524,907	236,487	247,470[a]	3,356,800	2,293,097	1,830,025	81,362	115,316	1,007,117	22,421	262,097	170,867	103,436	470,660	388,300	112,374	166,907	98,358
1967	360,178	321,807	254,607[a]	4,167,443	2,340,545	1,882,765	89,242	115,981	1,182,000	23,114	280,000	173,704	93,426	553,969	394,400	118,465	..	127,949
1968	371,721	350,266	258,841[a]		2,403,054	1,837,609	97,001	119,541	1,183,053	24,355	300,000	180,991	121,373	624,213	403,900	122,591	..	135,258

a) Included with scooters and motor cycles

b) Included with cars

* Estimated

ANNEX IVB

DEATH RATE OF ROAD USER PER 1000 MOTOR VEHICLE

Year	Austria	Belgium	Denmark	France	Germany	Great Britain	Greece	Ireland	Italy	Luxem-bourg	Nether-lands	Norway	Portugal	Spain	Sweden	Switzer-land	Turkey	Yugosla-via
								MOPED RIDERS										
1961	0.4	0.2	0.4	0.4	0.6	0.3		a	0.5	0.4	0.3	a	..	..	..	1.0	..	..
1962	0.5	0.2	..	0.5	0.5	0.3		a	0.5	..	0.3	a	..	..	..	0.5	..	..
1963	0.5	0.2	..	0.4	0.5	0.2		a	0.5	..	0.3	a	..	..	0.2	0.4	..	..
1964	0.5	0.3	0.3	0.5	0.7	0.2		a	0.5	0.8	0.3	0.2	..	..	..	0.4	..	..
1965	0.4	0.3	0.3	0.5	0.5	0.2		a	0.5	..	0.3	0.3	..	..	..	0.3	..	..
1966	0.4	0.2	0.4	0.4	0.7	0.2		a	0.5	..	0.3	0.2	..	..	..	0.3	..	..
1967	0.5	0.3	0.4	0.4	0.7	0.1	..	a	0.5	..	0.3	0.3	..	..	..	0.4	..	..
1968	0.5	0.3	..	..	0.7	0.1	..	a	0.5	..	0.3	0.3	..	..	..	0.3	..	a
								USERS OF MOTOR CYCLES AND SCOOTERS										
1961	1.0	0.6	0.9	0.9	1.2	1.0		1.0	0.9	1.3	1.2	0.5	1.1	..	0.4	0.9	2.1	1.9
1962	0.9	0.6	0.9	1.0	1.0	0.8		1.0	0.8	0.2	0.9	0.4	1.5	0.5	0.4	1.0	2.5	1.9
1963	1.1	0.5	0.7	1.0	1.0	0.9		0.9	0.7	1.1	0.7	0.4	0.6	0.6	0.5	0.9	1.5	1.2
1964	1.0	0.6	0.9	0.7	1.1	1.1		0.7	0.6	1.4	1.0	0.3	0.7	0.6	0.5	0.9	1.7	1.7
1965	0.9	0.4	0.6	1.4	0.9	1.0		0.9	0.6	1.4	0.8	0.3	0.7	0.5	0.6	0.7	2.6	2.4
1966	0.6	0.6	0.7	1.3	1.0	1.1	0.9	1.1	0.8	1.7	0.9	0.4	0.7	0.5	0.6	0.8	2.3	2.7
1967	0.8	0.4	0.9	0.5	1.3	0.9	0.6	0.8	0.8	1.6	1.0	0.4	0.5	0.5	0.6	0.9	..	1.1
1968	0.9	0.5			1.5	1.1	0.3	1.3	0.9	1.5	1.0	0.6	0.7	0.4	0.8	1.0	..	1.0
								USERS OF CARS										
1961	0.8	0.4	0.4	0.5	0.8	0.3		0.4	0.7	0.5	0.6	0.3	0.7	..	0.3	0.6	8.1	5.4
1962	0.7	0.4	0.3	0.5	0.7	0.2		0.4	0.9	0.8	0.7	0.3	0.9	1.0	0.3	0.6	7.9	2.4
1963	0.7	0.4	0.4	0.5	0.7	0.2		0.5	0.7	0.9	0.6	0.3	0.7	0.9	0.3	0.5	2.7	3.8
1964	0.7	0.5	0.4	0.6	0.8	0.3		0.3	0.6	0.7	0.6	0.3	0.6	0.9	0.4	0.5	3.1	
1965	0.7	0.5	0.5	0.6	0.7	0.3		0.3	0.5	0.6	0.6	0.3	0.6	0.9	0.3	0.4	2.2	1.5
1966	0.7	0.4	0.4	0.6	0.7	0.3	2.7	0.4	0.4	0.5	0.5	0.3	0.6	0.8	0.3	0.4	2.9	1.9
1967	0.8	0.4	0.4	0.6	0.7	0.2	2.4	0.3	0.4	0.4	0.5	0.2	0.6	0.8	0.3	0.5	..	1.5
1968	0.8	0.4			0.6	0.2	1.5	0.4	0.4	0.7	0.5	0.3	0.6	0.8	0.3	0.4	..	1.7
								USERS OF OTHER VEHICLES										
1961	0.5	0.4	0.1	0.3	0.4	0.3		b	1.0	b	0.5	b	0.9	..	b	1.5	b	1.1
1962	0.5	0.3	0.2	0.3	0.4	0.3		b	0.9	b	0.5	b	0.8	1.5	0.2	0.8	b	b
1963	0.5	0.4	0.1	0.3	0.4	0.4		b	0.8	b	0.6	b	b	1.4	0.2	0.8	9.1	b
1964	0.4	0.3	0.1	0.2	0.4	0.3		b	0.6	b	0.5	b	b	1.1	b	0.9	7.5	
1965	0.3	0.3	0.2	0.2	0.3	0.3		b	0.6	b	0.5	b	b	1.1	0.2	0.6	7.6	3.6
1966	0.3	0.3	0.2	0.2	0.3	0.3	b	b	0.5	b	0.5	b	0.8	1.0	0.2	0.5	8.3	3.8
1967	0.4	0.2		0.1	0.3	0.3		b	0.5	b	0.5	0.3	0.8	1.0	0.2	0.6	..	2.9
1968	0.4	0.2			0.3	0.3	0.5	b	0.4	b	0.4	0.2	b	0.8	b	0.6	..	2.9

a) Included with scooters and motor cycles

b) Included with cars

ANNEX IVC

CASUALTY RATE OF ROAD USER PER 1000 MOTOR VEHICLES

Year	Austria	Belgium	Denmark	France	Germany	Great Britain	Greece	Ireland	Italy	Luxem-bourg	Nether-lands	Norway	Portugal	Spain	Sweden	Switzer-land	Turkey	Yugosla-via
MOPED RIDERS																		
1961	28.7	35.0	9.1	12.8	27.6	15.0	..	a	11.9	a	13.6	a	..	..	..	30.2	..	..
1962	25.0	33.5	..	13.7	22.9	13.5	..	a	13.1	..	13.5	a	..	..	..	15.7	..	..
1963	26.0	32.3	..	12.9	21.1	13.0	..	a	14.0	..	12.5	a	..	..	..	11.6	..	..
1964	26.3	37.6	7.9	14.7	25.0	14.2	..	a	13.9	12.4	14.8	4.7	..	..	..	11.5	..	..
1965	25.2	35.1	7.5	14.6	20.9	12.9	..	a	13.1	..	15.1	4.6	..	..	..	9.6	..	..
1966	25.8	33.0	8.1	13.6	21.3	12.0	..	a	13.5	..	15.8	4.7	..	..	..	9.4	..	..
1967	27.7	34.5	9.1	12.6	21.5	10.3	..	a	14.6	..	14.1	5.2	..	..	..	8.8	..	..
1968	26.8	33.9	..	..	21.0	9.8	...	a	15.6	..	12.7	5.4	..	..	..	8.6	..	a
USERS OF MOTOR CYCLES AND SCOOTERS																		
1961	42.3	58.1	37.5	33.8	45.5	64.1	..	17.8	29.2	19.9	35.3	9.7	44.2	..	13.9	30.9	32.6	39.2
1962	38.7	62.3	36.5	33.9	39.3	66.6	..	17.9	26.9	..	32.4	8.1	37.5	17.2	11.6	34.9	18.5	36.4
1963	38.6	54.9	32.7	35.4	39.3	58.0	..	12.5	23.3	..	31.0	8.1	24.6	17.1	12.3	29.7	18.6	37.2
1964	34.9	58.4	35.1	28.6	42.6	67.7	..	16.7	19.4	17.1	32.0	13.6	25.4	17.0	13.8	28.5	18.4	39.9
1965	29.7	58.7	32.8	51.7	34.4	69.2	..	15.5	19.0	33.2	29.6	13.4	24.7	17.2	14.8	24.5	13.7	60.1
1966	28.8	54.1	33.2	46.8	39.2	71.8	32.3	13.5	26.3	33.1	28.6	16.0	20.2	15.5	15.4	25.2	12.4	63.1
1967	27.3	52.1	32.3	40.3	48.3	61.1	17.9	16.3[c]	26.5	31.1	24.1	18.8	18.2	13.4	15.7	25.9	..	26.3
1968	26.0	50.6	..	..	57.3	62.7	14.6	29.4[c]	27.7	28.2	26.4	20.0	18.0	11.3	21.6	26.8	..	20.5
USERS OF CARS																		
1961	32.6	31.2	12.6	12.7	31.0	17.9	..	8.3	19.4	27.2	12.3	7.9	18.9	..	8.3	21.4	57.1	72.4
1962	32.5	33.0	12.6	13.5	30.9	17.1	..	9.7	19.9	30.0	12.8	7.6	17.8	25.0	9.1	19.6	57.2	58.1
1963	31.6	32.5	12.6	14.1	28.9	17.4	..	8.3	18.5	30.5	12.0	7.9	15.8	24.6	8.9	16.4	29.8	58.4
1964	32.6	36.7	13.8	15.8	28.9	17.5	..	6.8	18.2	25.8	12.4	7.2	17.4	24.2	8.1	15.9	33.4	..
1965	30.9	37.6	14.8	16.5	26.8	18.0	..	7.5	15.5	22.6	12.3	7.3	16.2	25.4	8.6	13.8	34.6	42.2
1966	31.3	33.5	13.9	15.5	26.6	17.9	..	7.3	13.7	17.8	11.6	7.2	15.7	23.8	7.5	13.6	24.1	46.4
1967	32.3	33.8	14.8	14.8	25.6	16.4	17.7	7.9[c]	13.3	18.6	10.6	8.5	15.4	21.2	7.3	13.7	..	37.1
1968	30.6	30.1	..	..	24.9	14.4	15.3	13.0[c]	13.3	16.9	10.1	8.3	14.1	20.3	6.8	13.0	..	36.4
USERS OF OTHER VEHICLES																		
1961	12.8	24.8	5.8	6.4	14.2	b	..	b	31.9	b	13.0	b	23.0	..	b	24.4	b	7.6
1962	12.6	29.9	5.3	6.6	13.6	b	..	b	26.9	b	14.8	b	19.8	31.3	3.6	19.8	b	6.1
1963	12.1	32.2	5.2	6.8	13.2	b	..	b	24.9	b	14.4	b	b	26.1	3.2	18.5	50.3	6.7
1964	11.3	32.6	5.2	4.7	11.9	b	..	b	17.7	b	11.6	b	b	24.0	b	15.1	41.9	..
1965	6.7	29.6	5.5	4.5	11.5	b	..	b	15.9	b	11.0	b	b	21.9	2.9	12.3	41.9	51.9
1966	6.8	27.2	5.2	4.2	10.6	b	..	b	11.3	b	9.7	b	18.5	20.6	2.2	12.7	51.2	47.8
1967	9.9	18.3	b	2.6	9.9	b		b	9.6	b	7.9	6.5	19.7	21.3	2.4	10.6	..	36.6
1968	9.9	17.2	..	..	9.5	b	3.0	b	9.7	b	7.0	4.8	b	18.0	b	10.7	..	37.9

a) Included with scooters and motor cycles

b) Included with cars

c) Including those slightly injured

ANNEX VA

PEDESTRIANS KILLED OR INJURED BY AGE - GROUP (1)

	Austria	Belgium	Denmark	France	Germany	Great Britain	Greece	Ireland	Italy	Luxem-bourg	Nether-lands	Norway	Portugal	Spain	Sweden	Switzer-land	Turkey	Yugos-lavia
0-5																		
1965																		
Killed	98	37	24[d]	383	491	290[b]	17	42[b]	127	7	123	56	49[d]	85[d]	22[h]	39		37[d]
Injured	3,153	1,125	396[d]	8,589	9,062	3,468[b]	238	456[b]	2,135	145	1,962	696	540[d]	1,010[d]	407[h]	487		275[d]
Total	3,251	1,162	420[d]	8,972	9,553	3,758	255	498	2,262	152	2,085	752	589[d]	1,095[d]	429[h]	526		312[d]
1966																		
Killed	103	37	28[d]	371	508	314[b]	16	34[b]	179	2[d]	127	60	55[d]	87[d]	30[h]	71		46[d]
Injured	3,139	1,076	493[d]	8,807	9,348	3,671[b]	267	401[b]	3,282	32[d]	1,916	813	517[d]	1,081[d]	404[h]	842		351[d]
Total	3,242	1,113	521[d]	9,178	9,851	3,985	283	435	3,461	34[d]	2,043	873	572[d]	1,168[d]	434[h]	913		397[d]
1967																		
Killed	47	31	32[d]	229	581	315[b]	25	41[b]	193	11	121	43	59[d]	102[d]	14[h]	40		50[d]
Injured	1,099	1,135	360[d]	3,859	10,326	3,887[b]	261	457[b]	3,546	149	1,705	385	690[d]	1,111[d]	343[h]	568		362[d]
Total	1,146	1,166	392[d]	4,088	10,906	4,202	286	498	3,739	160	1,826	428	749[d]	1,213[d]	357[h]	608		412[d]
1968																		
Killed	58	46	..	..	543	309[b]	27	40	207	6	137	41	63[d]	119[d]	19[h]	38		53[d]
Injured	1,105	1,125	..	..	10,037	3,930[b]	305	807	3,417	115	1,638	416	723[d]	1,133[d]	355[h]	506		404[d]
Total	1,163	1,171	..	..	10,580	4,239	332	847	3,624	121	1,775	457	786[d]	1,252[d]	354[h]	544		457[d]
6-9 years																		
1965																		
Killed	a	28	44[e]	a	574	219[b]	44	a	258	a	73	a	91[e]	142[e]	27[i]	55		64[j]
Injured	a	1,544	884[e]	a	18,838	3,610[b]	877	a	7,833	a	1,564	a	1,841[e]	3,444[e]	445[i]	1,382		578[j]
Total	a	1,572	928[e]	a	19,412	3,829	921	a	8,091	a	1,637	a	1,932[e]	3,586[e]	472[i]	1,437		642[j]
1966																		
Killed	a	38	36[e]	a	612	194[b]	48	a	228	6[e]	70	a	94[e]	150[e]	22[i]	43		79[j]
Injured	a	1,435	665[e]	a	20,006	3,937[b]	1,032	a	7,610	98[e]	1,601	a	1,860[e]	3,622[e]	432[i]	1,181		741[j]
Total	a	1,473	701[e]	a	20,618	4,131	1,080	a	7,838	104[e]	1,671	a	1,954[e]	3,772[e]	454[i]	1,224		820[j]
1967																		
Killed	44	27	58[e]	189	655	201[b]	42	a	203	a	72	13	88[e]	162[e]	8[i]	76		65[j]
Injured	1,607	1,533	889[e]	5,113	21,233	4,086[b]	889	a	7,571	a	1,399	282	2,168[e]	3,977[e]	296[i]	1,301		764[j]
Total	1,651	1,560	947[e]	5,302	21,888	4,287	931	a	7,774	a	1,471	295	2,256[e]	4,139[e]	304[i]	1,377		839[j]
1968																		
Killed	73	29	..	..	639	222[b]	28		225		70	16	96[e]	188[e]	15[i]	72		97[j]
Injured	1,562	1,487	..	..	21,474	4,325[b]	926		7,761		1,380	341	1,893[e]	3,891[e]	377[i]	1,555		927[j]
Total	1,635	1,516	..	..	22,113	4,547	954		7,986		1,450	357	1,989[e]	4,079[e]	392[i]	1,627		1,024[j]
10-14 years																		
1965																		
Killed	a	19		97	c	127[b]	c	2[b]	c	a	19	a				12		47[k]
Injured	a	897		2,806	c	2,207[b]	c	93[b]	c	a	650	a				374		784[k]
Total	a	916		2,903	c	2,334	c	95	c	a	669	a				386		831[k]
1966																		
Killed	a	14		80	c	99[b]	c	4[b]	c	a	22	a				8		60[k]
Injured	a	918		2,822	c	2,388[b]	c	107[b]	c	a	700	a				343		902[k]
Total	a	932		2,902	c	2,487	c	111	c	a	722	a				351		926[k]
1967																		
Killed	22	12		110	c	125[b]	c	5[b]	c	a	33	9				23		73[k]
Injured	656	869		2,883	c	2,478[b]	c	117[b]	c	a	638	190				546		994[k]
Total	678	881		2,993	c	2,603	c	122	c	a	671	199				569		1,067[k]
1968																		
Killed	13	10		..	c	105[b]	c	2	c	a	20	3				14		76[k]
Injured	738	845		..	c	2,614[b]	c	207	c	a	597	235				417		1,181[k]
Total	751	855		..	c	2,719	c	209	c	a	617	238				431		1,257[k]

ANNEX VA (Contd.)

	Austria	Belgium	Denmark	France	Germany	Great Britain	Greece	Ireland	Italy	Luxembourg	Netherlands	Norway	Portugal	Spain	Sweden	Switzerland	Turkey	Yugoslavia
15-24 years																		
1965																		
Killed	40	17	18	149	407	149[b]	17	8[b]	136	1	35	10	63	63	36	22		47
Injured	1,198	1,221	394	4,868	8,194	2,556[b]	901	156[b]	5,004	41	797	208	2,106	2,106	401	582		1,017
Total	1,238	1,238	412	5,017	8,601	2,705	918	164	5,140	42	832	218	2,169	2,169	437	604		1,064
1966																		
Killed	47	16	16	174	417	224[b]	15	9[b]	142	-	30	13	60	60	18	18		60
Injured	1,142	1,207	387	5,100	8,247	2,713[b]	992	161[b]	5,327	34	896	246	2,264	2,264	336	557		1,219
Total	1,189	1,223	403	5,274	8,664	2,937	1,007	170	5,469	34	926	259	2,324	2,324	354	575		1,279
1967																		
Killed	37	14	15	221	377	203[b]	16	12[b]	127	-	39	13	418	73	11	29		64
Injured	1,046	1,214	349	5,157	7,421	2,709[b]	850	182[b]	5,128	36	752	279	6,984	2,476	331	580		1,258
Total	1,083	1,228	364	5,378	7,798	2,912	866	194	5,255	36	791	292	7,402	2,549	342	609		1,322
1968																		
Killed	38	22	..	..	304	167[b]	14	16[b]	124	1	33	12	486	89	13	33		64
Injured	999	1,200	..	..	7,236	2,666[b]	830	282[b]	5,242	28	709	255	6,977	2,505	310	545		1,443
Total	1,037	1,222	..	..	7,540	2,833	844	298	5,366	29	742	267	7,463	2,574	323	578		1,507
25-64 years																		
1965																		
Killed	216	121	86	1,301	1,994	653[bf]	109	45[b]	810	6	138	39	160	312	116	135		348
Injured	3,494	3,832	1,232	16,014	24,001	5,356[f]	2,734	323[b]	15,247	106	1,801	464	3,403	6,366	1,181	1,999		2,792
Total	3,710	3,953	1,318	17,315	25,995	6,009[f]	2,843	368	16,057	112	1,939	503	3,563	6,678	1,297	2,134		3,140
1966																		
Killed	248	115	65	1,241	2,056	678[bf]	133	50[b]	757	7	131	43	152	384	36	122		321
Injured	3,534	3,369	1,339	15,732	23,952	5,655[f]	3,156	324[b]	15,057	90	1,969	595	3,154	6,747	1,013	1,897		3,159
Total	3,782	3,484	1,404	16,973	26,009	6,333[f]	3,289	374	15,814	97	2,100	638	3,306	7,131	1,099	2,019		3,480
1967																		
Killed	248	124	88	1,256	1,828	615[bf]	123	58[b]	740	9	127	48	159	418	81	121		331
Injured	3,405	3,325	989	14,926	21,436	5,245[f]	2,657	350[b]	14,364	93	1,671	612	3,328	6,984	934	1,901		3,382
Total	3,653	3,449	1,077	16,182	23,264	5,860[f]	7,402	408	15,104	102	1,798	660	3,487	7,402	1,015	2,022		3,714
1968																		
Killed	204	126	..	..	1,604	576[bf]	486	60	802	11	116	26	182	486	93	121		408
Injured	3,347	3,169	..	...	20,890	5,076[f]	6,977	554	14,580	68	1,671	607	3,534	6,977	952	1,847		3,983
Total	3,551	3,295	..	..	22,494	5,652[f]	7,463	614	15,382	79	1,787	633	3,716	7,463	1,045	1,968		5,391
65 years and over																		
1965																		
Killed	292	117	120	937	2,374	1,653[bg]	84	31[b]	811	3	190	47	55	191	126	183		150
Injured	1,993	1,781	940	7,382	10,109	6,276[g]	855	140[b]	4,977	42	1,203	288	814	2,189	628	1,127		652
Total	2,285	1,898	1,060	8,319	12,483	7,929[g]	939	171	5,788	45	1,393	335	869	2,380	754	1,310		802
1966																		
Killed	281	146	133	882	2,452	1,643[bg]	80	43[b]	837	2	226	58	75	273	141	185		163
Injured	2,208	1,726	1,049	7,481	10,342	6,238[g]	939	124[b]	4,863	32	1,195	328	858	2,367	572	1,069		771
Total	2,489	1,872	1,182	8,363	12,794	7,881[g]	1,019	167	5,700	84	1,421	386	933	2,640	713	1,254		934
1967																		
Killed	287	154	152	1,112	2,382	1,503[bg]	96	59[b]	803	8	209	53	96	291	81	174		197
Injured	2,206	1,750	727	7,274	10,159	5,957[g]	867	138[b]	4,826	35	1,101	371	982	2,578	435	1,153		777
Total	2,493	1,904	879	8,386	12,541	7,460[g]	963	197	5,629	43	1,310	424	1,078	2,869	516	1,327		974
1968																		
Killed	250	109	..	..	2,245	1,380[bg]	97	55	896	6	213	57	67	320	120	196		200
Injured	2,053	1,664	..	..	9,872	5,709[bg]	945	191	4,886	27	1,016	395	942	2,453	412	1,057		932
Total	2,303	1,773	..	..	12,117	7,089[g]	1,042	246	5,732	33	1,229	452	1,009	2,773	532	1,253		1,132

ANNEX VA(Contd.)

	Austria	Belgium	Denmark	France	Germany	Great Britain	Greece	Ireland	Italy	Luxem-bourg	Nether-lands	Norway	Portugal	Spain	Sweden	Switzer-land	Turkey	Yugos-lavia
Unknown ages																		
1965																		
Killed	6	1	-	7	15	14[b]	1	-	224	-	-	-	27	40	-	-		17
Injured	87	305	-	107	326	247[b]	15	-	2,471	-	6	81	495	1,046	16	-		188
Total	93	306	-	114	341	261	16	-	2,695	-	6	81	522	1,086	16	-		205
1966																		
Killed	4	1	-	-	7	1[b]	6	-	251	-	-	-	22	17	-	-		16
Injured	87	360	-	80	283	184[b]	20	-	2,290	-	23	64	509	345	11	-		174
Total	91	361	-	80	290	185	26	-	2,541	-	23	64	531	263	11	-		190
1967																		
Killed	4	2	5	3	-	2[b]	3	-	295	-	-	-	35	36	-	-		17
Injured	96	298	1	85	234	110[b]	26	-	2,473	-	22	64	680	336	4	-		195
Total	100	300	6	88	234	112	29	-	2,768	-	22	64	715	372	4	-		212
1968																		
Killed	9	3	..	..	7	3[b]	1	-	260	-	-	-	41	28	-	-		39
Injured	109	361	..	..	315	120[b]	27	13	2,455	-	18	59	684	319	4	-		249
Total	118	364	..	..	322	123	28	13	2,715	-	18	59	725	347	4	-		288
All ages																		
1965																		
Killed	652	340	292	2,874	5,855	3,105[b]	272	128[b]	2,366	17	578	152	405	833	327	446		710
Injured	9,925	10,705	3,846	39,766	70,530	23,714[b]	5,620	1,168[b]	37,667	334	7,983	1,737	8,095	16,161	3,098	5,951		6,286
Total	10,577	11,045	4,138	42,640	76,385	26,819	5,892	1,296	40,033	351	8,561	1,889	8,500	16,994	3,405	6,397		6,996
1966																		
Killed	683	367	278	2,748	6,052	3,153[b]	298	140[b]	2,394	17	606	174	438	971	297	447		745
Injured	10,110	10,091	3,933	40,022	72,178	24,786[b]	6,406	1,117[b]	38,429	286	8,300	2,046	7,950	16,426	2,768	5,889		7,317
Total	10,793	10,458	4,211	42,770	78,230	27,939	6,704	1,257	40,823	303	8,906	2,220	8,388	17,397	3,065	6,336		8,062
1967																		
Killed	689	364	350	3,120	5,822	2,964[b]	305	175[b]	2,361	28	601	179	464	1,082	195	463		807
Injured	10,115	10,124	3,315	39,297	70,809	24,472[b]	5,550	1,224[b]	37,908	313	7,288	2,183	8,955	17,462	2,343	6,049		7,733
Total	10,804	10,488	3,665	42,417	76,631	27,436	5,855	1,419	40,269	341	7,889	2,362	9,419	18,544	2,538	6,512		8,540
1968																		
Killed	645	345	..	..	5,342	2,762	304	173	2,514	24	589	155	490	1,210	260	474		937
Injured	9,913	9,851	..	..	69,824	24,440	5,590	2,054	38,291	238	7,029	2,308	8,977	17,278	2,390	5,927		9,119
Total	10,558	10,196	..	..	75,166	27,202	5,894	2,227	40,805	262	7,618	2,463	9,467	18,488	2,650	6,401		10,056

a) Included with 0 - 5 years

b) Seriously injured only

c) Included with 6 - 9 years

d) 0 - 4 years

e) 5 - 14 years

f) 25 - 59 years

g) 60 years and over

h) 0 - 6 years

i) 7 - 14 years

j) 5 - 7 years

k) 8 - 14 years

	Austria	Belgium	Denmark	France	Germany	Great Britain	Greece	Ireland
0-5 years								
1965	1,687,712	934,902	393,103[b]	8,191,619	5,959,000	5,434,800	885,831	..
1966	1,717,266	932,510	404,420[b]	8,392,456	6,054,000	5,521,000	884,008	614,92
1967	637,223	922,321	413,776[b]		6,082,000	5,553,600	893,285	..
1968	630,711	907,974	..	..	6,056,000	5,546,800	903,988	..
6-9 years								
1965	a	612,536	738,566[c]	a	7,353,000	3,139,700	1,299,743	..
1966	a	618,613	737,854[c]	a	7,520,000	3,217,500	1,304,177	a
1967	601,014	624,959	739,847[c]	..	7,698,000	3,307,200	1,307,958	..
1968	616,249	626,028	..	..	7,913,000	3,409,400	1,312,645	..
10-14 years								
1965	a	722,451		4,257,322	d	3,669,799	d	..
1966	a	733,505		4,173,044	d	3,661,000	d	285,47
1967	508,265	743,172		..	d	3,694,600	d	..
1968	526,154	754,323		..	d	3,767,800	d	..
15-24 years								
1965	1,049,174	1,290,637	791,510	6,981,409	7,922,000	7,668,200	1,314,944	..
1966	1,014,073	1,339,811	800,947	7,098,660	7,759,000	7,792,900	1,334,008	444,64
1967	991,652	1,382,951	805,180	..	7,636,000	7,879,000	1,375,581	..
1968	978,483	1,409,928	..	..	7,626,000	7,892,900	1,405,947	..
25-64 years								
1965	3,559,615	4,731,431	2,293,364	23,417,339	30,744,000	20,674,100[i]	4,277,514	..
1966	3,579,882	4,698,792	2,301,994	23,545,840	31,051,000	23,557,200[i]	4,297,273	1,215,95
1967	3,584,393	4,675,280	2,315,306	..	30,988,000	23,450,900[i]	4,319,699	..
1968	3,579,720	4,661,549	..	..	30,924,000	23,356,500[i]	4,335,251	..
65 years and over								
1965	957,667	1,207,277	541,582	5,839,512	7,033,000	9,380,100[j]	772,301	..
1966	978,386	1,233,149	552,253	5,947,000	7,254,000	9,516,400[j]	794,185	323,00
1967	999,465	1,256,918	564,663	..	7,469,000	9,692,300[j]	819,918	..
1968	1,017,376	1,272,108	..	..	7,665,000	9,807,300[j]	845,029	..
All ages								
1965	7,254,168	9,499,234	4,758,125	48,687,201	59,011,000	52,966,600	8,550,333	..
1966	7,289,607	9,556,380	4,797,468	49,157,000	59,638,000	53,266,000	8,613,651	2,884,00
1967	7,322,012	9,605,601	4,838,772	..	59,873,000	53,577,600	8,716,441	..
1968	7,348,693	9,631,910	..		60,184,000	53,780,700	8,802,860	..

a) Included with 0-5 years

b) 0-4 years

c) 5-14 years

d) Included with 6-9 years

e) Included with 15-24 years

BY AGE-GROUP

Italy	Luxembourg	Netherlands	Norway	Portugal	Spain	Sweden	Switzerland	Turkey	Yugoslavia
4,718,591	74,700[h]	1,450,599	919,000	919,900[b]	2,143,667[b]		555,260		1,814,400[b]
4,751,980	26,000[h]	1,453,187	923,000	925,600[b]	2,519,250[b]		584,540		1,810,400[b]
4,765,777	75,400[h]	1,449,556	380,000	929,100[b]	..		589,900		1,794,400[b]
4,813,434	75,200[h]	1,441,416	384,000	933,100[b]	..		602,760		1,801,600[b]
8,133,525		916,753	a	1,760,100[c]	5,190,633[c]		345,840		1,216,600[f]
8,194,526	49,500[c]	928,111	a	1,823,800[c]	5,895,720[c]		358,960		1,206,100[f]
8,214,860		938,926	244,000	1,833,700[c]	..		364,800		1,201,600[f]
8,297,008		950,316	245,000	1,845,700[c]	..		373,440		1,204,900[f]
d		1,107,109	a				416,000		2,753,000[g]
d		1,112,855	a				426,400		2,762,500[g]
d		1,119,782	307,000				433,400		2,758,000[g]
d		1,127,794	308,000				444,700		2,721,500[g]
7,966,156	219,500	2,095,817	565,000	1,413,700	5,358,700		998,400		3,124,000
8,025,902	220,000	2,147,200	579,000	1,410,400	4,650,400		1,011,700		3,199,000
8,045,817	219,500	2,195,591	594,000	1,404,300	..		1,027,600		3,285,000
8,126,275	217,100	2,233,071	606,000	1,396,800	..		1,033,400		3,405,000
6,818,454	e	5,548,363	1,784,000	4,363,600	13,247,700		2,891,200		9,272,000
7,019,592	e	5,610,661	1,781,000	4,427,700	14,990,900		2,865,900		9,363,000
7,282,782	e	5,658,864	1,781,000	4,482,100	..		2,884,000		9,461,000
7,555,609	e	5,710,568	1,785,000	4,536,500	..		2,905,500		9,539,000
5,293,868	38,800	1,176,091	440,000	777,100	2,022,400		618,300		1,305,000
5,333,571	39,200	1,204,237	453,000	794,800	2,518,400		632,500		1,395,000
5,346,806	40,300	1,235,482	462,000	810,800	..		653,400		1,450,000
5,400,274	41,200	1,266,556	475,000	827,000	..		676,100		1,460,000
2,930,594	333,000	12,294,732	3,708,000	9,234,400	27,963,200		5,825,000		19,485,000
3,325,571	334,700	12,456,251	3,736,000	9,335,400	30,524,700		5,880,000		19,736,000
3,656,092	335,200	12,598,201	3,768,000	9,415,000	..		5,953,100		19,950,000
4,192,600	333,500	12,729,721	3,803,000	9,496,800	..		6,035,900		20,132,000

f) 5-7 years

g) 8-14 years

h) 0-14 years

i) 25-59 years

j) 60 years and over

ANNEX VI

MONTH BY MONTH INDEX OF NON FATAL ACCIDENTS 1965-1968 (1965 = 100)

Country	Austria	Belgium	Denmark	Germany	Great Britain	Greece	Holland /	Ireland	Italy	Luxem-bourg	Norway*	Portugal	Spain	Sweden	Switzer-land	Yugos-lavia
1965																
Jan.	93	113	109	93	107	96	107	90	109	96	86	89	86	117	106	103
Feb.	91	90	103	90	90	81	102	85	92	90	78	89	88	105	97	82
Mar.	78	96	95	85	101	93	98	80	94	90	86	97	87	96	83	79
April	94	101	96	98	103	100	96	110	99	114	90	103	94	99	93	91
May	98	109	98	99	98	102	96	91	105	86	93	96	102	108	102	101
June	110	99	96	104	102	101	102	107	103	110	94	105	112	96	105	102
July	108	99	102	107	100	95	100	107	100	122	111	101	99	102	102	108
Aug.	108	106	103	109	102	104	101	102	103	119	109	112	104	104	105	107
Sept.	106	102	102	106	100	109	100	104	101	101	112	103	101	100	98	105
Oct.	105	94	101	102	97	106	101	114	98	95	111	102	108	99	96	102
Nov.	103	91	96	102	101	107	93	109	98	88	109	99	108	93	105	102
Dec.	104	100	99	105	101	104	108	102	99	90	121	105	110	87	108	119
1966																
Jan.	103	95	98	105	97	114	100	82	97	92	100	104	110	95	96	112
Feb.	104	96	95	103	94	116	95	84	97	93	106	95	106	98	107	116
Mar.	101	97	99	107	96	115	103	80	96	100	109	103	105	96	101	109
April	107	98	99	107	102	120	104	93	100	84	96	113	108	81	103	119
May	112	91	101	107	100	109	106	91	99	94	113	113	98	84	105	121
June	111	95	100	108	101	113	106	93	98	77	108	104	101	82	106	125
July	103	91	103	101	96	125	101	90	98	69	107	99	100	85	99	110
Aug.	104	92	103	102	93	115	104	94	96	77	114	93	100	87	102	113
Sept.	105	90	101	102	92	110	105	95	97	84	117	94	105	93	103	114
Oct.	113	97	105	108	99	112	104	100	103	97	118	93	109	91	108	121
Nov.	109	96	110	108	98	108	111	104	99	92	126	104	100	85	99	121
Dec.	107	98	110	111	102	114	105	110	104	99	116	103	101	90	106	140
1967																
Jan.	117	98	102	109	99	111	104	91	105	92	119	105	102	89	116	119
Feb.	110	95	94	107	98	105	105	97	97	96	114	109	100	88	104	117
Mar.	112	94	96	107	95	103	96	110	106	89	105	108	113	91	107	124
April	109	95	98	108	91	104	96	92	98	101	118	109	101	91	102	116
May	110	100	104	108	96	106	98	100	104	95	126	103	111	84	105	123
June	111	90	105	105	91	103	94	97	103	95	131	108	101	83	106	122
July	111	98	95	106	93	97	98	105	102	105	126	113	111	84	108	129
Aug.	109	91	94	105	94	97	93	111	101	92	124	111	106	81	101	129
Sept.	113	95	97	109	96	98	95	116	105	97	126	122	108	77	110	133
Oct.	109	96	96	107	91	99	95	108	102	88	130	124	106	81	108	133
Nov.	118	100	98	107	87	101	97	113	106	99	130	115	107	89	110	140
Dec.	117	88	96	103	83	98	88	121	99	88	132	111	106	92	99	110
1968																
Jan.	109	94	103	104	89	93	95	194	102	92	161	110	105	85	103	136
Feb.	114	94	119	109	90	97	100	178	110	84	162	118	112	83	102	139
Mar.	117	94	111	106	90	100	99	173	104	83	178	111	102	81	106	142
April	113	93	108	105	87	96	99	185	106	84	182	102	110	95	111	143
May	107	95	101	106	85	104	95	175	103	77	140	110	109	98	106	137
June	109	101	102	109	88	101	99	182	107	94	143	114	118	102	103	137
July	106	98	106	107	86	105	90	160	108	86	123	118	107	95	105	136
Aug.	113	99	104	117	91	108	101	164	106	85	134	109	112	93	114	139
Sept.	105	107	109	115	90	108	103	178	111	73	129	122	110	94	115	137
Oct.	106	91	102	110	92	108	100	168	109	75	122	126	112	91	107	138
Nov.	123	97	124	109	92	110	103	174	115	71	115	124	121	89	111	161
Dec.	110	82	97	100	83	105	89	177	107	64	129	124	116	93	113	151

/ Holland figures for 1967 and 1968 exclude very slight Casualties

* Norway figures include Fatal Accidents

Annex VII

CORRECTING FACTORS FOR FATALITIES

The Economic Commission for Europe's recommended definition for a road fatality is a death that occurs as a result of a road accident and within 30 days of that accident. Most member countries of the E.C.M.T. now adhere to this definition but a few (viz Austria, Belgium, France, Italy, Portugal and Spain) are unable to do so and they define a fatality as a death occurring within a certain number of days (always less than 30) after the accident or, in the case of Belgium and Portugal, only a death occurring at the scene of the accident or immediately afterwards.

To obtain comparability between countries it is necessary to apply correcting factors to the fatality figures for the above six countries. A number of research studies in various countries have been carried out to find what percentage of deaths occure on average within x days of an accident. Also the Economic Commission for Europe supplies a set of values for the percentage of deaths occurring (a) at the scene of the accident, (b) within 3 days and (c) within 30 days of the accident. These ECE values, however, are inadequate for correcting the figures for all the above countries and in any event the percentages are much higher than those quoted by most of the research studies. For these reasons a set of correcting factors based on the approximate averages of the percentages in a number of research studies has been used. They are as follows : -

Country	Definition of fatality	Estimated % within this period	Correcting factor
Belgium	At scene		
Italy (before 1964)	At scene		
Portugal	At scene or on way to hospital	46	2.000
Spain	Within 24 hrs	71	1.30
France (before 1967)	Within 3 days	80	1.15
Austria (from	Within 3 days	80	1.15
France (from 1967)	Within 6 days	84	1.09
Italy (from 1964)	Within 7 days	85	1.07
Standard definition	Within 30 days	92	1.00

The above correcting factors have been used throughout the body of the report for the relevant years. The fatality figures and fatality rates in the annexes are uncorrected, however.

Annex VIII

PROCEDURE FOR OBTAINING THE SEASONALLY ADJUSTED ACCIDENT INDICES

1. In Section 7 of the report an analysis of month-by-month accident changes is described, in which the variation due to seasonal causes has as far as possible been eliminated. For comparability the accident level for all countries was then reduced to an index of 100 for the average month in the base year, 1965.

The following are the steps in the calculation :

(i) Suppose the number of accidents in a particular month is A_m and the accidents in succeeding months are A_{m+1} , A_{m+2} .... etc., and the accidents in preceding months are A_{m-1} , A_{m-2} ..... etc.

(ii) We calculate

$$\tfrac{1}{2}A_{m-6}+A_{m-5}+A_{m-4}+\ldots+A_{m+5}+\tfrac{1}{2}A_{m+6}=R_m$$

A_m

for every month, m, from July 1965 to June 1968

(iii) For any month of the year there there will thus be three values of R_m. We calculate the seasonal adjusting factor R_m, as the mean of these three values.

(iv) We calculate a separate R_m for each month of the year.

(v) We multiply every monthly accident figure by its appropriate R_m to give a series of 48 adjusted accident figures, A'_m.

(vi) We calculate the mean A'_m for 1965, that is A'_m.

(vii) We divide all 48 values of A'_m by A'_m and multiply by 100 to give the seasonally adjusted accident index (where the mean for 1965 is 100).

2. The method of using seasonally adjusted monthly accident data to study large and rapid changes in the accident level has already been used by American workers.* In their analysis they used seasonal adjusting factors derived from a period prior to the period they were studying. In the present analysis the adjusting factors are derived from the same period that is being studied. This does not invalidate the method, although it has the effect of not smoothing out all the inherent seasonal variation in accidents.

*Ross H L, D J Campbell and G V Glass. Determining the Social Effects of a Legal Reform : The British 'Breathalyser' Cradkdown of 1967. American Behavioural Scientist, 1970, Vol XIII.

REPORT BY THE COMMITTEE OF DEPUTIES ON THE ROAD SAFETY ROLE OF THE POLICE

ROAD SAFETY ROLE OF THE POLICE

A. Introduction

1. The E.C.M.T.'s attention is permanently focussed on measures to increase safety on the roads. Some of them concern legislation and are designed to ensure that both the rules of conduct on the roads and the technical standards to which vehicles must conform keep in step with the increase in traffic and technical advancement. One of the Conference's major concerns in this respect is to satisfy the increasing need for uniformity at international level, another is to bring about an exchange of views on modern methods of building new roads and reconstructing old ones, to ensure not only that their capacity is increased but also that they are made safer to use. Together with other international bodies, the E.C.M.T. encourages scientific research with a view to finding satisfactory solutions for new problems or finding better ways of solving old problems. Yet another matter to which the Conference gives considerable attention is road-safety education.

In addition to these and other factors, effective traffic control contributes in no small measure to road safety. Control is almost exclusively carried out by the police.

2. In the majority of the Member countries the responsibility for the police does not rest with the Ministers assembled in the E.C.M.T. In view of the very important part played by traffic control in matters of road safety and the smooth flow of traffic on the roads, which are closely connected, the Conference believes it will be useful, partly because of its co-ordinating role in these fields, to set out its views on the subject and place them before the competent authorities. Thus the considerations set out below are not designed to lead to an official decision within the E.C.M.T., but rather form the basis for action on the part of the Ministers of Transport to encourage both the competent national authorities and the International Organisations concerned, particularly the Council of Europe.

B. Police duties that figure in the promotion of road safety and ensure the smooth flow of traffic

1. Broadly they are :

1.1 Enforcement of rules of conduct seeing that vehicles satisfy the prescribed technical standards.

1.2 Preventive control

1.3 Dealing with road accidents.

1.4 Promoting the smooth flow of traffic on the roads.

1.5 Escorting special loads.

1.6 Co-operation with bodies concerned in road-safety education and enlightenment.

1.7 Co-operation with organisations engaged in research.

2. One very important point is the need for close co-operation between the police and other organisations concerned with road traffic, in particular, the road administrations, training centres and other organisations concerned with road-safety education and enlightenment.

3. Notes on the duties listed in B1 :

on 1.1 The rules that should be enforced most strictly are those whose infringement is often a contributing factor in serious accidents, for instance :

a) the rules governing :

speed
overtaking
priority
changing direction
pedestrians
driving under the influence of alcohol
prescribed periods of work and rest for commercial drivers (long-distance lorry drivers etc.) ;

b) the rules governing the techni-

cal standards for :

brakes
lights
tyres
steering gear
load limits on heavy vehicles.

on 1.2 Preventive control contributes to road safety. The mere fact that people see the police prevents them from doing things likely to endanger other road users ; offenders can be persuaded to mend their ways by giving them the right sort of warning or information.

There must always be a sufficient and adequate amount of control for it to be effective.

on 1.3 The following points are of major importance when dealing with road accidents :

- the spot at which the accident occurred should be cordoned off to prevent any further accident or collision and protect anyone who may have been injured ;

- first aid should be given to the injured ;

- measures should be taken to ensure that traffic is not unduly impeded ;

- the recording of particulars of accidents could be greatly simplified and speeded up if printed accident forms were used ; such forms could be designed to serve both as official reports and for statistical purposes. Official reports on accidents involving only slight damage to property should be almost entirely dispensed with to lighten the task of the police.

on 1.4 The smooth flow of traffic contributes to road safety. This is particularly important during rush hours and at other times when there is heavy traffic.

on 1.5 The police know a great deal about the behaviour of road users. Their experience should be used in road-safety education and enlightenment, though this does not mean that the responsibility should fall on them alone. It would be better if they passed their knowledge on to other groups, say school teachers, instructors of driving schools and personnel of other organisations concerned with these problems.

The police are generally the first to hear of unexpected hindrances to traffic (e.g. road closures or obstructions, slippery roads, fog). They also know where to expect traffic jams. Obviously they are the ones who should see to it that the public are duly informed via the media (press, radio, television) ; in doing so they should co-operate with other organisations if necessary.

on 1.6 The competent authorities should try to reduce the need to escort special loads. If the times at which they are transported and the routes they follow are made subject to certain conditions and special equipment is made compulsory, in many cases police escorts will no longer be necessary, which will lighten the task of the police.

on 1.7 Road traffic studies can only be meaningful if copious information on accidents is available. The police are one of the most appropriate authorities to collect such information. They, too, need this information to be able to plan for optimum personnel utilisation.

Some road safety study projects, too can only be carried out with police co-operation.

C. Methods of control

1. Methods should be adapted to requirements, which may differ according to place, type of road and time of day.

2. The system of selective enforcement should be applied with a view to achieving maximum road safety and the smooth flow of traffic, as well as with a view to efficiency and a rational utilisation of the personnel available.

In order to use this system, up-to-date information must be available on :

a) incidents and circumstances generally liable to precipitate dangerous situations or traffic jams (e. g. certain offences, certain behaviour on the road, road repairs, etc.) ;

b) the places where such incidents are likely to occur or such circumstances are likely to arise (e. g. black spots, places where the speed limit is frequently exceeded, the vicinity of places where alcoholic drinks are consumed, road junctions with diversions, etc.) ;

c) the times at which such incidents are most likely to occur or such circumstances are most likely to arise, (e. g. during rush hours, during the day, at night, at weekends) ;

d) the items of equipment most suitable for taking action under the circumstances described in 'a) at the places described in (b) during the periods named in (c), (e. g. cameras, speed-measuring devices, equipment for measuring the alcohol content of the blood, motor cycles for patrolling on roads where cars can hardly overtake each other, if at all, etc.).

On the grounds of the above information, the personnel available can be instructed to pay special attention to certain incidents or circumstances at certain times and on certain routes or at certain spots by using special equipment, i. e. to carry out selective enforcement.

3. With the principle of selective enforcement as a starting point, the following methods of control, methods of approach and procedures may be considered :

3. 1 Special campaigns designed to :

a) promote the observance of rules that are of particular importance in certain seasons (e. g. a national or regional check on lights and tyres) ;

b) promote the observance of rules that are frequently broken (e. g. a national or regional check on failure to stop at red traffic lights) ;

c) concentrate the police potential temporarily along certain routes or in certain areas, (e. g. in areas where there is a relatively high increase in the number of accidents, on routes taken by holidaymakers).

Campaigns of this kind can have a powerful preventive effect. It would seem advisable to repeat them within a reasonable space of time to prevent road-users from getting the impression that no more attention is likely to be paid to the road-safety rules for the time being. The follow-up campaign can of course be on a smaller scale.

3. 2 Traffic control by police in plain-clothes and/or by police in vehicles not recongnisable as police cars.

This is not a popular measure. But there are undeniably certain cases (e. g. frequent non-observance of traffic rules tending to increase the risk of accidents at certain places or on certain routes) in which such control may be a reasonable means of improving road safety. Moreover, road users can be warned in the press and given the reasons for the measure, or notices can be put up along the roads for instance stating that in a particular town a speed check is being carried out by means of radar.

On the other hand, an official report need not necessarily be made of every single offence observed ; again the alternative is to talk to the offender and persuade him to better his ways. One method used in various Member countries is for a policeman in plain clothes who sees a road user commit an offence to report it by walkie-talkie to one of his colleagues in uniform a little further on, who stops the offender.

3. 3 Drawing up an official report based on notes made at the time of the make, colour and registration number of the vehicle in question without ascertaining the name of the driver.

The advantage of this method is that the road user is not forced to

stop, which in many traffic situations might be undesirable. A great deal of time can be saved both for the police and for the owner of the vehicle concerned by using forms. For example, the owner of the vehicle might be sent a standard form stating the offence committed by his vehicle, and be given the opportunity of filling in his own version of the incident on another standard form and returning it ot the police.

The psychological effect of this method is that road-users can never be sure that any offence they may commit will escape the eye of guardians of public order. Notification of an offence should follow the offence with the least possible delay.

3. 4 Simplified procedure for payment of fines for some offences.

In various Member countries, policemen are entitled to give offenders against road-safety rules the option of paying certain fines on the spot in return for a standard form on which the offence is stated in brief and, of course, indicating the amount paid (which is a fixed sum depending on the nature of the offence).

Alternatively, the offender may be given a similar form stating that he can pay the fine at a certain police station within a certain time. Forms of this kind are slipped behind the windscreen wipers of cars belonging to people who commit parking offences or stop where stopping is prohibited. In both cases, if the offender pays, the matter does not come before the courts or the administrative bodies. This method greatly simplifies procedure and also has a positive psychological effect.

D. Equipment

1. Means of Transport

The police should have the transport they need for the efficient performance of their traffic duties on the various categories of roads and under the various conditions prevailing on those roads.

They should include :

a) fast cars for control requiring overtaking ;

b) motor cycles for control on busy roads or routes where cars can hardly overtake each other, if at all ;

c) ordinary cars for control in built-up areas ;

d) aircraft, helicopters in particular for traffic supervision and control where the traffic density is high over a wide area.

2. Means of communication

a) All vehicles should in principle be equipped with radio telephones.

b) The use of portophones by non-motorised officers should be promoted.

3. Special equipment

The police should have special equipment for their traffic duties, such as :

a) speed-measuring devices (radar equipment, etc.) ;

b) equipment for measuring the alcohol content of the blood ;

c) cameras for recording offences (also cameras that can be connected with traffic lights) ;

d) portable equipment for cordoning off the site of an accident or for guiding traffic, e. g.

- cones ;
- torches ;
- obstruction lamps ;
- traffic signs ;
- spotlights ;

e) first-aid equipment ;

f) fire-fighting equipment ;

g) television for traffic control.

In addition, the police or the competent technical services should be equipped with devices for measuring

noise and exhaust gases, and devices for checking light adjustment, and load limits on heavy vehicles.

E. Other factors

Other factors that help to determine the effect the police can have on road safety are training, specialisation an strength.

1. Training

1.1 The rapid increase in traffic intensity and the resulting changes in the overall traffic picture make it essential that the police be given not only a thorough basic training but also sound continuing training and periodical refresher courses. This would ensure that the police approach the problems of their profession form the right angle and enable them to learn new methods and be trained to use any new equipment.

1.2 There should be proper communication between the various training centres in each Member country so that the systems may be made uniform, which would ensure greater safety on the roads.

1.3 It is also recommended that experiences be exchanged at international level on account of the continuous increase in international traffic, in which uniformity is also essential.

2. Specialisation

Special groups are required for special duties or for normal duties on certain roads or routes requiring special knowledge or skill, for instance ;

a) keeping a check on the observance of technical regulations relating to vehicles (in Member countries where this is a police responsibility) ;

b) handling serious accidents ;

c) traffic control on motorways, and other roads with a high traffic density ;

d) control by means of aircraft, e.g. helicopters ;

e) teaching the principles of road-safety to certain categories of road users (in Member countries where this is a police responsibility) ;

- in schools ;

- on mock road lay-outs ;

- to school patrols and other adults doing the same work ;

- to traffic offenders, in pursuance of a court order, or an administrative decision.

3. Strength

Police strength should be sufficient to meet traffic requirements. The intensity of the supervision affects the results obtained.

Factors that may be important in determining the ideal intensity are, among others ;

a) traffic density, which varies throughout the day (e.g. rush hours) ;

b) whether roads are in or outside built-up areas ;

c) whether it is day or night ;

d) the type of road (motorway, number of lanes, number of junctions, etc.) ;

e) the number of accidents ;

f) the demand for police on point duty ;

g) the method of patrolling.

The impression is that for some reason or other the police strength in a number of Member countries, or at all events in parts of them, does not come up to requirements. In the interest of road safety it would be advisable to increase the actual strength of the police forces in those cases.

Lastly, it would seem advisable to investigate the relationship between the intensity of police patrolling and the number of accidents, including in such investigations the control systems and the equipment used. Enquiries of this kind need not necessarily cover the whole problem at once. It might be possible to carry out separate enquiries regarding certain types of roads or certain areas.

FLEET CAPACITY ON WESTERN EUROPEAN WATERWAYS

Contents

FLEET CAPACITY ON WESTERN EUROPEAN WATERWAYS

A. AIMS

For some years, various questions have arisen with regard to inland waterway transport capacity and how it might be adapted to the quantitative and qualitative requirements of Western European transport markets.

The Inland Waterways Investments Sub-Committee was instructed by the Committee of Deputies of the E. C. M. T. to study this matter and submit a report to the Council of Ministers. The main purpose of this paper, therefore, is to evaluate fleet capacity from the qualitative and quantitative angles alike.

B. INTRODUCTION

This paper falls into two chapters : the first covers the quantitative development of inland navigation, the second deals with the qualitative aspects of the fleets operating on the inland waterways on the countries concerned.

Chapter I is based on studies concerning the trend of the fleet and of traffic carried on Western European waterways between 1955 and 1968. The corresponding statistical background is dealt with in Annexes I and II.

C. SUMMARY

The trends of fleet capacity and of traffic carried on Western European waterways, show that the increase in capacity always exceeded that of transport demand up to 1966. Moreover, as navigation conditions on the waterways (high-water levels, in particular) were exceptionally favourable from 1964 to the middle of 1968, operators were able to make very effective use of canal craft capacity and, as a consequence, vessels used as a stand-by in the event of low-water conditions could not always be fully employed.

Fleet capacity hardly increased from 1966 to 1968 even though transport demand went on rising. The surplus capacities reported in 1967 accordingly dwindled and had nearly vanished by the end of 1968. From the last quarter of 1968 onwards, low water badly hampered navigation in many river basins and craft kept as a stand-by for this contingency accordingly came back into commission. This applied to dry cargo and tanker traffic alike.

As regards the qualitative aspect, the report points out that the functioning of the market is hampered by unremunerative capacity which is unadapted to technical progress.

The quality of transport services has indeed been improved during the last decade, and this particularly applies to newly-built craft which, as a general rule, cater reasonably well for shippers' requirements. However, as waterway craft have a long lifespan, and as their average age is consequantly high, the fleet is, by and large, somewhat ill-adapted to technical progress. This maladjustment has a more troublesome effect on the functioning of the waterway transport market than the possible existence of over-capacity in quantitative terms.

It may be concluded that this particular situation should be dealt with as a matter of priority when the time comes to adopt transport policy measures affecting waterway shipping capacity.

It would be useful to look more closely into the factors which have an important bearing on inland waterway transport from the shippers' angle.

Chapter I

QUANTITATIVE ASPECTS OF FLEET CAPACITY IN THE FEDERAL REPUBLIC OF GERMANY, BELGIUM, FRANCE, THE NETHERLANDS AND SWITZERLAND (1955-1968)

1. Changes in the size of waterway fleets in the Federal Republic of Germany, Belgium, France, the Netherlands and Switzerland during the periods 1955-1967 and 1955-1968.

a) General trend

(aa) Trend from 1955 to 1967

The information received from the foregoing countries by the Inland Waterways Sub-Committee shows that, during the period 1955-1967, the waterway fleet for all these countries combined rose from :

14.6 million tons to 17.7 million tons (21 per cent).

This was a net balance covering units newly built, bought from abroad, converted (lengthened), scrapped, sold or lost for other reasons.

If the following estimated coefficients are applied to the tonnage of the various types of craft : 1.6 (1) for self-propelled craft (including self-propelled tankers), 1.9 (1) for push-towed barges and 1.0 (1) for pull-towed barges (including tankers), the weighted capacity of the combined fleets of the countries under review then becomes :

18.1 million tons in 1955 and
25.6 million tons in 1967.

The increase over the 12 years was thus 7.56 million tons or 42 per cent.

This increase in weighted tonnage was made up as follows :

Netherlands	3.90 million tons
Federal Republic of Germany	2.04 million tons
Belgium	1.00 million tons
France	0.31 million tons
Switzerland	0.32 million tons

The Netherlands thus accounted for more than half (52 per cent) of the total increase, the Federal Republic of Germany, over a quarter (27 per cent), Belgium about one-eight (13 per cent), France and Switzerland 4 per cent each.

(1) These are average values which are not necessarily representative of some networks in the countries listed.

In terms of weighted capacity, the relative increases for each country's fleet were as follows :

Netherlands (approximately)	80 per cent
Federal Republic of Germany "	42 " "
Belgium "	30 " "
France "	7 " "
Switzerland "	82 " "

Thus, the increases in fleet capacity from 1955 to 1967 were well above average in the Netherlands and Switzerland, distinctly below average in Belgium and even more so in France, but fairly close to the average in the Federal Republic of Germany.

(ab) Trend from 1955 to 1968

The weighted capacity of the combined fleet did not appreciably change during the period 1955-1968 as compared with 1955-1967.

From 1967 to 1968 weighted capacity in the Netherlands and the Federal Republic of Germany rose by 142,000 and 19,000 tons respectively but dropped by 55,000 tons in France, 64,000 tons in Belgium and 13,000 tons in Switzerland. The net increase in overall weighted capacity during that period was thus only 29,000 tons or 0.1 per cent, which means that the increase in capacity from 1955 to 1968 is much the same as for the period 1955-1967, i.e. 7.6. million tons or 42 per cent.

The waterway fleets of the Netherlands, the Federal Republic of Germany, Belgium, Switzerland and France respectively accounted for this increase as follows : 53.2 per cent, 27.1 per cent, 12.3 per cent, 4.1 per cent and 3.3 per cent.

From 1955 to 1968, the weighted capacity of the fleets of each of the countries under review thus rose as follows :

Netherlands	= + 4.04 million tons or + 82 per cent
Federal Republic of Germany	= + 2.06 " " " + 43 " "
Belgium	= + 0.93 " " " + 28 " "
Switzerland	= + 0.31 " " " + 79 " "
France	= + 0.25 " " " + 5.5 " "

(See also following table).

(ac) It should perhaps be pointed out that the coefficients shown above match the generally recognised differences in output for dumb barges (pull-towed), self-propelled and push-towed craft.

When the weighted capacity of the fleet is calculated by applying the coefficient 1 to dumb barges (pull-towed) even though their share of the total capacity of the fleet had dropped to 27.6 per cent in 1968 (after having accounted for the main bulk of it in 1955) a higher

Table I. TREND OF WEIGHTED CAPACITY FOR DIFFERENT TYPES OF WATERWAY CRAFT

(1955 - 1968)

(Coefficients : self-propelled craft : 1.6 ; push-towed barges = 1.9 ; pull-towed barges = 1.0)

Unit : 1,000 dwt

	All countries combined			GERMANY			BELGIUM			FRANCE			NETHERLANDS			SWITZERLAND		
	1955	1967	1968	1955	1967	1968	1955	1967	1968	1955	1967	1968	1955	1967	1968	1955	1967	1968
Self-propelled barges	8,258	16,574	16,617	1,939	4,600	4,619	2,344	3,499	3,472	1,850	3,038	3,002	1,882	5,042	5,124	243	395	400
Self-propelled tankers	987	2,567	2,573	243	866	875	93	291	293	384	466	451	184	795	807	83	149	147
Pull-towed barges	8,499	4,582	4,347	2,554	1,081	1,010	873	453	414	2,275	452	383	2,275	2,527	2,473	52	69	67
Pull-towed tankers	341	303	286	97	90	85	6	13	14	102	37	30	124	148	145	12	15	13
Push-towed barges	-	1,298	1,518	-	217	274	-	51	51	-	686	758	-	281	369	-	63	63
Push-towed tankers	-	321	336	-	17	27	-	-	4	-	239	239	-	42	59	-	19	7
Total	18,085	25,645	25,677	4,833	6,871	6,890	3,316	4,311	4,248	4,611	4,918	4,863	4,935	8,835	8,977	390	710	697
Difference 1955-1967 Increase ('000 dwt)		+7,560t + 42 %			+2,038t + 42 %			+ 995t + 42 %			+ 307t + 42 %			+3,900t + 79 %			+320t +82%	
Difference 1955-1968 Increase ('000 dwt)			+7,592t + 42 %			+2,038t + 42 %			+ 932t + 28%			+ 252t + 5 %			+4,042t + 82 %			+307t +79%

figure is obtained than if the calculation had been based on the coefficient 1 for self-propelled craft (68.1 per cent of the fleet in 1968).

This method of appraisal, which assumes a fleet made up entirely of pull-towed barges should be borne in mind if the output of the fleet is to be judged in relation to other modes of transport.

b) Trend of dry cargo and tanker tonnage

The comparative figures for weighted capacity of dry-cargo vessels and tankers show a much bigger increase for the latter than for the former during the period 1955 to 1968.

Weighted capacity of dry-cargo vessels increased by 5.72 million tons (34 per cent) from 16.8 million tons in 1955 to 22.5 million tons in 1968.

Weighted capacity of tankers, on the other hand, rose by 1.86 million tons (140 per cent) from 1.30 million tons in 1955 to 3.20 million tons in 1968. The increases for each country taken singly during the period 1955-1968 were as follows :

	Dry-cargo tonnage	Tanker tonnage
Netherlands	+ 3.34 million tons (+ 70 per cent)	+ 0.70 million tons (+ 228 per cent)
Federal Republic of Germany	+ 1.40 million tons (+ 31 per cent)	+ 0.65 million tons (+ 190 per cent)
Belgium	+ 0.72 million tons (+ 22 per cent)	+ 0.21 million tons (+ 213 per cent)
France	+ 0.02 million tons (+ 0.4 per cent)	+ 0.23 million tons (+ 48 per cent)
Switzerland	+ 0.24 million tons (+ 81 per cent	+ 0.07 million tons (+ 76 per cent
Total	5.72 million tons (+ 34 per cent)	1.86 million tons (+ 140 per cent

2. Increased capacity resulting from shorter journey-time as a consequence of better navigation conditions (improvements to waterways as such, improvements to locks implying faster movements of shipping through the latter) and other rationalisation measures

Apart from the increase in tonnage and the commissioning of more efficient craft (more numerous self-propelled craft and pusher tugs) waterway fleet capacity was also expended as a consequence of the faster turnround obtained by better navigation conditions, swifter trans-shipment in the ports, longer hours of navigation per day and other rationalisation measures.

According to a survey conducted in the Federal Republic of Germany in 1967, the additional increase in capacity obtained in this way may be estimated at 20 per cent for self-propelled barges, 16.5 per cent for self-propelled tankers and 15 per cent for dumb craft.

The Inland Waterways Sub-Committee judges that the figures arrived at for

the Federal Republic of Germany are representative for other countries too, especially bearing in mind that they were not based on German internal traffic alone but also took into account traffic links between German ports on the one side and Dutch, Belgian, French and Swiss ports on the other.

Apart from the increase in capacity due to the expansion and modernisation of waterway fleets (calculated at 7. 6 million tons weighted capacity as shown under section 1 above) a further increase to cover savings in turnround time must be taken into account. On the basis of the percentages shown above, this last increase may be estimated at 4. 7 million tons weighted capacity.

The countries under review accounted for the following shares of this increase :

Netherlands	1. 62 million tons
Federal Republic of Germany	1. 27 " "
Belgium	0. 81 " "
France	0. 89 " "
Switzerland	0. 13 " "
Total	4. 72 million tons

3. Combined increase in capacity resulting from expansion and modernisation of the fleet and from savings on journey time (sections 1 and 2)

If all the factors mentioned in sections 1 and 2 above are taken into account, their combined effect during the period 1955-1968 (the same applies to 1955-1967) was to raise the weighted capacity of the fleets of the countries under review from 18. 1 million tons in 1955 to 30. 4 million tons in 1968, i. e. by :

12. 3 million tons or 68 per cent,

weighted capacity for dry-cargo vessels having risen :

from 16. 8 million tons in 1955 to 26. 7 million tons in 1968 = + 60 per cent

and that of tankers :

from 1. 3 million tons in 1966 to 3. 7 million tons in 1968 = 180 per cent

The breakdown by country is follows :

Country	Overall increase in capacity	of which	
		Dry-cargo vessels	Self-propelled tankers
Netherlands	+ 5. 7 million tons	+ 4. 8 million tons	+ 0. 9 million tons
Federal Republic of Germany	+ 3. 4. " "	+ 2. 5 " "	+ 0. 8 " "
Belgium	+ 1. 8 " "	+ 1. 5 " "	+ 0. 3 " "
France	+ 1. 1 " "	+ 0. 8 " "	+ 0. 3 " "
Switzerland	+ 0. 4 " "	+ 0. 3 " "	+ 0. 1 " "
Total	+ 12. 3 " "	+ 9. 9 " "	+ 2. 4 " "
	or + 68 %	or + 60 %	or + 180 %

4. Trend of traffic on the inland waterways of the Federal Republic of Germany, Belgium, France, the Netherlands and Switzerland during the periods 1955-1967 and 1955-1968

a) Overall trend

(aa) Trend from 1955-1967

As compared with a 68 per cent increase in capacity, waterway traffic in the countries under review during the period 1955-1967 rose from 57, 400 million ton-km in 1955 to 93, 700 million in 1967, i. e. by 63 per cent (see Table II).

This increase in terms of ton-km carried on the inland waterways of the countries concerned was thus relatively smaller than the increase in the weighted capacity of their waterway fleets. The increase of 36, 300 million ton-km on the inland waterways of these countries was made up as follows :

Federal Republic of Germany	17, 200 million ton-km (+60 per cent)
Netherlands	13, 300 " " (+87 " ")
France	4, 100 " " (+46 " ")
Belgium	1, 700 " " (+36 " ")

Ton-km on Swiss territory can be left out of account, having amounted to only 15 million ton-km in 1955 and 38 million ton-km in 1967, i. e. roughly 0. 04 per cent of the overall figure for the inland waterways of the countries listed. The share accounted for by the Swiss fleet as a whole did however amount ot 710, 000 tons (2. 7 per cent) in 1967 and 390, 000 tons (2. 2 per cent) in 1955.

The traffic output (in terms of ton-km) of the waterway fleets under review during the period 1955-1967 having increased less than their weighted capacity (63 per cent as compared with 68 per cent, the inference to be drawn from a purely arithmetical calculation is that weighted capacity in 1967 showed a surplus of :

approximately 0. 9 to 1 million tons

In the event, however, it is assumed that in 1955 (the base year for this study), tonnage capacity roughly balanced the volume of traffic. According to the studies conducted on this subject, all the relevant factors that can be quantified (water level, loading ratio and utilisation factor of craft) seem to show that tonnage capacity during that year in the countries under review more or less matched transport demand, and that the navigation conditions prevailing on the waterways were those of a "normal" year. It is also assumed that all the vessels included in the records of these countries were in fact capable of contributing to waterway traffic. If, in 1967, some units were not "fit for navigation" or were being used on a long-term basis for storage - and so played no part in the transport market - the tonnage these vessels account for correspondingly reduces effective overcapacity. Though such vessels withdrawn from waterway traffic are reckoned as surplus capacity, it should not be implied that their being laid up or used for storage is due to under-utilisation. The calculations were also based on the assumption that navigation conditions on the waterways in 1955 and 1967 were identical, but as they were in fact generally better in 1967 than in 1955 (higher average water levels, few days lost through fog and ice, and a higher average utilisation factor - especially on main rivers) effective overcapacity must have been higher than that shown by the study. The excess capacity thus resulting from exceptional navigation conditions cannot however be described as "over-capacity" in the true sense, but should rather be regarded as a "stand-by" to be kept available by operators.

(ab) Trend from 1955 to 1968

The gap between the two trends for this period is much wider than that for 1955-1967 as there was no further expansion of the weighted capacity of the fleet in the countries under review between 1967 and 1968, whereas traffic increased in the meantime by 5. 3 per cent to 98, 700 million ton-km. Hence, the increase in terms of ton-km for the period 1955-1968 may be calculated at 72 per cent as compared with only 68 per cent for capacity.

On a purely arithmetical reckoning, there is therefore no effective overcapacity for 1968.

If, in spite of all this, the fleet was not always fully employed in 1968 - at least during the first nine months - the reason lies in the exceptionally good navigation conditions (highwater levels) prevailing at the time. For instance, the average utilisation factor for all fully or partly laden craft commissioned in the Federal Republic of Germany was 77. 8 per cent in 1968 as compared with 75. 7 per cent in 1967 and 69. 9 per cent in the base year 1955. Fleet capacity may also have been somewhat further expanded in 1968 through more intensive practice of round-the-clock navigation. At the latter end of the year, when water levels fell below standard, and so correspondignly reduced the utilisation factor, a temporary shortage of capacity should, according to the calculations, have arisen on certain canal networks, especially at critical points. Another factor had a bearing on the issue in 1967 and 1968 alike : a number of craft, though included in the records, were not "fit for navigation" or were used for storage and, as they were therefore unavailable for traffic operations, so-called "stand-by" capacity was correspondingly reduced.

The figures for "capacity" and "output" (ton-km- shown in the first column of this table for all countries combined are the most significant. Those shown in the columns for individual countries give only limited guidance because the share of each country's fleet in ton-km output on foreign waterways varies in each case. Where Switzerland is concerned, the relatively large increase in ton-km as compared with the expansion of capacity is due to the fact that, in that country, traffic with the "Basle-Campagne" port, which involves a journey of over 10 km on Swiss territory, shows a bigger percentage increase than traffic with the

Table II. OUTPUT IN TERMS OF TON-KM ON THE WATERWAYS OF THE FEDERAL REPUBLIC OF GERMANY, BELGIUM, FRANCE, THE NETHERLANDS AND SWITZERLAND

(1955 - 1968)

Milliard ton-km

All countries combined			GERMANY			BELGIUM			FRANCE			NETHERLANDS			SWITZERLAND		
1955	1967	1968	1955	1967	1968	1955	1967	1968	1955	1967	1968	1955	1967	1968	1955	1967	1968
57.4	93.7	98.7	28.6	45.8	47.9	4.6	6.3	6.6	8.9	13.0	13.2	15.3	28.6	31.0	0.015	0.038	0.04(2)
1955 to 1967																	
+ 36.3 milliard ton-km			+ 17.2 milliard ton-km			+ 1.66 milliard ton-km			+ 4.1 milliard ton-km			+ 13.3 milliard ton-km			+ 0.02 milliard ton-km		
= + 63 %			= + 60 %			= + 36 %			= + 45 %			= + 87 %			= + 150 %		
1955 to 1968																	
+ 41.3 milliard ton-km			+ 19.3 milliard ton-km			+ 2.0 milliard ton-km			+ 4.3 milliard ton-km			+ 15.7 milliard ton-km			+ 0.025 milliard ton-km		
= + 72 %			= + 67 %			= + 44 %			= + 48 %			= + 103 %			= + 160 %		
Increase in weighted capacity (1)																	
1955 - 1967 = + 68 %			1955 - 1967 = + 69 %			1955 - 1967 = + 55 %			1955 - 1967 = + 26 %			1955 - 1967 = + 111 %			1955 - 1967 = + 115 %		
1955 - 1968 = + 68 %			1955 - 1968 = + 69 %			1955 - 1968 = + 53 %			1955 - 1968 = + 25 %			1955 - 1968 = + 115 %			1955 - 1968 = + 112 %		

(1) Weighted capacity, including increased capacity due to shorter journey time

(2) Estimates.

port of "Basle-Ville" which requires a much shorter journey in Switzerland itself.

b) Output in terms of ton-km subdivided according to dry-cargo vessels and tankers

The breakdown of ton-km and capacity according to dry-cargo vessels and tankers shows that the weighted capacity of dry-cargo vessels (evaluated in the light of the information supplied by all the countries under review) has increased to much the same degree (+ 60 per cent) as the ton-km output (+59. 5 per cent) that these craft account for. Calculated on this basis, the overcapacity of the dry-cargo fleet in 1968 was rather slight as it only amounted to some 50,000 tons. If sizeable access capacity was nonetheless apparent for a while, the reason lies in the exceptionally good navigation conditions prevailing in 1968 which entailed exceptionally high utilisation factors for waterway craft.

This was not therefore "overcapacity" in the true sense, but rather "partly unused stand-by capacity". Given normal water levels and medium utilisation factors dry-cargo fleets would undoubtedly have been fully employed in 1968, the more so as some of the craft included on the records were no longer fit for navigation by that time or were being used for storage.

As navigation conditions on the waterways deteriorated at the latter end of the year, when low-water levels prevented craft from being as heavily laden as before, a scarcity of shipping may have arisen at various points.

During the period 1955-1968, weighted capacity of the tanker fleet rose by 180 per cent, as compared with 194 per cent for output in terms of ton-km. Theoretically, this is equivalent to a shortfall of roughly 200,000 tons in the weighted capacity of the tanker fleet in 1968, but here again there was no such gap in actual practice because of good navigation conditions and the facilities for a high degree of utilisation they provided. Owing to normal water levels and average utilisation factors, the oil tanker fleets were fully employed during that year. However, losses due to "poor navigability" or to using craft for storage were doubtless lower for the tanker fleet than for dry-cargo vessels, the age pyramid being more favourable in the case of the former.

It must also be pointed out that the scaling down of excess capacity for the dry-cargo fleet has occurred mainly in recent years when tonnage capacity practically levelled off whilst ton-km output increased sharply.

The tonnage, in row figures, of the tanker fleet (self-propelled, pull-towed and push-towed) for all the countries combined did not appreciably increase during the last few years of the period 1955-1966, and in some countries it even fell (see Tables I (1), I (12) in Annex I).

As regards output in terms of ton-km, though there was an increase in 1968 as compared with 1965, the figures for certain countries or certain routes in 1968 had dropped back by comparison with previous years because of the shorter length haul for oil traffic, this being due to the installation of refineries in consumer areas.

Table III. OUTPUT IN TERMS OF TON-KM BROKEN DOWN ACCORDING TO DRY-CARGO VESSELS AND TANKERS (1955-1968) TOGETHER WITH CHANGES IN FLEET CAPACITY

Category of craft	All countries combined		GERMANY		BELGIUM		FRANCE		NETHERLANDS		SWITZERLAND	
	1955	1968	1955	1968	1955	1968	1955	1968	1955	1968	1955	1968
Dry-cargo vessels												
Output in milliard ton-km	52.4	83.7	26.3	40.4	4.35	5.8	7.5	10.6	14.2	26.9	0.012	0.023
Increase from 1955 to 1968												
a) Output	+ 31.3 milliard ton-km or + 59%		+ 2.5 milliard ton-km or + 54%		+ 1.45 milliard ton-km or 34.5%		+ 3.1 milliard ton-km or + 41 %		+ 12.7 milliard ton-km or + 89 %		+ 0.011 milliard ton-km or + 91 %	
b) Weighted capacity of the fleet	+ 9.9 million dwt or + 60 %		+ 2.5 million dwt or + 56 %		+ 1.5 million dwt or + 46 %		+ 0.8 million dwt or + 19 %		+ 4.8 million dwt or + 104 %		+ 0.34 million dwt or + 115 %	
Tankers	5.1	15.0	2.3	7.5	0.3	0.8	1.4	2.6	1.1	4.1	0.003	0.015
Increase from 1955 to 1968												
a) Output	+ 9.9 milliard ton-km or + 194%		+ 5.2 milliard ton-km or + 231%		+ 0.5 milliard ton-km or + 196%		+ 1.2 milliard ton-km or + 87%		+ 3.0 milliard ton-km or + 273%		+ 0.012 milliard ton-km or + 351%	
b) Weighted capacity of the fleet	+ 5.2 million dwt or + 180 %		+ 0.8 million dwt or + 238 %		+ 0.26 million dwt or + 265 %		+ 0.32 million dwt or + 72 %		+ 0.9 million dwt or + 281 %		+ 0.1 million dwt or + 104 %	

Chapter II

QUALITATIVE ASPECTS

I. GENERAL

The first part of this study on the capacity of the inland waterways fleet deals with the quantitative aspect of overcapacity. In view of the action taken by various governments for the scrapping of canal craft, this aspect is of very great importance.

The traffic trend in 1968 gives no justification for claiming that there is any "quantitative" overcapacity worth mentioning. On more than one occasion during that year there was indeed a scarcity of tonnage capacity in various areas and a similar situation prevailed in 1969.

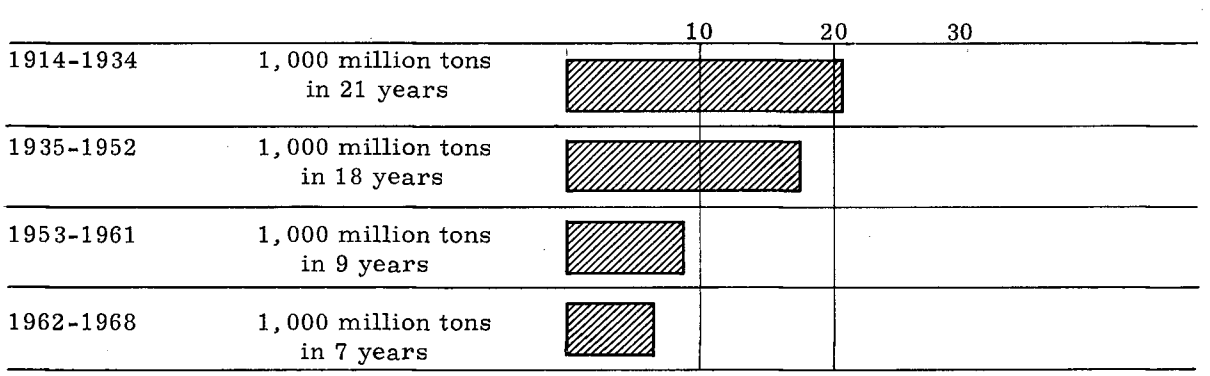
If we now consider the composition of the fleet from a qualitative angle it is seen to be made up of many types of craft which are altogether different in size and equipment.

Boats with under 50 tons cargo capacity are found at one end of the scale, and push-towed units with a capacity ranging from 10,000 to 12,000 tons at the other. Between these two extremes, there is a whole range of units that are partly standardized but their equipment varies in many respects.

All this shows how the problem of overcapacity is two-fold, involving both quantity and quality, but these two aspects are not entirely distinct : they may overlap, at least to some extent. That is why it is most difficult to judge whether overcapacities on the inland waterways are quantitative or qualitative. Owing to the sharp increase in freight carried on inland waterways in recent years, the qualitative development of the waterway fleet has not always received all the attention required.

The following strikingly illustrates this increase :

4,000 MILLION TONS OF FREIGHT CARRIED ON THE RHINE ABOVE LOBITH



The question of the qualitative aspect of the waterway fleet arises at this point. How should this fleet be made up in the future ?

II. RELATIONSHIP BETWEEN CAPACITY AND THE FUNCTIONING OF THE MARKET

Like the quantitative adaptation of supply to demand, the qualitative aspects of fleet capacity are of great importance for the transport market, and more particularly for waterway transport. Major qualitative differences make it difficult to adapt waterways transport to technical progress and to improvements in the working of the market. In the light of social and technical progress and of shippers' requirements, let us now consider in what respect the capacity made available might be improved to ensure that markets work as smoothly as possible. Consideration must therefore be given to the short and long-term possibilities of meeting shippers' requirements, and to the possibilities of discovering entirely new forms of transport.

1. Short-term possibilities

This means possible improvements on the basis of the existing fleet and of existing loading and unloading facilities. Investments for the construction of new units are therefore excluded.

In this connection, it is most important to reduce the time during which goods are in transit. This can be done in two ways :

a) Raising the speed of navigation as such :

- by practising day-and-night navigation on a large scale ;
- by providing existing craft with more powerful engines ;
- by speeding up the passage of craft through locks.

b) Quicker loading and unloading :

- by providing craft with fewer but larger holds, as this automatically facilitates loading and unloading operations ;
- by organising co-operation between inland waterway transport operators and those providing transhipment facilities in such a way that queueing time for loading and unloading is reduced to the utmost ;
- by improving trans-shipment facilities ;
- by providing more facilities for loading and unloading at night, on Sundays and holidays ;
- by improvements to rate structures and provisions for demurrage, control systems, etc. ;
- by simplifying administrative measures which hamper technical progress.

The foregoing factors, and more especially faster transit, work to the benefit of shippers and transport operators alike. Quicker turnround helps to improve profitability and transport operators must strive towards efficient management as far as they can. Another argument in favour of quicker transport is the loss of interest throughout the period when goods are in transit and hence outside the production cycle.

This is an increasingly weighty argument when interest rates are rising as they have done steadily in recent years.

Attention must also be drawn to the great benefits of automation : when the engine itself (including the checking of the oil level) and other equipment can be controlled from the wheel-house, it may be possible to operate with a smaller crew and so reduce running costs.

2. Long-term possibilities

This refers to investment in new transport units designed mainly to carry bigger cargoes at higher speeds.

a) Progress with pusher navigation is a case in point : pusher-tugs equipped with very powerful engines are used for day-and-night navigation and push-towed

barges, built as nearly as possible to standard specifications, help to speed up loading and unloading operations. The standardization of general specifications would further accelerate the formation of pusher convoys.

Investment in this form of transport calls for a safely dependable economic return. Quicker turnround contributes to this and the same applies to co-operation (e. g. the pooling of equipment) between operators. Apart from arrangements of this sort for the organisation of the market, the following factors also help to bring down transport costs :

- push-towed convoys need smaller crews than do traditional forms of navigation ;

- construction costs per ton are lower for push-towed units. The construction costs of a pusher tug are indeed higher than those of a conventional tug hauling the same tonnage of pull-towed barges are lower as they are of simpler design and need not comprise living quarters. Thus, the construction cost of a push-towed unit is two-thirds that of a traditional unit ;

- maintenance and repair costs are lower.

b) In the long term, the construction of craft designed for special traffics (e. g. transport of LPG) will also have to be developed.

c) New forms of ship propulsion may also come into being. This subject will call for further study.

3. Containers

Container traffic has not risen on the waterways as it has done for other modes of transport. This is due mainly to the long duration of waterway journeys and the high rentals charged for containers, which the relatively cheaper cost of waterway transport has so far failed to offset. Furthermore, because of the special equipment required, trans-shipment of containers from ocean-going vessels to canal craft is usually more expensive than trans-shipment to rail or road.

The waterways should, however, win a reasonable share of container traffic, especially as this will still go on increasing to a considerable degree. According to a study published last year, which had been commissioned by the Rotterdam Municipality and the "Rijnmond" Organisation, about 30 per cent of general merchandise traffic will be containerised by 1990. As a consequence of this trend, the inland waterways might lose some of the freight they carry at present.

Waterway transport operators should therefore keep the problem of containerisation constantly under review for the inland waterways are not, on the face of it, unsuitable for traffic of this kind. As the total duration of container transits lengthens, the relative slowness of inland waterway navigation will become less of a handicap.

Moreover, as the inland waterways are able to carry more containers in a single batch, trunk hauls between terminals may be handled in this way equally well and possibly even better.

As regards freight charges, the rate per container unit will become more competitive as the amount of container traffic handled on the waterways increases. Existing calculations already show that waterway transport is much cheeper than other modes.

One advantage is that many canal craft are already adapted to container transport. In addition, the waterways become more attractive for container traffic as the lenght of haul increases.

A step in the right direction is the creation of the "Rhein-Container-Linie" which provides, since 1st February, 1969, a daily container service between the three Benelux ports and Mannheim, Strasbourg and Basle on the Rhine. This is the beginning of a development which will surely gather strength in the near future.

Several large ports on the Rhine

are already equipped for container handling. It must be hoped that more and more facilities of this kind will be provided and that the small ports will also be equipped in this way.

4. Barge-carrier vessels (LASH system)

This very recent form of transport (a "mother" ship carrying lighters of about 400 tons) is attractive for shippers in cases where rapid transit is important.

- Trans-shipment costs are eliminated : lighters emerge from the "mother" ship or are lifted over the side with the ship's own cranes.

- Demurrage in the ports is reduced to practically nothing as lighters are often able to proceed on their course without delay.

- Queueing time for loading and unloading is reduced to the utmost.

This form of transport calls for heavy capital outlays, however, and its future development cannot yet be foreseen at this stage. Incidentally, it involves some disadvantages for waterway transport since it is an extension of maritime transport which makes no use of conventional waterway craft.

Push-towing will however continue to play a part, both in container traffic and in LASH traffic : containers can be carried on push-towed barges and both pusher tugs and conventional tugboats may also be used for towing lighters.

It is difficult to say for the time being how far barge-carrier vessels will contribute to the quantitative and qualitative improvement of the fleet.

III. CONCLUSIONS

The mixed content of the fleet, the speed of technical change and the need for specialisation have raised difficult problems of vital importance in the course of the last few years.

The market cannot be expected to function smoothly until these problems are solved. They are mainly due to the very long working life of inland waterway craft. In this respect, there can scarcely be any comparison with other economic sectors, especially with the competing modes - rail and road. The figures for the composition of the fleet according to age group in Annex I leave no doubt about this, though here again it must be pointed out that there is no hard and fast relationship between the age of a vessel and its economic value.

There was a time when technical progress on the inland waterways was slow (from 1900 to the mid-fifties - half a century - pull-towing was the main activity in this fields) but its pace has quickened in the last 15 years and it is hard to see where it will end. Cases in point are the development of push-towing, specialised craft, facilities for round-the-clock navigation, the LASH system, single-hold craft and various technical refinaments such as ship's radio communications and radar.

However, as long as a part of the fleet which is uneconomic and ill-adapted to technical progress has an increasingly adverse affect on the working of the market, the more difficult it will be to bring about the qualitative adaptation of fleet capacity which is more and more urgently needed. The fact that several E. C. M. T. countires are trying to eliminate the obstructive elements in various ways is indeed important, but as it can be seen that quantitative overcapacity has largely disappeared in recent years both because of the stagnation of new building and increased traffic (and this notwithstanding better transport performance) the efforts made towards structural improvements should rather give priority, as things stand at present, to the qualitative aspects of waterway fleet capacity.

Annex I

NUMBER OF CRAFT AND CARGO CAPACITY OF THE FLEET

In Germany, the overall number of craft rose from 6,780 in 1955 to 7,066 in 1968, an increase of 358 units, or 5.3. per cent, but attention must be drawn to a steady decline since 1965 (7,517 units in 1965).

The breakdown by category of craft has changed considerably during the period under review.

In 1955, dumb barges (pull-towed) accounted for 52 per cent of the fleet as compared with 42 per cent for self-propelled barges. This situation had changed by 1968 : the number of self-propelled barges had nearly doubled and they then accounted for 69.1 per cent of the fleet. In the meantime, the number of pull-towed barges had dropped by nearly one-third and their share of the total had fallent to 17 per cent.

The number of self-propelled tankers rose very sharply between 1955 and 1965 (from 281 to 741 units). The number of craft in this category dropped to 701 between 1966 and the end of 1968, but their percentage share of the total fleet (having declined from 12 per cent to 11.6 per cent) was not correspondingly altered. Two new categories of craft (push-towed barges and tankers) have come on the scene since 1965. The number of push-towed barges dropped back slightly (from 100 to 96 units) between 1966 and 1967, but this was more than offset by an increase of 17 units in 1968.

In Germany, the percentage increase in the total capacity of the fleet from 1955 to 1968 was much greater than that for the number of craft, having risen from 4,015,000 tons to 4,684,000 tons during that period, i.e. an increase of 16.6 per cent as compared with 5.3 per cent for the number of craft. It is useful to see how capacity has developed according to category of craft.

In 1955, the average capacity of self-propelled craft was 430 tons. By 1968, it had risen to 590 tons. In the case of dumb barges (pull-towed) average capacity rose from 740 tons in 1955 to 842 tons in 1968. All other categories of craft were similarly affected.

In Belgium, the total number of craft dropped by 383 units (6.2 per cent) from 1955 to 1968. The composition of the fleet changed considerably between these two dates. In 1955, self-propelled barges accounted for 67.7 per cent of the total fleet (61 per cent of total capacity). In 1968, the corresponding figures were 83 per cent and 77 per cent respectively.

The number of self-propelled tankers increased nearly two-fold - and their capacity nearly three-fold - between 1955 and 1968 : 225 units (capacity 58,000 tons) in 1955 - 408 units (capacity 183,000 tons) in 1968.

The trend for dumb barges (pull-towed) was quite different from that for the two above categories of craft. From 1,745 units (28 per cent of the fleet) amounting to 873,000 tons (36.3 per cent of total capacity) in 1955, they dropped to 544 units (9 per cent) and 414,000 tons (15 per cent of total capacity) in 1968.

This sharp drop for dumb barges -

a development common to all countries - did not bring about a corresponding decline in the size of the fleet as a whole. Between 1955 and 1968, the number of craft dropped from 6,150 to 5,768, i.e. by 6 per cent as compared with 69 per cent for the number of dumb barges.

Tankers (pull-towed) were not affected to the same degree, though their number did drop slightly from 19 units in 1955 to 13 units in 1968, but their capacity rose very substantially from 6,000 tons to 14,000 tons during the same period.

The base year for statistics concerning push-towed barges and tankers is 1965. The number of units in both categories has never ceased to grow since then, push-towed barges showing the biggest increase : 21 push-towed barges and 2 push-towed tankers in 1965 as compared with 25 and 5 respectively in 1968.

Though - as already mentioned - the total number of craft dropped by 6 per cent during the period 1955 - 1968, total capacity increased sharply : from 2,402,000 tons in 1955 to 2,810,000 tons in 1968 (+ 17 per cent). It follows that the tendency was to substitute large vessels for small.

In Luxembourg, the opening of the Moselle Canal led to the creation of a waterway fleet for which figures are available as from 1967. During the very brief period from 1967 till 1968, the increase was very sharp : from 1 unit (1,400 tons cargo capacity) in 1967 to 12 units (6,800 tons) in 1968. Of these 12 units, 11 are self-propelled barges and the twelfth is a self-propelled tanker.

In France, the total number of craft fell, by about 27 per cent, from 10,431 units in 1955 to 7,532 units in 1968, but the decline in total cargo capacity - (from 3,773,000 tons in 1955 to 3,096,000 tons in 1967) - was not so sharp (-17 per cent). The replacement of old vessels by new units of much larger capacity was not practised to the same degree for all categories of craft.

The number of self-propelled barges has increased very considerably since 1955 : from 3,288 units to 5,004 in 1968. As shown in Table I (1), small craft were replaced by larger capacity units mainly from 1965 onwards, this being the year when the number of self-propelled barges was at its peak. In 1966, the number of self-propelled barges had dropped to 5,222 (-38) but capacity was not thereby reduced, in fact it rose by 1,000 tons, from 1,923,000 tons in 1965 to 1,924,000 tons in 1966. The average capacity of self-propelled barges has steadily increased : 351 tons in 1955 365 tons in 1965, 368 tons in 1966 and 375 tons in 1968.

Dumb barges (pull-towed) account for the steepest fall : from 6,310 units in 1955 to 1,063 units in 1968, i.e. by 81 per cent in 13 years. Their capacity correspondingly declined by 83 per cent, from 2,275,000 tons in 1955 to 383,000 tons in 1968.

As in other countries, push-towed barges and tankers - especially the former - are accounting for a growing share of the fleet since 1965 : from 5 per cent and 1 per cent respectively in 1965 to 8 per cent and 2 per cent in 1968.

The number and capacity of self-propelled tankers has practically levelled off since 1955. In view of the constant increase in demand for petroleum products, this can only be due to increasingly keen competition from pipelines.

In the Netherlands, the total number of craft rose very sharply between 1955 and 1968 : from 15,428 units to 20,419, an increase of approximately 33 per cent.

Fleet capacity followed a similar trend : 4,160 million tons in 1955 as compared with 6,549 million in 1968, an increase of roughly 57 per cent.

Self-propelled tankers accounted for one of the sharpest increases, their number having increased two-fold and

their capacity nearly four-fold from 1955 to 1967. On the other hand, though the number of pull-towed tankers increased very sharply (168 units in 1955 to 237 in 1967), their overall capacity did not rise to any appreciable extent. Unit capacity for this category of craft thus remained the same.

The number of dumb barges (pull-towed) has been falling steadily since 1965 (8,423 in 1965, 8,378 in 1966 and 8,160 in 1967), but their capacity has not declined at so sharp a rate (2,734 million tons in 1965, 2,718 million tons in 1966 and 2,675 million in 1967). This restructuring process applied mainly to craft ranging from 401 to 650 tons capacity, they being replaced by units exceeding 1,500 tons.

In Switzerland, the number of craft increased very sharply between 1955 and 1968, from 357 units to 463 (an increase of 30 per cent).

The increase in capacity was even more striking : from 268,00 tons in 1955 to 461,000 tons in 1968 (+ 72 per cent). The share of the total fleet accounted for by each category of craft, both in number and capacity, remained practically unchanged throughout this period.

CLASSIFICATION OF CRAFT BY AGE-GROUP

The age classification of the fleet in Member countries of the E. C. M. T. during the period 1955-1968 is shown in Tables II (a), (b), (c), (d), (e), (f).

In Germany, 85.9 per cent of the fleet was over 40 years old in 1955 as compared with 72 per cent in 1968.

The fleet was actively rejuvenated from 1950 onwards : for instance, vessels built during the period 1950-1959 accounted for 7.3 per cent of the total in 1955, and 15.5 per cent in 1960. This percentage increase continued with ships built between 1960 and 1968. The elimination of old craft helped to expand the share accounted for by new units (built since 1950).

Tables II (a) and (b) show that the capacity of the new units brought into service far exceeds that of their predecessors. The number of craft brought into service before 1940 accounted for a bigger percentage than did their capacity, but from then onwards the situation was reversed.

In Belgium, the average age of the fleet was fairly low in 1965. 23.1 per cent was built between 1920 and 1929, and only 6.1 per cent before 1900.

The figures for 1968 were much the same : 22.9 per cent for vessels built between 1920 and 1929 and 5.4 per cent for those built before 1900.

In contrast to the figures for Germany, Tables II (a) and (b) show that the capacity of new craft is much the same as that of their predecessors.

In France, a good many old craft were renewed from 1960 onwards. Units built before 1920 accounted for 33.6 per cent of the total in 1965, 21.5 per cent in 1960 and 10.3 per cent in 1968.

Concomitantly, there was an increase in average capacity for units built since 1940. In 1955, the situation was as follows : vessels built before 1940 accounted for 72.6 per cent of the fleet (77 per cent of the total capacity). In 1968, the number had dropped to 56.2 per cent of the total and their capacity was down to 48.4 per cent.

In Luxembourg, the creation of the fleet is so recent that its average age is obviously very low. In 1967, the only existing vessel was less than 12 monts old. The addition of 11 units - not all of very recent construction - in 1968 did not raise the average age very considerably : two units were over 40 years old, four were under 15 years and the remainder under ten.

In the Netherlands, 87 per cent of the total number of craft was aged less than 25 years in 1956. This figure had dropped to 84 per cent by 1966. A trend towards modernisation has been apparent in the last few years but 80 per cent of the fleet was still over 25 years old in 1968. As in other countries, vessels put into commission since 1940 are of distinctly larger capacity than their predecessors.

In Switzerland, the average age of craft was around 25 years in 1955. The situation had improved by 1968 when nearly 50 per cent of the fleet was aged under 18 years. As in most countries, the average age of new units is rising.

CLASSIFICATION OF CRAFT BY CAPACITY CATEGORY

The breakdown of the fleet by capacity category for the countries under review is hown in Tables III (1) to III (12). The years selected to show how the trend has developed are 1955, 1960, 1965 and 1968. As a general rule, the number of vessels in Class V (those over 1,500 tons) has followed a rising trend. The figures for all countries cover the following categories : self-propelled barges, self-propelled tankers, dumb barges and tankers (pull-towed).

It was also possible to obtain the figures for push-towed barges and tankers concerning Germany, Belgium, France and Switzerland in 1968. The Belgian and French figures for 1965 are also available.

In Germany, the number of craft in the four categories mentioned above rose from 6,780 in 1955 to 7,873 in 1960, dropped back slightly to 7,517 in 1965 and again rose to 6,941 in 1968. The figures for separate classes and categories of craft are rather different from this overall trend. Those for self-propelled barges, for instance, we were 2,813 units in 1955, 4,940 Class III (651 to 1,000 tons) : 651 units in 1955, 1,063 in 1960, 1,439 in 1965 and 1,336 in 1968. The number of vessels in Class IV (1,001 to 1,500 tons) also showed a fairly substantial increase, from 77 units at the beginning of the period under review to 678 units in 1968. In that year, there were also eight self-propelled barges of over 1,500 tons which were necessarily of recent construction as there were none before 1965.

The number of self-propelled tankers tankers rose far more steeply - from 281 units in 1955 to 741 in 1965, a nearly three-fold increase. In 1968, the total dropped back, by 40 units, to 701.

Class IV is that which shows the sharpest increase : from 2 units to 152 in ten years and then to 223 in 1968. Next comes Class III, from 148 units to 355, a nearly two-fold increase in ten years, but this figure dropped back to 254 in 1968. In Class V (over 1,500 tons) there were 7 units in 1965 (none in 1955) and only 5 in 1968.

In contrast to other types of craft, dumb barges (pull-towed) declined : from 3,450 units in 1955 to only 1,668 in 1965 (a drop of more than 50 per cent in ten years) and then to 1,201 in 1968. Generally speaking, all Classes (i.e. capacity categories) were similarly affected though there was some replacement of small craft by larger units to a limited degree.

The trend for pull-towed tankers was similar to that for pull-towed barges.

In Belgium, the size of the fleet taken as a whole declined from 6,158 units at the beginning of the period under review to 5,901 in 1965 and 5,767 in 1968. The number of self-propelled barges increased substantially from 1955 to 1965 but fell back slightly from 1965 to 1968.

Classes IV and V were those which showed the biggest increase during the period under review : from 17 units and 1 unit respectively in 1955 to 173

and 25 in 1965 and then to 208 and 28 in 1968. The increase for Class II was a close third.

The number of self-propelled tankers also rose fairly sharply : from 206 units in 1955 to 375 in 1965 and then to 408 in 1968 (a nearly two-fold increase). Classes IV and V, being of large capacity, were most affected by this increase.

In contrast to these two categories of craft, the number of dumb barges (pull-towed) not only did not increase but steadily declined, i. e. from 1,932 units in 1955 to 653 units in 1965 and 544 units in 1968.

The decline also affected pull-towed tankers, though the number of craft in this category is hardly representative of the fleet as a whole : 19 units in 1955, 13 in 1965, this figure remaining the same in 1968.

From 1965 to 1968 the push-towed barges and tankers categories showed a slight increase : from 21 and 2 units to 25 and 5 units respectively.

Generally speaking, tendency to replace small units by larger ones (from 1,005 to 1,500 tons) is apparent for all categories of craft.

In France, the number of craft remained at much the same level from 1955 to 1965 but dropped from then onwards, i. e. from 10,431 in 1955 to 9,688 in 1965 (including 530 push-towed barges and tankers) and then to 7,532 in 1968 (including 724 push-towed barges and tankers).

The decrease recorded for dumb (pull-towed) barges was offset by an incrase in the number of self-propelled barges up to 1965. The figures for each of these types of craft broken down by capacity categories show a sharp dec decline for pull-towed barges in Class I (251-400 tons). Meanwhile, the sharpest increase for self-propelled barges was precisely in this category and very closely matches the decrease for pull-towed barges under 400 tons.

As regards other categories of craft, the composition of the fleet and the number of vessels did not, in the main, substantially change up to 1965. Only from that year onwards was there a very sharp drop in the number of pull-towed tankers and, to a lesser degree, self-propelled tankers. In the meantime, there was a fairly big increase in the number and capacity of push-towed barges and tankers, both of which are usually of large capacity. Indeed, there were no Class V vessels in the figures for earlier years but by 1968 there were 35 push-towed tankers exceeding 1,500 tons.

In the Netherlands, the fleet as a whole, far from decreasing, has been expanding since 1955 and only from 1965 to 1968 was there a slight fall in the total number of existing craft. Though the number of self-propelled barges has remained unchanged in recent years, it rose very sharply from 1956 onwards.

The number of self-propelled tankers increased more than two-fold from 1955 to 1965. This increase chiefly applied to large-capacity craft. As shown in Tables III (9) to (12), the same rate of growth continued during the period 1965-1968.

The number of dumb barges (pull-towed) increased during the period 1955-1965, but from then onwards and up to 1968, this part of the fleet was trimmed down, especially barges in the 401-650 ton group. The number of pull-towed barges over 1,500 tons increased : from 233 units at the beginning of the period under review to 333 in 1965 and then to 346 in 1968.

The number of pull-towed tankers followed a rising trend from 1956 onwards but has levelled off in the last few years.

In Switzerland, the fleet as a whole increased from 338 units in 1955 to 445 in 1968. The number of self-propelled barges fell from 276 in 1965 to 271 in 1968, but as total capacity for this type of craft rose from 242,000 tons in 1965 to 250,000 tons in 1968, it follows that there was a distinct shift from small

to larger-capacity craft, especially those over 1,000 tons.

Self-propelled tankers followed much the same trend as craft in the foregoing category.

The dumb-barge (pull-towed) fleet was also trimmed down, small craft being replaced by vessels of larger tonnage.

The figures for pull-towed tankers show little change, but this is not the case for push-towed barges (which did not exist in 1955) ; the five units ranging from 1,000 to 1,500 tons existing in 1960 were replaced by craft exceeding 1,500 tons in 1965.

Table I (1) INLAND WATERWAY FLEETS : NUMBER AND CARGO CAPACITY BY CATEGORY OF CRAFT

Country / Type of craft	1955				1960				1965			
	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%
GERMANY												
Self-propelled barges	2,813	42.0	1,212	30.0	4,003	53.0	2,000	41.0	4,940	66.0	2,839	57.0
Self-propelled tankers	281	4.0	152	4.0	557	7.0	381	8.0	741	9.8	565	12.0
Dumb barges (pull-towed)	3,450	52.0	2,554	64.0	2,750	37.0	2,351	49.0	1,584	21.0	1,357	27.0
Dumb tankers (pull-towed)	164	2.0	97	2.0	181	3.0	108	2.0	165	2.0	96	2.0
Dumb barges (push-towed)									84	1.0	86	2.0
Dumb tankers (push-towed)									3	0.2	1	-
Total fleet	6,708	100	4,015	100	7,491	100	4,840	100	7,517	100	4,945	100

Table I (2)

Country / Type of craft	1966				1967				1968			
	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%
GERMANY												
Self-propelled barges	4,950	67.0	2,887	59.1	4,912	68.6	2,875	61.0	4,885	69.1	2,885	61.6
Self-propelled tankers	723	9.8	539	11.0	702	9.8	541	11.5	701	9.9	546	11.6
Dumb barges (pull-towed)	1,444	19.5	1,220	25.0	1,293	18.0	1,081	23.0	1,201	17.0	1,011	21.6
Dumb tankers (pull-towed)	166	2.2	94	1.9	161	2.2	90	1.9	154	2.2	84	1.8
Dumb barges (push-towed)	100	1.4	121	2.5	96	1.3	114	2.4	113	1.6	144	3.1
Dumb tankers (push-towed)	5	0.1	4	0.1	8	0.1	9	0.2	12	0.2	14	0.3
Total fleet	7,388	100	4,885	100	7,172	100	4,710	100	7,066	100	4,684	100

Table I (3) INLAND WATERWAY FLEETS : NUMBER AND CARGO CAPACITY BY CATEGORY OF CRAFT

Country / Type of craft	1955				1960				1965			
	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%
BELGIUM												
Self-propelled barges	4,161	67.7	1,465	61.0	4,798	79.0	1,843	72.0	4,837	81.0	2,132	75.0
Self-propelled tankers	225	4.0	58	2.4	330	5.3	109	4.3	375	6.0	162	5.6
Dumb barges (pull-towed)	1,745	28.0	873	36.3	937	15.3	597	23.0	653	11.0	482	17.0
Dumb tankers (pull-towed)	19	0.3	6	0.3	26	0.4	17	0.7	13	0.3	11	0.4
Dumb barges (push-towed)	-	-	-	-	-	-	-	-	21	0.6	26	1.0
Dumb tankers (push-towed)	-	-	-	-	-	-	-	-	2	0.1	1	-
Total fleet	6,150	100	2,402	100	6,091	100	2,567	100	5,901	100	2,814	100

Table I (4)

Country / Type of craft	1966				1967				1968			
	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%
BELGIUM												
Self-propelled barges	4,871	82.0	2,183	76.0	4,834	82.2	2,187	76.3	4,772	83	2,170	77
Self-propelled tankers	393	6.6	169	6.0	413	7.0	182	6.3	408	7	183	6.5
Dumb barges (pull-towed)	638	10.7	480	16.5	587	10.0	453	15.8	544	9	414	15
Dumb tankers (pull-towed)	16	0.3	14	0.5	15	0.3	13	0.5	13	0.2	14	0.5
Dumb barges (push-towed)	22	0.4	27	1.0	24	0.4	27	1.0	25	0.7	27	1.0
Dumb tankers (push-towed)	2	-	1	-	3	0.1	2	0.1	5	0.1	2	0.01
Total fleet	5,942	100	2,875	100	5,876	100	2,864	100	5,767	100	2,810	100

Table I (5) INLAND WATERWAY FLEETS : NUMBER AND CARGO CAPACITY BY CATEGORY OF CRAFT

Country / Type of craft	1955				1960				1965			
	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%
FRANCE												
Self-propelled barges	3,288	31.0	1,156	31.0	4,321	44.0	1,564	44.0	5,260	54.0	1,923	53.0
Self-propelled tankers	637	6.0	240	6.0	716	7.0	285	8.0	701	7.0	288	8.0
Dumb barges (pull-towed)	6,310	60.0	2,275	60.0	4,547	47.0	1,609	45.0	3,072	32.0	940	26.0
Dumb tankers (pull-towed)	196	3.0	102	3.0	159	2.0	91	3.0	125	1.0	59	2.0
Dumb barges (push-towed)	-	-	-	-	-	-	-	-	435	5.0	296	8.0
Dumb tankers (push-towed)	-	-	-	-	-	-	-	-	95	1.0	105	3.0
Total fleet	10,431	100	3,773	100	9,743	100	3,549	100	9,688	100	3,611	100

Table I (6)

Country / Type of craft	1966				1967				1968			
	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%
FRANCE												
Self-propelled barges	5,222	58.0	1,924	56.0	5,074	65.0	1,899	61.0	5,004	66.0	1,876	61.0
Self-propelled tankers	759	8.0	306	9.0	710	9.0	291	9.0	673	9.0	282	9.0
Dumb barges (pull-towed)	2,335	26.0	722	22.0	1,248	16.0	452	14.0	1,063	14.0	383	12.0
Dumb tankers (pull-towed)	103	1.0	47	1.0	84	1.0	37	1.0	68	1.0	30	1.0
Dumb barges (push-towed)	477	6.0	322	9.0	542	7.0	361	11.0	606	8.0	399	13.0
Dumb tankers (push-towed)	103	1.0	110	3.0	118	2.0	126	4.0	118	2.0	126	4.0
Total fleet	8,999	100	3,431	100	7,776	100	3,166	100	7,532	100	3,096	100

Table I (7) INLAND WATERWAY FLEETS : NUMBER AND CARGO CAPACITY BY CATEGORY OF CRAFT

Country / Type of craft	1955				1960				1965			
	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity	%
LUXEMBOURG												
Self-propelled barges												
Self-propelled tankers												
Dumb barges (pull-towed)												
Dumb tankers (pull-towed)												
Dumb barges (push-towed)												
Dumb tankers (push-towed)												
Total fleet												

Table I (8)

Country / Type of craft	1966				1967				1968			
	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%
LUXEMBOURG												
Self-propelled barges					1	100	1.4	100	11	91	6.7	99
Self-propelled tankers									1	9	0.07	1
Dumb barges (pull-towed)									-	-	-	-
Dumb tankers (pull-towed)									-	-	-	-
Dumb barges (push-towed)									-	-	-	-
Dumb tankers (push-towed)									-	-	-	-
Total fleet					1	100	1.4	100	12	100	6.8	100

Table I (9) INLAND WATERWAY FLEETS : NUMBER AND CARGO CAPACITY BY CATEGORY OF CRAFT

Country / Type of craft	1955				1960				1965			
	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%
NETHERLANDS												
Self-propelled barges	7,133	46.0	1,176	28.0	9,658	51.0	2,119	41.0	11,062	53.0	3,026	47.0
Self-propelled tankers	429	3.0	115	3.0	753	4.0	272	5.0	1,090	5.0	461	7.0
Dumb barges (pull-towed)	7,698	50.0	2,745	66.0	8,292	44.0	2,592	51.0	8,423	40.0	2,734	43.0
Dumb tankers (pull-towed)	168	1.0	124	3.0	221	1.0	144	3.0	235	2.0	168	3.0
Dumb barges (push-towed)	-	-	-	-	-	-	-	-	-	-	-	-
Dumb tankers (push-towed)	-	-	-	-	-	-	-	-	-	-	-	-
Total fleet	15,428	100	4,160	100	18,924	100	5,128	100	20,810	100	6,389	100

Table I (10)

Country /	1966				1967				1968			
	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%
NETHERLANDS												
Self-propelled barges	11,067	53.0	3,121	48.0	10,998	54.0	3,151	49.0	12,152	59.0	3,706	57.0
Self-propelled tankers	1,090	5.0	467	7.0	1,117	5.0	497	8.0				
Dumb barges (pull-towed)	8,378	40.0	2,718	42.0	8,160	40.0	2,675	41.0				
Dumb tankers (pull-towed)	234	2.0	165	3.0	237	1.0	170	1.0				
Dumb barges (push-towed)	-	-	-	-	-	-	-	-	8,327	41.0	2,843	43.0
Dumb tankers (push-towed)	-	-	-	-	-	-	-	-				
Total fleet	20,769	100	6,471	100	20,512	100	6,493	100	20,479	100	6,549	100

Table I (11) INLAND WATERWAY FLEETS : NUMBER AND CARGO CAPACITY BY CATEGORY OF CRAFT

Country / Type of craft	1955				1960				1965			
	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%
SWITZERLAND												
Self-propelled barges	207	58.0	152	57.0	263	62.2	221	58.7	276	57.6	242	53.4
Self-propelled tankers	67	19.0	52	19.0	88	20.8	85	22.6	95	19.8	95	21.0
Dumb barges (pull-towed)	54	15.0	52	19.0	40	9.4	49	13.0	54	11.2	67	14.8
Dumb tankers (pull-towed)	10	3.0	12	5.0	11	2.6	14	3.7	13	2.7	16	3.5
Dumb barges (push-towed)	-	-	-	-	5	1.2	7	1.8	10	0.2	16	3.5
Dumb tankers (push-towed)					-	-	-	-	10	0.2	17	3.8
Tugs	19	5.0	-	-	16	3.8	-	-	21	4.3	-	-
Total fleet	357	100	268	100	423	100	376	100	479	100	453	100

Table I (12)

Country / Type of craft	1966				1967				1968			
	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%
SWITZERLAND												
Self-propelled barges	276	57.6	245	53.4	271	56.9	247	52.8	271	59.0	250	54.3
Self-propelled tankers	94	19.6	94	20.5	88	18.5	93	19.9	84	18.0	92	20.0
Dumb barges (pull-towed)	51	10.6	65	14.2	54	11.4	69	14.7	53	11.4	68	14.7
Dumb tankers (pull-towed)	14	2.9	17	3.7	12	2.5	15	3.2	11	2.4	13	2.8
Dumb barges (push-towed)	15	3.0	23	5.2	24	5.0	33	7.3	24	5.2	33	7.2
Dumb tankers (push-towed)	8	0.2	14	3.0	6	1.3	10	2.1	2	0.4	4	1.0
Tugs	21	4.1	-	-	21	4.4	-	-	18	3.6	-	-
Total fleet	479	100	458	100	476	100	467	100	463	100	460	100

Table II. (a) INLAND WATERWAY FLEETS : BREAKDOWN BY AGE-GROUP

Country / Year of construction	1955				1960				1965			
	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%
GERMANY												
Before - 1900	1,359	20.2	875	22.0	1,376	18.3	887	18.3	1,190	15.8	727	14.7
1900 - 1909	1,532	23.0	817	20.3	1,564	21.0	857	17.7	1,503	20.0	777	15.7
1910 - 1919	1,031	15.4	529	13.2	1,069	14.3	576	12.0	1,081	14.3	560	11.3
1920 - 1929	1,200	17.9	781	19.4	1,177	15.7	815	16.8	1,137	15.1	761	15.4
1930 - 1939	627	9.3	325	8.0	617	8.2	340	7.0	571	7.6	328	6.6
1940 - 1949	464	6.9	334	8.3	416	5.6	331	6.8	405	5.4	322	6.5
1950 - 1959	495	7.3	354	8.8	1,168	15.5	944	19.5	1,117	14.8	957	19.3
1960 - 1969	-	-	-	-	104	1.4	89	1.8	513	6.8	513	10.3
Age unspecified	-	-	-	-	-	-	-	-	-	-	-	-
Total	6,708	100.0	4,015	100,0	7,491	100.0	4,840	100,0	7,517	100.0	4,945	100.0
BELGIUM												
Before - 1900									334	5.6	171	6.1
1900 - 1909									697	11.8	384	13.6
1910 - 1919									861	14.6	367	13.0
1920 - 1929									1,446	24.5	649	23.1
1930 - 1939									803	13.6	327	11.6
1940 - 1949									397	6.7	173	6.1
1950 - 1959									750	12.7	342	12.2
1960 - 1969									597	10.1	399	12.3
Age unspecified									16	0.4	2	1.9
Total									5,901	100.0	2,814	100.0

Table II. (b) INLAND WATERWAY FLEETS : BREAKDOWN BY AGE-GROUP

Country / Year of construction	1966				1967				1968			
	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%
GERMANY												
Before - 1900	1,152	15.6	697	14.3	1,102	15.4	658	14.0	1,076	15.2	645	13.8
1900 - 1909	1,466	20.0	757	15.5	1,431	20.0	731	15.5	1,394	19.7	710	15.1
1910 - 1919	1,064	14.4	544	11.1	1,034	14.4	517	11.0	1,007	14.3	499	10.6
1920 - 1929	1,114	15.0	739	15.1	1,088	15.1	717	15.2	1,075	15.2	713	15.2
1930 - 1939	562	7.6	324	6.6	546	7.6	317	6.7	538	7.6	312	6.7
1940 - 1949	387	5.2	310	6.3	369	5.1	296	6.3	362	5.1	294	6.3
1950 - 1959	1,095	14.8	946	19.4	1,058	14.7	912	19.4	1,033	14.6	905	19.3
1960 - 1969	548	7.4	568	11.7	544	7.6	561	12.0	581	8.2	607	13.0
Age unspecified	-	-	-	-	-	-	-	-	-	-	-	-
Total	7,388	100.0	4,885	100.0	7,172	100.0	4,710	100.0	7,066	100.0	4,684	100.0
BELGIUM												
Before - 1900	322	5.4	163	5.7	314	5.4	161	5.6	301	5.2	151	5.4
1900 - 1909	691	11.6	391	13.6	672	11.5	384	13.4	644	11.2	363	12.9
1910 - 1919	845	14.2	362	12.6	819	13.9	348	12.1	789	13.7	339	12.0
1920 - 1929	1,440	24.2	659	23.0	1,418	24.1	654	22.8	1,395	24.1	664	22.9
1930 - 1939	808	13.6	331	11.5	809	13.8	330	11.5	791	13.7	326	11.6
1940 - 1949	405	6.8	177	6.1	408	6.9	177	6.2	401	7.0	174	6.2
1950 - 1959	746	12.5	342	11.9	742	12.6	342	12.0	732	12.7	340	12.1
1960 - 1969	668	11.2	446	15.5	683	11.6	461	16.1	700	12.1	472	16.8
Age unspecified	17	0.2	4	0.1	11	0.2	7	0.3	14	0.3	1	0.1
Total	5,942	100.0	2,875	100.0	5,876	100.0	2,864	100.0	5,767	100.0	2,810	100.0

Table II. (c) INLAND WATERWAY FLEETS : BREAKDOWN BY AGE-GROUP

Country / Year of construction	1955				1960				1965			
	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%
FRANCE												
Before - 1900	1,105	10.6	384	10.2	635	6.5	227	6.4	492	5.1	142	3.9
1900 - 1909	1,349	13.0	506	13.4	710	7.3	297	8.4	523	5.4	198	5.5
1910 - 1919	1,047	10.0	381	10.1	748	7.7	285	8.0	621	6.4	214	5.9
1920 - 1929	3,157	30.3	1,143	30.3	2,956	30.3	1,067	30.0	2,263	23.4	769	21.3
1930 - 1939	1,392	13.3	490	13.0	1,407	14.4	500	14.1	1,935	20.0	666	18.4
1940 - 1949	1,293	12.4	506	13.4	1,316	13.5	516	14.5	771	8.0	313	8.7
1950 - 1959									1,963	20.2	830	23.0
1960 - 1969	687	6.6	297	7.9	1,489	15.3	598	16.8	687	7.1	432	12.0
Age unspecified	401	100.0	68	2.0	482	4.8	59	2.0	433	4.5	47	1.3
Total	10,431		3,774	100.0	9,743	100.0	3,552	100.0	9,688	100.0	3,613	100.0
LUXEMBOURG												
Before - 1900												
1900 - 1909												
1910 - 1919												
1920 - 1929												
1930 - 1939												
1940 - 1949												
1950 - 1959												
1960 - 1969												
Age unspecified												
Total												

Table II. (d) INLAND WATERWAY FLEETS : BREAKDOWN BY AGE-GROUP

Country / Year of construction	1966				1967				1968			
	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%
FRANCE												
Before - 1900	373	4.1	112	3.3	274	3.5	83	2.6	245	3.2	74	2.4
1900 - 1909	380	4.2	124	3.6	240	3.1	81	2.5	219	2.9	73	2.3
1910 - 1919	506	5.6	177	5.1	346	4.5	123	3.9	318	4.2	114	2.7
1920 - 1929	2,140	23.8	734	21.4	1,780	23.0	626	19.7	1,688	22.4	595	19.2
1930 - 1939	1,905	21.2	660	19.2	1,687	21.7	607	19.1	1,620	21.5	583	18.8
1940 - 1949	778	8.6	319	9.3	708	9.1	309	9.7	699	9.3	304	9.8
1950 - 1959	1,988	22.0	841	24.5	1,914	24.6	830	26.2	1,898	25.2	827	26.7
1960 - 1969	672	7.5	433	12.6	760	9.8	488	15.4	784	10.4	509	16.4
Age unspecified	257	2.9	33	1.0	67	1.0	21	0.6	61	0.8	19	0.6
Total	8,999	100.0	3,433	100.0	7,776	100.0	3,169	100.0	7,532	100.0	3,098	100.0
LUXEMBOURG												
Before - 1900									-	-	-	-
1900 - 1909									1	8.3	0.4	5.9
1910 - 1919									1	8.3	0.07	1.0
1920 - 1929									-	-	-	-
1930 - 1939									-	-	-	-
1940 - 1949									1	8.3	0.4	5.9
1950 - 1959									3	25.0	1.6	23.6
1960 - 1969					1	100.0	1.4	100.0	6	50.0	4.3	63.6
Age unspecified									-	-	-	-
Total					1	100.0	1.4	100.0	12	100.0	6.8	100.0

Table II. (e) INLAND WATERWAY FLEETS : BREAKDOWN BY AGE-GROUP

Country / Year of construction	1955				1960				1965			
	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%
NETHERLANDS												
Before - 1900	1,521	10.0	419	10.0	1,530	8.0	402	8.0	1,581	8.0	450	7.0
1900 - 1909	3,653	32.0	898	21.0	3,743	20.0	891	18.0	3,766	18.0	941	15.0
1910 - 1919	3,089	20.0	778	19.0	3,444	18.0	831	17.0	3,497	17.0	893	14.0
1920 - 1929	4,425	28.0	1,662	30.0	5,336	29.0	1,388	28.0	5,517	27.0	1,533	24.0
1930 - 1939	1,344	9.0	485	12.0	1,892	10.0	547	11.0	2,063	10.0	622	10.0
1940 - 1949	282	2.0	133	3.0	405	2.0	174	3.0	505	2.0	222	4.0
1950 - 1959	312	2.0	142	3.0	1,441	8.0	665	13.0	1,557	7.0	730	11.0
1960 - 1969	-	-	-	-	-	-	-	-	1,427	7.0	910	14.0
Age unspecified	860	6.0	90	2.0	869	5.0	89	2.0	897	4.0	90	1.0
Total	15,487	100.0	4,206	100.0	18,660	100.0	4,987	100.0	20,810	100.0	6,389	100.0
SWITZERLAND												
Before - 1900)	)				2	0.5	2	0.5	10	2.2	10	2.6
1900 - 1909)	) 2	1.0	2	1.0	1	0.2	1	0.3	4	0.9	4	1.0
1910 - 1919)	)				1	0.2	1	0.3	3	0.7	5	1.1
1920 - 1929)	) 159	47.0	106	39.0	95	23.4	81	21.5	95	20.7	89	20.0
1930 - 1939)	)				80	19.6	52	13.8	71	15.5	48	10.8
1940 - 1949)	) 163	48.0	144	54.0	109	26.8	105	28.0	102	22.2	97	21.8
1950 - 1959	14	4.0	16	6.0	112	27.5	124	33.0	124	27.0	125	28.1
1960 - 1969					7	1.7	9	2.4	49	10.7	65	14.6
Age unspecified					-	-	-	-	-	-	-	-
Total	338	100.0	268	100.0	407	100.0	375	100.0	458	100.0	443	100.0

Table II. (f) INLAND WATERWAY FLEETS : BREAKDOWN BY AGE-GROUP

Country / Year of construction	1966				1967				1968			
	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%	Number	%	Cargo capacity ('000 tons)	%
NETHERLANDS												
Before - 1900	1,562	8.0	447	7.0	1,543	7.0	446	7.0	1,521	7.4	429	6.6
1900 - 1909	3,714	18.0	941	15.0	3,606	18.0	929	14.0	3,566	17.4	916	14.0
1910 - 1919	3,452	17.0	890	14.0	3,367	16.0	868	13.0	3,350	16.4	862	13.2
1920 - 1929	5,471	26.0	1,529	24.0	5,335	26.0	1,494	23.0	5,267	25.7	1,476	22.5
1930 - 1939	2,062	10.0	624	10.0	2,044	10.0	620	10.0	2,042	10.0	624	9.5
1940 - 1949	497	2.0	218	3.0	518	3.0	238	4.0	518	2.5	233	3.6
1950 - 1959	1,556	7.0	735	11.0	1,557	8.0	739	11.0	1,573	7.7	739	11.3
1960 - 1969	1,566	8.0	998	15.0	1,672	8.0	1,072	17.0	1,775	8.7	1,182	18.0
Age unspecified	889	4.0	90	1.0	870	4.0	89	1.0	867	4.2	88	1.3
Total	20,769	100.0	6,471	100.0	20,512	100.0	6,493	100.0	20,479	100.0	6,549	100.0
SWITZERLAND												
Before - 1900	8	1.8	8	1.7	8	1.8	8	1.7	8	1.8	8	1.7
1900 - 1909	4	0.9	4	0.9	5	1.1	6	1.3	4	1.0	5	1.1
1910 - 1919	3	0.7	5	1.1	5	1.1	8	1.7	5	1.1	8	1.7
1920 - 1929	91	19.8	86	18.8	86	18.8	84	17.9	82	18.3	83	18.1
1930 - 1939	68	14.8	47	10.3	60	13.1	43	9.2	54	12.1	38	8.3
1940 - 1949	101	22.9	95	20.8	91	20.1	90	19.2	92	20.6	92	20.0
1950 - 1959	127	27.7	138	30.2	137	30.1	149	31.7	140	31.4	152	33.0
1960 - 1969	56	12.3	73	16.0	63	13.8	80	17.0	60	13.4	74	16.1
Age unspecified	-	-	-	-	-	-	-	-	-	-	-	-
Total	458	100.0	456	100.0	455	100.0	468	100.0	445	100.0	460	100.0

Table III. (1) INLAND WATERWAY FLEETS : NUMBER OF CRAFT BROKEN DOWN BY CAPACITY CATEGORIES END OF 1955

Country / Category	Class	Self-propelled barges	Self-propelled tankers	Dumb barges (pull-towed)	Tankers (pull-towed)	Dumb barges (push-towed)	Tankers (push-towed)	Total fleet
GERMANY								
Up to 250 tons	0)	1,549	102	889	67			2,607
From 251 to 400 tons	I)							
From 401 to 650 tons	II	536	29	659	25			1,249
From 651 to 1,000 tons	III	651	148	1,120	55			1,974
From 1,001 to 1,500 tons	IV	77	2	690	14			783
Over 1,500 tons	V	-	-	92	3			95
Total		2,813	281	3,450	164			6,708
BELGIUM								
Up to 250 tons	0							
From 251 to 400 tons	I	3,549	179	1,078	15			4,821
From 401 to 650 tons	II	350	15	609	3			977
From 651 to 1,000 tons	III	82	12	100	2			196
From 1,001 to 1,500 tons	IV	17	-	113	1			131
Over 1,500 tons	V	1	-	32	-			33
Total		3,999	206	1,932	21			6,158(*)

(*) The disparity with Table I (3) is due to the fact that the breakdown by tonnage was not calculated at the same date as for classification adopted in that table

Table III (2) INLAND WATERWAY FLEETS : NUMBER OF CRAFT BROKEN DOWN BY CAPACITY CATEGORIES END OF 1955

Country / Category	Class	Self-propelled barges	Self propelled tankers	Dumb barges (pull-towed)	Tankers (pull-towed)	Dumb barges (push-towed)	Tankers (push-towed)	Total fleet
FRANCE								
Up to 250 tons)	0							
From 251 to 400 tons)	I							
From 401 to 650 tons	III							
From 651 to 1,000 tons	III							
From 1,001 to 1,500 "	IV							
Over 1,500 tons	V							
Total		3,288	637	6,310	196	-	-	10,431
LUXEMBOURG								
Up to 250 tons	0							
From 251 to 400 tons	I							
From 401 to 650 "	II							
From 651 to 1,000 "	III							
From 1,001 to 1,500 "	IV							
Over 1,500 tons	V							
Total								

Table III. (3) INLAND WATERWAY FLEETS : NUMBER OF CRAFT BROKEN DOWN BY CAPACITY CATEGORIES END OF 1955

Country / Category	Class	Self-propelled barges	Self-propelled tankers	Dumb barges (pull-towed)	Tankers (pull-towed)	Dumb barges (push-towed)	Tankers (push-towed)	Total fleet
NETHERLANDS								
Up to 250 tons)	0							
From 251 to 400 tons)	I	6,617	328	5,327	68			12,340
From 401 to 650 "	II	371	42	1,105	21			1,539
From 651 to 1,000 "	III	131	49	512	35			727
From 1,001 to 1,500 "	IV	13	10	521	19			665
Over 1,500 tons	V	1	-	233	25			259
Total		7,133	429	7,698	168			15,428
SWITZERLAND								
Up to 250 tons	0							
From 251 to 400 tons	I	31	22	17	-			70
From 401 to 650 tons	II	56	1	2	-			59
From 651 to 1,000 "	III	81	22	7	6			116
From 1,001 to 1,500 "	IV	39	21	28	3			91
Over 1,500 tons	V	-	1	-	1			2
Total		207	67	54	10			338

Table III. (4) INLAND WATERWAY FLEETS : NUMBER OF CRAFT BROKEN DOWN BY CAPACITY CATEGORIES END OF 1960

Country / Category	Class	Self-propelled barges	Self-propelled tankers	Dumb barges (pull-towed)	Tankers (pull-towed)	Dumb barges (push-towed)	Tankers (push-towed)	Total fleet
GERMANY								
Up to 250 tons	0	1,141	122	545	40			1,848
From 251 to 400 tons	I	735	13	340	31			1,119
From 401 to 650 "	II	788	34	578	29			1,429
From 651 to 1,000 "	III	1,063	335	1,057	56			2,511
From 1,001 to 1,500 "	IV	124	12	680	17			833
Over 1,500 tons	V	2	3	125	3			133
Total		3,853	519	3,325	176			7,873
BELGIUM								
Up to 250 tons	0	3,872	251	387	11			4,521
From 251 to 400 tons	I							
From 401 to 650 tons	II	669	39	302	2			1,012
From 651 to 1,000 "	III	214	35	68	4			331
From 1,001 to 1,500 "	IV	38	5	136	9			188
Over 1,500 tons	V	5	-	44	-			49
Total		4,798	330	937	26			6,091

Table III. (5) INLAND WATERWAY FLEETS : NUMBER OF CRAFT BROKEN DOWN BY CAPACITY CATEGORIES END OF 1960

Country / Category	Class	Self-propelled barges	Self-propelled tankers	Dumb barges (pull-towed)	Tankers (pull-towed)	Dumb barges (push-towed)	Tankers (push-towed)	Total fleet
FRANCE								
Up to 250 tons)	0	380	89	1,237	6			1,712
From 251 to 400 tons)	I	3,394	432	2,140	68			6,034
From 401 to 650 tons	II	375	110	787	30			1,302
From 651 to 1,000 "	III	168	73	236	24			501
From 1,001 to 1,500 "	IV	-	11	102	31			144
Over 1,500 tons	V	-	1	45	-			46
Total		4,321	716	4,547	159			9,743
LUXEMBOURG								
Up to 250 tons)	0							
From 251 to 400 tons)	I							
From 401 to 650 "	II							
From 651 to 1,000 "	III							
From 1,001 to 1,500 "	IV							
Over 1,500 tons	V							
Total								

Table III. (6) INLAND WATERWAY FLEETS : NUMBER OF CRAFT BROKEN DOWN BY CAPACITY CATEGORIES END OF 1960

Country / Category	Class	Self-propelled barges	Self-propelled tankers	Dumb barges (pull-towed)	Tankers (pull-towed)	Dumb barges (push-towed)	Tankers (push-towed)	Total fleet
NETHERLANDS								
Up to 250 tons)	0	6,720	414	5,740	93			12,967
From 251 to 400 tons)	I	1,539	85	461	16			2,101
From 401 to 650 "	II	1,000	99	874	30			2,003
From 651 to 1,000 "	III	341	91	465	31			928
From 1,001 to 1,500 "	IV	51	60	495	22			628
Over 1,500 tons	V	3	4	257	29			293
Total		9,658	753	8,292	221			18,924
SWITZERLAND								
Up to 250 tons)	0	-	5	-	-			5
From 251 to 400 tons)	I	22	9	1	-			32
From 401 to 650 "	II	53	1	1	-			55
From 651 to 1,000 "	III	123	35	9	5			172
From 1,001 to 1,500 "	IV	55	30	28	5	5	-	123
Over 1,500 tons	V	10	8	1	1			20
Total		263	88	40	11	5	-	407

Table III. (7) INLAND WATERWAY FLEETS : NUMBER OF CRAFT BROKEN DOWN BY CAPACITY CATEGORIES END OF 1965

Country / Category	Class	Self-propelled barges	Self-propelled tankers	Dumb barges (pull-towed)	Tankers (pull-towed)	Dumb barges (push-towed)	Tankers (push-towed)	Total fleet
GERMANY								
Up to 250 tons)	0	1,050	151	156	41			1,398
From 251 to 400 tons)	I	921	25	147	25			1,118
From 401 to 650 "	II	987	51	297	28			1,363
From 651 to 1,000 "	III	1,439	355	501	56			2,351
From 1,001 to 1,500 "	IV	537	152	462	15			1,166
Over 1,500 tons	V	6	7	105	3			121
Total		4,940	741	1,668	168			7,517
BELGIUM								
Up to 250 tons)	0	338	101	64	3	0	-	506
From 251 to 400 tons)	I	3,189	141	190	2	1	-	3,523
From 401 to 650 "	II	764	50	159	0	3	2	977
From 651 to 1,000 "	III	348	52	44	2	1	-	447
From 1,001 to 1,500 "	IV	173	28	128	5	15	-	349
Over 1,500 tons	V	25	3	68	1	1	-	99
Total		4,837	375	653	13	21	2	5,901

Table III. (8) INLAND WATERWAY FLEETS : NUMBER OF CRAFT BROKEN DOWN BY CAPACITY CATEGORIES END OF 1965

Country / Category	Class	Self-propelled barges	Self-propelled tankers	Dumb barges (pull-towed)	Tankers (pull-towed)	Dumb barges (push-towed)	Tankers (push-towed)	Total fleet
FRANCE								
Up to 250 tons)	0	394	89	1,118	4	25	0	1,630
From 251 to 400 tons)	I	4,188	404	1,306	69	167	20	6,154
From 401 to 650 "	II	502	115	449	27	116	24	1,233
From 651 to 1,000 "	III	174	78	144	21	42	24	483
From 1,001 to 1,500 "	IV	2	14	39	4	4	27	90
Over 1,500 tons	V	0	1	16	0	81	0	98
Total		5,260	701	3,072	125	435	95	9,688
LUXEMBOURG								
Up to 250 tons)	0							
From 251 to 400 tons)	I							
From 401 to 650 "	II							
From 651 to 1,000 "	III							
From 1,001 to 1,500 "	IV							
Over 1,500 tons	V							
Total								

Table III. (9) INLAND WATERWAY FLEETS : NUMBER OF CRAFT BROKEN DOWN BY CAPACITY CATEGORIES END OF 1965

Country / Category	Class	Self-propelled barges	Self-propelled tankers	Dumb barges (pull-towed)	Tankers (pull-towed)	Dumb barges (push-towed)	Tankers (push-towed)	Total fleet
NETHERLANDS								
Up to 250 tons)	0	6,453	534	5,932	96			13,015
From 251 to 400 tons)	I	2,232	123	428	16			2,799
From 401 to 650 "	II	1,569	165	687	29			2,450
From 651 to 1,000 "	III	664	125	525	24			1,338
From 1,001 to 1,500 "	IV	123	126	518	33			800
Over 1,500 tons	V	21	17	333	37			408
Total		11,062	1,090	8,423	235			20,810
SWITZERLAND								
Up to 250 tons)	0	-	6	-	-			6
From 251 to 400 tons)	I	15	5	1	-			21
From 401 to 650 "	II	45	2	-	-			47
From 651 to 1,000 "	III	149	39	16	5			209
From 1,001 to 1,500 "	IV	57	33	37	7			134
Over 1,500 tons	V	10	10	0	1	10	10	41
Total		276	95	54	13	10	10	458

Table III. (10) INLAND WATERWAY FLEETS : NUMBER OF CRAFT BROKEN DOWN BY CAPACITY CATEGORIES END OF 1968

Country / Category	Class	Self-propelled barges	Self-propelled tankers	Dumb barges (pull-towed)	Tankers (pull-towed)	Dumb barges (push-towed)	Tankers (push-towed)	Total fleet
GERMANY								
Up to 250 tons)	0	1,003	153	112	45	5	-	1,318
From 251 to 400 tons)	I	911	24	115	25	10	-	1,085
From 401 to 650 "	II	949	42	237	20	13	5	1,266
From 651 to 1,000 "	III	1,336	254	349	49	16	1	2,005
From 1,001 to 1,500 "	IV	678	223	334	12	17	-	1,264
Over 1,500 tons	V	8	5	54	3	52	6	128
Total		4,885	701	1,201	154	113	12	7,066
BELGIUM								
Up to 250 tons)	0	291	106	63	3	-	-	463
From 251 to 400 tons)	I	3,115	153	144	1	5	3	3,421
From 401 to 650 "	II	770	54	131	-	2	2	959
From 651 to 1,000 "	III	360	53	33	2	1	-	449
From 1,001 to 1,500 "	IV	208	35	110	7	15	-	375
Over 1,500 tons	V	28	7	63	-	2	-	100
Total		4,772	408	544	13	25	5	5,767

Table III. (11) INLAND WATERWAY FLEETS : NUMBER OF CRAFT BROKEN DOWN BY CAPACITY CATEGORIES END OF 1968

Country / Category	Class	Self-propelled barges	Self-propelled tankers	Dumb barges (pull-towed)	Tankers (pull-towed)	Dumb barges (push-towed)	Tankers (push-towed)	Total fleet
FRANCE								
Up to 250 tons)	0	230	62	200	0	25	8	525
From 252 to 400 tons)	I	4,006	420	509	41	230	12	5,218
From 401 to 650 "	II	597	107	272	21	188	20	1,205
From 651 to 1,000 "	III	170	68	75	4	58	17	392
From 1,001 to 1,500 "	IV	1	14	7	2	9	26	59
Over 1,500 tons	V	0	2	0	0	96	35	133
Total		5,004	673	1,063	68	606	118	7,532
LUXEMBOURG								
Up to 250 tons)	0)		1					
From 251 to 400 tons)	I)	6						
From 401 to 650 "	II	1						
From 651 to 1,000 "	III	2						
From 1,001 to 1,500 "	IV	2						
Over 1,500 tons	V							
Total		11	1					

Table III. (12) INLAND WATERWAY FLEETS : NUMBER OF CRAFT BROKEN DOWN BY CAPACITY CATEGORIES END OF 1968

Country / Category	Class	Self-propelled barges	Self-propelled tankers	Dumb barges (pull-towed)	Tankers (pull-towed)	Dumb barges (push-towed)	Tankers (push-towed)	Total fleet
NETHERLANDS (1st January, 1968)								
Up to 250 tons	0	6,195	540	5,729	95			12,559
From 251 to 400 tons	I	2,261	111	426	16			2,814
From 401 to 650 "	II	1,625	162	669	27			2,483
From 651 to 1,000 "	III	739	147	495	30			1,411
From 1,001 to 1,500 "	IV	151	137	495	36			819
Over 1,500 tons	V	27	20	346	33			426
Total		10,998	1,117	8,160	237			20,512
SWITZERLAND								
Up to 250 tons	0	7	2	-	-			9
From 251 to 400 tons	I							
From 401 to 650 "	II	29	1	-	-	-	-	30
From 651 to 1,000 "	III	152	37	27	4			220
From 1,001 to 1,500 "	IV	72	35	22	6	12		147
Over 1,500 tons	V	11	9	4	1	12	2	34
Total		271	84	53	11	24	2	445

Annex II

FREIGHT TRAFFIC TRENDS

Table 1 shows traffic trends from 1955 to 1968 (in tons carried for domestic and international traffic and in ton-km for the two combined). Figure 1 shows the traffic indices in ton-km for five countries (Germany, Belgium, France, the Netherlands and Switzerland). Both documents make it clear thant inland waterway traffic for all these countries combined (in terms of tons carried and ton-km alike) has never ceased to expand.

Table 2 shows indices (1) of domestic and international traffic tonnage and total ton-km for each country during the period 1955)1968. This table shows that most countries recorded a bigger increase for international traffic than for domestic traffic.

In the Federal Republic of Germany, traffic in terms of ton-km rose from 28,624 million in 1955 to 47,932 million in 1968, an increase of 67 per cent. In the meantime, the tonnage of goods loaded in international traffic increased by 141 per cent as compared with 1965. For goods unloaded the increase was 121 per cent. The corresponding increase for domestic traffic was only 55 per cent.

In Belgium, traffic in terms of ton-km rose from 4,617 million in 1955 to 6,649 million in 1968, an increase of 44 per cent. The tonnage of goods loaded in international traffic during this period rose by 43 per cent. For goods unladed, the increase was much higher : 129 per cent. Domestic traffic, on the other hand, increased by only 25 per cent.

In France, traffic in terms of ton-km during the period 1955-1968 increased by 48 per cent. The increase in tonnage of goods loaded in international traffic during this period was considerable : from 7,752,000 tons in 1955 to 20,601,000 in 1968 (+ 166 per cent). The increase for tons unloaded in international traffic was 118 per cent. Domestic traffic, in terms of tons carried, was 55 per cent higher in 1968 than in 1955.

In the Netherlands, traffic in terms of ton-km rose from 15,255 million in 1955 to 31,044 million in 1968, an increase of 103 per cent. The tonnage loaded in international traffic rose by 117 per cent during the same period. The tonnage of goods unloaded increased at a similar pace, i.e. by 118 per cent. Domestic traffic increased by 113 per cent.

In Switzerland, total traffic through the Basle ports has ranged between 7.5 and 8.6 million tons since 1963. On the short stretch of the Rhine lying in Swiss territory, traffic carried during this period varied between 38 and 40 million ton-km a year. From 1963 to 1965, the tonnage of goods loaded (exports rose, by 106 per cent, to 660,000 tons, after which it dropped back to 320,000 tons in 1968. From 1955 to 1966, the tonnage of goods unloaded (imports) rose from 4.1 to 8 million tons, but fell back to 7.5 million tons in 1968.

(1) To comply with the recommendations of various international bodies for a standard period of reference, the base year for these is 1963. It must be borne in mind that heavy frost made this a bad year for inland navigation.

Table I. GOODS TRAFFIC ON INLAND WATERWAYS (1,000 tons)

Country	Year	Domestic traffic	International traffic		Goods in transit	Tonnage carried total	Ton-km total (million-
			Loaded	Unloaded			
GERMANY							
	1955	64,418	21,908	31,606	6,680	124,612	28,624
	1960	86,789	31,715	45,851	6,941	171,295	40,271
	1961	90,817	32,167	42,680	6,551	172,215	40,214
	1962	90,818	30,626	42,951	6,379	170,774	39,936
	1963	84,995	30,698	45,127	6,506	167,327	39,513
	1964	96,013	29,022	52,627	6,133	183,795	40,609
	1965	98,180	32,409	57,007	8,098	195,694	43,552
	1966	100,313	39,688	58,655	9,238	207,894	44,826
	1967	94,576	47,869	62,089	9,905	214,439	45,785
	1968	100,077	52,772	69,795	10,683	233,328	47,932
BELGIUM							
	1955	22,572	15,826	16,441	2,001	56,840	4,617
	1960	24,379	13,214	20,573	2,991	61,158	5,226
	1961	24,821	14,921	21,877	3,496	65,115	5,473
	1962	25,522	15,709	22,156	3,254	66,641	5,421
	1963	22,778	16,156	22,599	3,268	64,801	5,201
	1964	26,356	18,522	26,195	4,235	75,308	5,543
	1965	25,778	18,867	27,806	4,580	77,031	6,087
	1966	26,456	19,785	28,865	4,488	79,594	5,970
	1967	27,111	20,999	32,601	4,621	85,332	6,262
	1968	28,168	22,657	37,644	4,861	93,330	6,649
FRANCE							
	1955	40,211	7,752	5,475	4,817	58,255	8,917
	1960	46,148	7,473	6,982	7,522	68,126	10,706
	1961	40,718	7,543	7,759	7,138	71,158	11,262
	1962	49,713	6,470	8,064	7,289	71,536	11,234
	1963	51,208	9,115	8,209	7,657	76,189	11,358
	1964	58,805	11,490	9,097	6,227	85,619	12,470
	1965	58,311	15,129	9,344	6,972	89,756	12,510
	1966	59,283	17,082	9,989	7,098	93,452	12,652
	1967	61,139	18,284	11,243	6,970	97,635	12,965
	1968	62,243	20,601	11,939	6,956	101,739	13,254
NETHERLANDS							
	1955	44,426	33,889	20,369	13,589	112,273	15,255
	1960	58,117	50,173	22,987	13,394	149,671	20,019
	1961	61,401	49,082	23,475	18,855	152,813	20,247
	1962	63,801	49,558	22,868	18,037	154,264	20,328
	1963	60,719	48,858	22,278	19,584	151,439	20,201
	1964	77,012	56,921	25,931	21,381	181,245	22,712
	1965	82,229	60,357	28,222	23,184	193,992	24,070
	1966	81,015	60,912	32,424	14,617	198,963	25,315
	1967	92,654	64,239	39,928	27,369	224,190	28,568
	1968	94,800	73,439	44,481	29,497	242,217	31,044
SWITZERLAND							
	1955	2	456	4,131	164	4,753	14
	1960	2	502	6,460	228	7,192	29
	1961	2	324	6,493	208	7,027	30
	1962	0	294	6,788	182	7,264	31
	1963	2	321	7,960	186	8,469	37
	1964	2	397	7,133	218	7,750	34
	1965	0	661	7,955	211	8,827	40
	1966	0	395	8,012	241	8,648	39
	1967	4	342	7,595	280	8,221	38
	1968	1	320	7,515	284	8,120	39

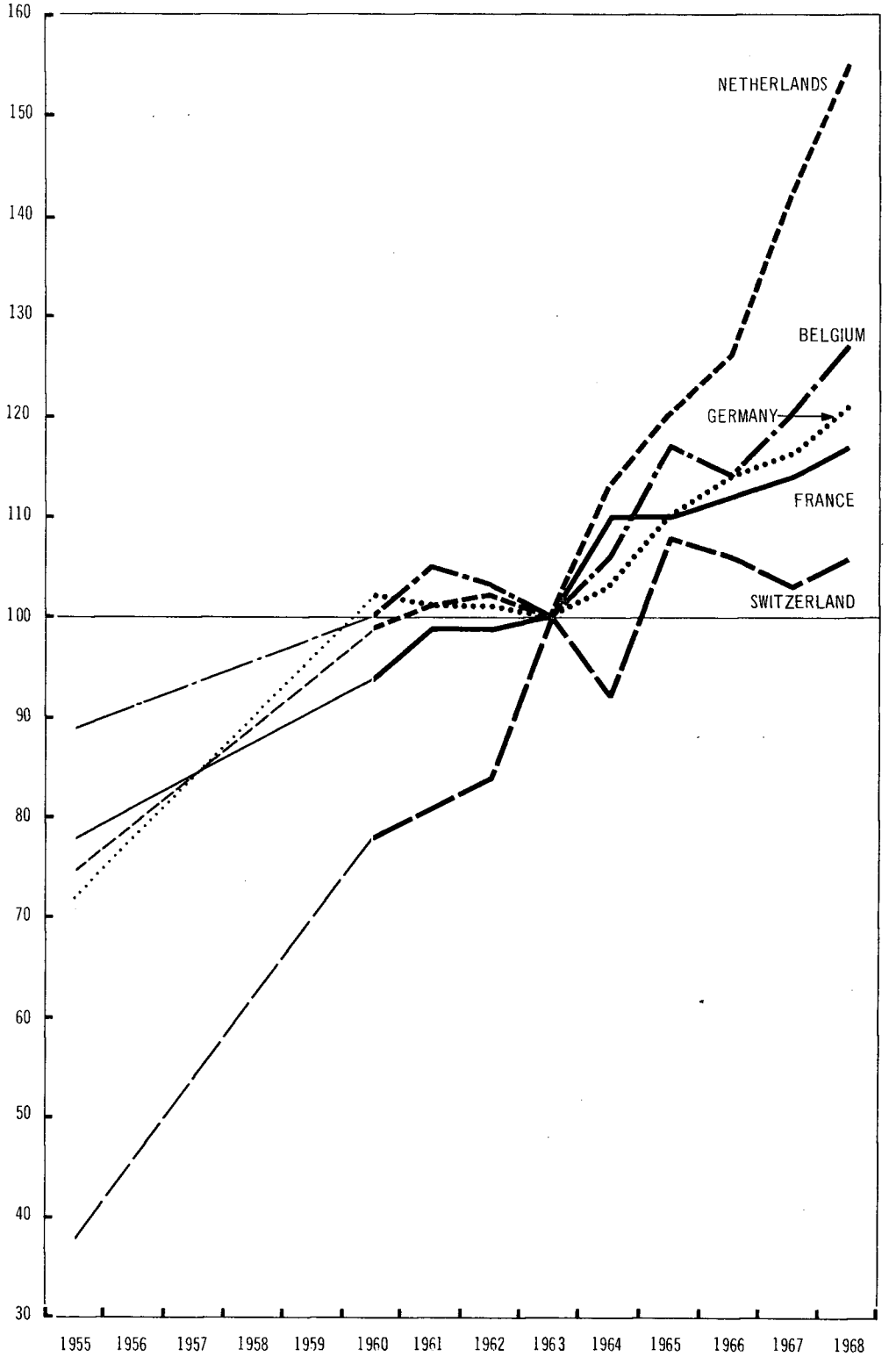
Table 2. TRAFFIC INDICES

Country / Year	1955	1960	1961	1962	1963	1964	1965	1966	1967	1968
GERMANY										
Domestic traffic index	76	102	107	107	100	113	115	118	111	118
International traffic index (goods loaded)	71	103	105	99	100	95	106	129	156	172
International traffic index (goods unloaded)	70	102	94	95	100	117	126	130	137	155
Ton-km index	72	102	101	101	100	103	110	114	116	121
BELGIUM										
Domestic traffic index	99	107	109	112	100	116	113	116	119	124
International traffic index (goods loaded)	98	82	92	97	100	115	117	122	130	140
International traffic index (goods unloaded)	73	91	97	98	100	116	123	128	144	167
Ton-km index	89	100	105	103	100	106	117	114	120	127
FRANCE										
Domestic traffic index	78	90	79	97	100	115	114	116	119	121
International traffic index (goods loaded)	85	82	83	71	100	126	166	187	201	226
International traffic index (goods unloaded)	67	85	94	98	100	111	114	122	137	145
Ton-km index	78	94	99	99	100	110	110	112	114	117
NETHERLANDS										
Domestic traffic index	73	96	101	105	100	127	135	133	152	156
International traffic index (goods loaded)	69	103	101	102	100	116	123	125	131	150
International traffic index (goods unloaded)	91	103	105	103	100	116	127	146	179	200
Ton-km index	75	99	101	102	100	113	120	126	142	155
SWITZERLAND										
Domestic traffic index	100	100	100	0	100	100	0	0	200	50
International traffic index (goods loaded)	142	156	101	92	100	124	206	123	106	100
International traffic index (goods unloaded)	52	81	82	85	100	90	100	101	95	94
Ton-km index	38	78	81	84	100	92	108	106	103	106

Figure 1

TREND OF TRAFFIC IN TON-KM

(Indices, 1963 = 100)



Annex III

SUMMARY OF THE VIEWS EXPRESSED BY INTERNATIONAL ORGANISATIONS AT THE HEARING ARRANGED BY THE E.C.M.T. ON 13th MAY, 1970, FOR THE CONSIDERATION OF THE REPORT

The Sub-Committee for Inland Waterways Investment heard the views of the International Organisations concerned (International Union for Inland Navigation, International Chamber of Commerce and World Federation of Labour) on 13th May, 1970.

The main points raised by these Organisations are summarised below.

The International Union for Inland Navigation (U.I.N.F.) first congratulated the European Conference of Ministers of Transport for having produced this study to which it attached keen interest.

This organisation pointed out that the following comments were those of the Secretariat, and did not necessarily reflect the views of the Steering Committee. It had not been possible to consult the latter because of the date of the hearing. In this connection, the Secretary-General of the U.I.N.F. said that the Steering Committee would be meeting in Rotterdam on 2nd June, 1970, to study, inter alia, the E.C.M.T. Report. An official stand would not be taken until this meeting had been held.

However, the Secretariat of this Organisation gave its views on the following points :

1) The widest possible circulation of the report among transport operators and shippers was requested.

2) The E.C.M.T. study bore out the conclusions of the U.I.N.F. study conducted in 1967.

3) The Secretary-General of the U.I.N.F. drew the Sub-Committee's attention to the commercial aspects of the problem of capacity which are not dealt with in the study under review.

4) The Secretariat of the U.I.N.F. said it disagreed with the term "standby fleet" used in the Report. Vessels comprised in this standby fleet could not be regarded as not normally utilisable since they still had some competitive impact on the rest of the fleet. To create a standby fleet in the true sense, speedier turnround - geared to match circumstances - should rather be envisaged. In this connection, a distinction should be made between "day" navigation, i.e. craft in operation from 12 to 14 hours a day, "semi-continuous" navigation (up to 18 hours a day), and "day and night" or "round-the-clock" navigation. In the opinion of the Secretariat of the U.I.N.F., judicious use of these three types of navigation could increase transport capacity two-fold, and so create a sandby fleet in the true sense.

5) The U.I.N.F. Secretariat, in a further reference to the problems of the standby fleet referred to in the Report, drew the Sub-Committee's attention to the fact that as things stood at present, this fleet affected the return on capital invested and exerted a downward pressure on transport rates. Hence, it had an unfavourable effect on the capacity of the fleet from a qualitative angle, and so implied overcapacity.

6) The Secretariat of the U.I.N.F. considers that in periods of balanced supply and demand (i.e. when there are no quantitative overcapacity) it

would be most useful to create an "unemployment fund" for vessels which may be laid up at the time when the balance of supply and demand is upset.

7) To cover the investments needed to raise the rate of return for inland waterway transport, the U. I. N. F. Secretariat proposes that shippers should be concerned with the financing of such investment. A possible approach would be a system of long-term contracts of carriage enabling craft to be fully employed.

8) The Secretariat of the U. I. N. F. pointed out to the E. C. M. T. how necessary it is to introduce automation on locks and bridges with a view to improving the productivity, and hence the profitability, of transport equipment. It therefore suggests that the E. C. M. T. should undertake a further study covering in particular the possibilities of automating locks and bridges so as to increase the output of the fleet.

The representatives of the International Chamber of Commerce also congratulated the E. C. M. T. on its study concerning fleet capacity in Western European Inland Waterways. They stressed how important it was to collect adequate statistical data and make an appropriate qualitative analysis in order to measure the possible risks of overcapacity which would adversely affect the profitability of the fleet.

The I. C. C. considered that a study of this kind was a pre-requisite to any discussion on the subject. According to this study, the situation with regard to overcapacity, which had been causing anxiety to public authorities and carriers alike, seems to be moving in the right direction. The I. C. C. accordingly feels that the restrictive measures that the public authorities might have been inclined to envisage in order to deal with over-capacity can thus be dispensed with.

In the opinion of the I. C. C., there is a conclusion of vital significance to be drawn from this study extending over a long period, namely that a situation of unbalance of supply and demand for waterway transport has gradually righted itself through a natural process without it being necessary to bring in restrictive regulations. The I. C. C. also considers that this natural unbalance has doubtless disappeared mainly as a consequence of industrial development and partly through the gradual elimination of less remunerative craft.

The representatives of the I. C. C. are convinced that the study under review, by showing the extent and probable development of requirements, will help to shape the course of future investments.

In conclusion, transport users take the view that the data contained in this study can be said to demonstrate the validity of the principles they advocate : the natural processes of supply and demand have made it possible to deal with overcapacity in the best way. In this connection, they recall that they are most anxious to see the utmost freedom left to waterway navigation, which has an essential bearing on economic activity at national and international level alike. Users must be allowed to exercise their right to choose their mode of transport or carry on own account.

The World Federation of Labour, like the other Organisations mentioned above, congratulated the E. C. M. T. for producing the study under review.

It considers that this survey should be supplemented with sectoral studies covering the problems which arise in different river basins and different countries. It also suggests that studies should be conducted for different categories of craft, the existing situation for each of them being very different.

The World Confederation of Labour emphasized the importance it attached to social problems. In its view, these problems had not been given sufficient treatment in the E. C. M. T. report. It recalled the present situation of boatmen who had to work from 60 to 70 hours a

week, and also drew the Ministers' attention to the hardships of night navigation and, what was even more important, to the new push-towing technique, which could have adverse effects on the health of the workers concerned, for they were far more prone to nervous disorders and coronary thrombosis since the introduction of this technique.

Lastly, the W. F. L. drew the attention of the E. C. M. T. to the possibility of instituting an unemployment fund to cover not only the problems mentioned by the U. I. N. F. with regard to transport equipment but also the crews concerned.

REPORT OF THE COMMITTEE OF DEPUTIES ON TRAFFIC AND INVESTMENT TRENDS IN 1969

Chapter I - General

This report on traffic and investment trends in 1969 consists of three chapters giving detailed information in respect of transport by railway, road and inland waterway, preceded by a first chapter summarising the main development.

The main features for the year 1969 are as follows :

A. RAILWAYS

Traffic

The fall in passenger traffic in recent years was halted in 1969. Overall, 0.5 per cent more passengers were carried and passenger-kilometres increased by 5.1 per cent. Only 1 country reported a reduction in passenger-kilometres (against 11 in 1968) and only 6 countries reductions in passengers carried (12 in 1968). This favourable turn no doubt reflected the effects both of economic recovery and of improvement in the quality, particularly of long distance services.

Continued economic recovery was also reflected in increases of 5.1 per cent in tons of freight carried and 7.2 per cent in ton-kilometres : ton kilometres increased in 15 of the 18 countries.

Rolling stock

During 1969 the total number of locomotives dropped by 416 (compared with a fall of 2,502 in 1968) to 32,611.

The number of goods wagons owned by the railways (other than in Great Britain) fell by only 3,093 to 966,000 compared with a fall of 54,000 in 1968.

Infrastructure

The electrified network increased by a further 970 kilometres in the twelve months to the end of October 1970. Established programmes for electrification envisage a further increase of approximately 3,900 km by 1974, of which nearly two-thirds will be in Germany and Yugoslavia.

The report gives details of numerous measures for improvement and cost-reduction such as centralization of signalling, modernization and replacement of level crossings installations of long welded rails telecommunications systems, and modernization of stations and freight terminals.

Energy consumption

Further electrification and dieselisation led to increases of more than 10 per cent in consumption of electricity and diesel fuel and a reduction of over 30 per cent in consumption of coal, equivalent overall to a net reduction in energy consumption of about 1 1/2 per cent in coal-equivalent terms.

Electric traction now accounts for over 50 per cent of the total energy consumed by locomotives in the E.C.M.T. countries ; the proportion increased from 45 per cent in 1968 to 52 per cent in 1969.

B. ROAD TRANSPORT

This chapter contains information received throught the use, for first times, of the questionnaire designed by the working party on the improvement of road transport statistics. The tables

on transport by road of passengers and freight demonstrate how large are the gaps in this important information and the need for further improvement.

Vehicles

The rapid growth in the number of vehicles on the road continued in 1969. For the 11 countries providing figures, the increase was 6.7 per cent - the same rate as for 1968 (13 countries).

Growth of private cars was 7.2 per cent against 7.8 per cent in 1968. Once again showing the tendency to slow down, apparent since the peak growth of 12.3 per cent in 1964. Growth of goods vehicles was 4.2 per cent against 3.5 per cent in 1968.

The average carrying capacity of goods vehicles rose by some 2 per cent.

The numbers of two-wheeled vehicles fell by 3 per cent continuing the long-term decline.

Traffic

Vehicle kilometres on national territory increased overall, for public passenger transport and for goods vehicles, at about the same rate as the vehicle "park", but it appears that utilization of these vehicles rose somewhat in a majority of the countries reporting. On the other hand there was a majority tendency towards lower utilization of private cars and two-wheeled vehicles.

The figures for transport of passengers and goods are too few to permit general conclusions to be drawn.

The Road System

The total length of motorways in service for countries other than Austria, Spain, Italy, Portugal, Sweden, Turkey, Yugoslavia and the Republic of Ireland, increased in 1969 by 816 km, including 244 km in the United Kingdom, 181 km in France and 134 km in Germany compared with 700 km in 1968 for the same countries.

The International Network

On information received from 10 countries the length of the international network increased by 2,952 km or 12 per cent largely due to the inclusion of new routes in the United Kingdom where the total length increased from 1,679 to 4,540 km.

For the same 10 countries the degree of standardisation increased from 68 to 70 per cent overall, but for the 9 countries for which the comparison can be made the length of route considered to be of adequate capacity remained stationary at 74 per cent.

Investment

For the 10 countries giving information investment expenditure on the international network was 11 per cent higher than in 1968 (but still 9 per cent below the earlier forecast).

Forecasts (for 8 countries) for 1970 for the international network are 3 per cent up and for the entire road networks are 7 per cent down, on the corresponding forecasts for 1969.

Detailed information is given on current work in hand on the various E routes.

C. INLAND WATERWAYS

Folowing increases of 6 and 7 per cent in 1967 and 1968, associated with a period of lower freights, tonnage carried on inland waterways increased by only 1 per cent in 1969. But higher freights in 1969 led to improved financial results despite cost increases.

Evolution of the fleet

As in 1968, both the total capacity and the number of vessels fell slightly - capacity by 1 per cent (1/2 per cent in 1968) and number of vessels by 2 1/2 per cent (1 per cent in 1968).

Infrastructure

There has been considerable further progress in improvements of links of European interest. Details are

given in Part C of Chapter IV.

D. PIPELINES

As in 1968 this mode of transport developed further in several countries. A number of new pipelines have been brought into service and branches added to existing systems, and there were some marked increases in tonnage transported. Details for individual countries are given in Chapter IV

E. SEAPORTS

Table 8 of the Report gives indications of the trend of traffic handled by the major seaports. In all the countries which have reported, with one exception, traffic has increased, though by much more in some countries than others.

Table 1. INLAND TRANSPORT INVESTMENT EQUIPMENT AND INFRASTRUCTURE

National currency units (millions) For Ireland (thousands)

COUNTRY	YEAR	GROSS NATIONAL PRODUCT (AT CURRENT PRICES)[1]	GROSS FIXED CAPITAL FORMATION[1]	RAILWAYS			LOCAL RAILWAYS AND URBAN LINES	ROAD TRANSPORT				INLAND WATERWAYS			INVESTMENT IN INLAND TRANSPORT (5 + 6 + 10 + 13)
				ROLLING STOCK	INFRA-STRUCTURE	TOTAL (3 + 4)		VEHICLES		INFRA-STRUCTURE	TOTAL (7 + 8 + 9)	VESSELS	INFRA-STRUCTURE	TOTAL (11 + 12)	
								COMMERCIAL VEHICLES	OTHER VEHICLES[2]						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Germany	1967	494,600	114,430	532	1,561	2,093	821	3,104	9,137	8,222	20,463	53	185	238	23,615
	1968	538,500	124,780	576	1,321	1,897	844	3,477	10,310	8,115	21,902	72	171	243	24,886
	1969	601,000	146,870	677	1,499	2,176	907	4,677	14,012	...	...	114	272	386	...
Austria	1967			1,330	894	2,224	190	1,396	6,528	3,393	11,317	...	33	33	13,764
	1968			1,135	1,008	2,143	215	1,361	7,843	3,473	12,677	...	55	55	15,090
	1969			962	893	1,855	201	1,548	6,776	3,633	11,957	...	73	73	14,086
Belgium[1]	1967	977,955	218,082	1,753	2,549	4,302	911	3,527	22,317	11,384	37,228	450	2,032	2,482	44,739
	1968	1,036,938	218,212	1,475	3,143	4,618	1,280	3,689	25,475	14,875	44,039	352	2,237	2,492	52,482
	1969	1,143,940	243,061	2,244	3,393	5,637	1,405	4,228	29,746	17,968	51,942	450	2,527	2,977	61,961
Denmark	1967	84,326	18,260	100	89	189	65	213	1,122	1,774	3,109	-	-	-	3,363
	1968	92,205	18,906	107	101	208	54	251	1,110	2,188	3,549	-	-	-	3,811
	1969	104,920	23,091	118	111	129	62	227	1,474	2,212	3,913	-	-	-	4,104
Spain	1967	1,632,200	346,900	3,098	5,129	8,227	622	24,027	38,808	8,686	71,521	-	-	-	80,370
	1968	1,804,900	377,000	4,167	6,684	10,851	1,285	23,118	41,285	14,051	78,454	-	-	-	90,590
	1969	2,011,700	443,500	2,975	7,175	10,150	1,428	24,503	51,638	17,627	93,768	-	-	-	105,346
France	1967	573,234	143,878	1,161	866	2,027	...	4,100	11,100	4,800	20,000	40	311	351	22,378
	1968	628,520	157,152	872	805	1,677	...	4,800	11,600	5,800	22,200	16	306	322	24,199
	1969	725,637	184,079	776	837	1,613	...	5,300	12,400	6,000	23,700	24	248	272	25,585
Greece	1967	211,295	45,876	365	72	437		923	1,117	1,925	3,965	-	-	-	
	1968	227,774	60,756	303	100	403		726	1,161	2,961	4,848	-	-	-	
	1969	251,853	74,798	126	83	209	8	927	1,029	3,429	5,385	-	-	-	5,602
Ireland ..... (in thousands units)	1967			1,324	915	2,239	-	10,312	29,184	8,008	47,504	-	94	94	49,837
	1968			1,092	757	1,849	-	13,712	37,952	8,284	59,948	-	174	174	61,971
	1969			...	...		-	...	...	...	...	-	...	...	...
Italy	1967	43,804,000	8,323,000	39,653	102,273	141,926	1,749	250	17,588	470,905	488,743	917	130	1,047	633,465
	1968	47,134,000	9,165,000	24,570	99,019	123,589	2,819	289	14,909	535,654	550,852	1,216	205	1,421	678,681
	1969	51,456,000	10,543,000	31,074	101,804	132,878	3,793	321	14,917	527,718	542,956	1,920	7	1,927	681,554
Luxembourg	1967	35,412	8,883	93	42	135	-	214	571	209	994	-	69	-	1,198
	1968	38,729	8,960	38	51	89	-	200	586	240	1,026	-	17	-	1,132
	1969	44,538	11,435	70	54	124	-	185	746	257	1,188	-	26	-	1,338
Norway	1967	60,132	18,196	74	154	228	-	779	1,552	1,035	3,366	-	-	-	3,594
	1968	64,600	17,452	77	155	232	-	825	1,672	1,064	3,561	-	-	-	3,793
	1969	69,532	17,622	91	159	250	-	1,146	2,428	1,276	5,850	-	-	-	6,100
Netherlands	1967	82,997	21,325	35	116	151	52	605	2,071	881	3,557	64	277	341	4,101
	1968	91,870	24,180	31	90	121	50	810	2,458	1,156	4,424	70	377	447	5,042
	1969	102,340	26,080	38	83	121	37	863	2,679	1,210	4,752	58	403	461	5,371
Portugal	1967	121,741	26,093	148	253	401	96	...	1,010	922	1,932	-	-	-	2,429
	1968	135,343	27,212	235	170	405	58	257	1,268	984	2,509	2	-	2	2,974
	1969	149,545[1]	30,699[1]	210	176	386	55	272	1,538[1]	870[1]	2,080[1]	15	-	15	3,136
United Kingdom ..	1967	40,146	7,239	39	46	85	14	308	934	298	1,540	-	-	-	1,639
	1968	43,009	7,889	31	50	81	19	335	1,037	349	1,721	-	-	-	1,821
	1969	45,765	7,927	18	42	60	10	374	969	411	1,754	-	-	-	1,824
Sweden	1967		30,592	125	122	247	79	1,104	3,466	1,583	6,153	-	-	-	6,479
	1968		31,314	177	153	330	59	866	4,401	1,638	6,905	-	-	-	7,294
	1969		33,456	177	163	340	93	978	4,906	1,672	7,556	-	-	-	7,989
Switzerland	1967		17,495	177	227	404	35	318	1,560	1,206	3,084	6	22	28	3,551
	1968	74,220	18,540	167	219	386	42	352	1,710	1,278	3,340	2	45	47	3,815
	1969	80,700	20,625	165	232	397	35	401	2,007	1,450	3,858	...	...	...	4,290
Turkey	1967	95,229	16,853												
	1968	105,020	20,256												
	1969	117,148	23,608												
Yugoslavia	1967														
	1968														
	1969														

1. SOURCE: OECD Statistical Bulletin.
2. Expenditure on the purchase of private cars and motor cycles has been included in this column in order to ensure a certain degree of comparability in the statistical data between countries, although that part of this expenditure should be classified under consumer goods. However a classification between consumption or investment in this sector has been indicated as regards the countries which gave this information (see table 1b) - see also footnotes at the end of tables 1a and 1c.

- NIL.
... Figures not available.

Table 1a. BREAKDOWN OF RAILWAY INVESTMENT

Millions of national currency units (For Ireland, thousands of units)

COUNTRY	YEAR	RAILWAYS OF GENERAL INTEREST										SECONDARY RAILWAYS	METROPOLITAIN RAILWAYS AND TRAM-WAYS		TOTAL FOR SECONDARY AND LOCAL RAILWAYS (11 + 12 + 13)
		ROLLING STOCK					INFRASTRUCTURE (PERMANENT WAY INSTALLATIONS)				TOTAL FOR RAILWAYS OF GENERAL INTEREST		ROLLING STOCK	INFRA-STRUCTURE	
		NEW ROLLING STOCK			OTHER INVESTMENT	SUB-TOTAL (1 + 2 + 3 + 5)	PERMANENT WAY	ELECTRI-FICATION	OTHER INSTALLATIONS	SUB-TOTAL (6 + 7 + 8)					
		PASSENGER STOCK	WAGONS	TRACTIVE STOCK											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Austria	1967	390.4	591.7	245.3	102.2	1,329.6	681.4	93.8	118.6	893.8	2,223.4	....	127.6	62.2	189.8
	1968	247	394.1	416.3	77.4	1,134.8	654.9	216.4	136.2	1,007.5	2,142.3	...	150.1	65.3	215.4
	1969	247	429.1	198.3	87.2	961.6	603.9	140.1	149.1	893.1	1,854.7	...	151.2	49.4	200.6
Belgium	1967	755	397	486	115	1,753	1,348	383	818	2,549	4,302	15	18	878	911
	1968	53	1,064	142	216	1,475	1,471	670	1,002	3,143	4,618	18	30	1,232	1,280
	1969	118	1,664	296	166	2,244	1,375	772	1,246	3,393	5,637	7	140	1,258	1,405
Denmark[1]	1967	69.3	14.8	13.6	2.6	100.3	62	0	27.0	89.0	189.3	7.9	-	57.0	64.9
	1968	71.1	14.4	20.9	0.2	106.6	63	0	38.0	101.0	207.6	7.6	-	46.0	53.6
	1969	72.4	12.7	32	1.1	118.3	67	0	44.0	111.0	229.3	12.6	-	49.0	61.6
France	1967	222.6	400.7	381.3	155.8	1,160.4	262	174.3	430.0	866.3	2,026.7	...	...	...	...
	1968	162.0	275.6	328.8	105.2	871.6	239	167.9	398.2	805.1	1,676.7	...	...	...	...
	1969	153.1	307.2	228.1	87.5	775.9	279	168.7	389.5	837.2	1,613.1	...	...	...	...
Germany	1967	125.6	137.9	250.8	17.6	531.9	224.7	149.9	1,185.9	1,560.5	2,092.4	102.2	101.6	617	820.8
	1968	119.9	176.5	289.8	10.0	576.2	229.6	110.4	981.1	1,321.1	1,897.3	81.6	105.5	656.7	843.8
	1969	173.3	287.7	201.8	14.4	677	349.3	89.0	1,060.9	1,499.2	2,176.2	89.6	134.8	682.2	906.6
Greece	1967	98.6	230.3	34.2	1.7	364.8	66.4	-	5.7	72.1	436.9	...	0.3	4.9	5.2
	1968	23.3	102.4	58.4	118.9	303.0	73.1	-	27.2	100.3	403.3	...	54.2	6.1	60.3
	1969	5.1	52.0	65.8	3.3	126.2	81.7	-	1.0			...	4.3	4.0	8.3
Ireland (thousands of units)	1967	...	...	...	...	391	915	-	-	915	1,306	-	-	-	-
	1968	...	...	...	...	335	757	-	-	757	1,092	-	-	-	-
	1969	...	...	...	...	...	...	-	-	...	...	-	-	-	-
Italy	1967	15,989	11,395	7,423	4,846	39,653	93,003[2]	9,270	-	102,273	141,926	1,303	...	446	1,749
	1968	7,561	6,427	4,914	5,668	24,570	87,378[2]	11,641	-	99,019	123,589	2,713	...	106	2,819
	1969	10,422	7,680	9,325	3,647	31,074	90,830[2]	10,974	-	101,804	132,378	2,170	...	1,623	3,793
Luxembourg	1967	46.3	45.0	-	1.4	92.7	30.0	-	11.7	41.7	134.4	-	-	-	-
	1968	14.3	24.1	-	-	38.4	43.6	-	7.7	51.3	89.7	-	-	-	-
	1969	-	69.9	-	-	69.9	40.1	-	13.6	53.7	123.6	-	-	-	-
Netherlands	1967	13	5	0	17	35	88	7	21	16	151	-	16	36	52
	1968	18	3	0	10	31	79	3	13	90	121	-	15	35	50
	1969	22	8	0	8	38	70	2	11	83	121	-	13	24	37
Norway	1967	19.5	33.1	21.3	-	73.9	105.5	28.0	20.9	154.4	228.3	-	-	-	-
	1968	19.9	22.8	53.1	-	77.2	101.7	28.8	24.0	154.5	231.7	-	-	-	-
	1969	26.2	11.5		-	90.8	110.5	25.9	22.3	158.7	249.5	-	-	-	-
Portugal	1967	...	...	...	-	148	...	...	...	...	148	...	47	49	96
	1968	166	21	48	-	235	123	16	27	166	401	...	15	43	58
	1969	106	24	80	-	210	133	19	24	176	386	...	25[3]	30[3]	55[3]
Spain	1967	1,188	374	1,375	161	3,098	2,981	544	1,604	5,129	8,227	452	100	522	1,224
	1968	1,948	516	1,636	67	2,996	4,550	1,075	1,059	7,082	10,078	376	91	1,194	2,660
	1969	1,035	600	1,260	80	2,975	4,636	890	1,649	7,175	10,150	270	32	1,396	1,698
Sweden	1967	49.3	38.1	23.0	14.3	124.7	78.0	11.9	32.0	121.9	246.6	-	-	-	-
	1968	74.3	41.4	34.8	26.6	177.1	98.3	19.7	34.9	152.9	330.0	-	-	-	-
	1969	75.0	34.5	45.0	22.6	177.1	96.8	27.3	39.0	163.1	340.2	-	-	-	-
Switzerland	1967	64.1	35.0	78.3	-	177.4	91.6	43.0	92.3	226.9	404.3	46.8	32.2	3.1	82.1
	1968	53.3	35.8	77.7	-	166.8	87.2	35.0	96.7	218.9	385.7	62.7	39.6	2.4	104.7
	1969	57.4	33.2	74.0	-	164.6	95.3	36.7	99.6	231.6	396.2	67.4	27.1	8.4	102.9
United Kingdom	1967	10.9	7.7	7.9	12.7	39.2	31.8	1.5	12.3	45.6	84.7	-	2.3	11.3	13.6
	1968	11.6	7.5	4.2	7.2	30.5	34.0	1.6	14.6	50.2	80.7	-	5.3	14.0	19.3
	1969	7.9	5.3	15	5.0	18.2	28.1	1.5	12.8	42.4	60.6	-	1.9	8.0	9.9

1. Figures for this country correspond to the financial year beginning 1st April of the reference year and ending 31st March of the following year.
2. Permanent way and allied installations.
3. Provisional figures.

Table 1b. BREAKDOWN OF INVESTMENT IN THE ROAD SECTOR

Millions of national currency units (For Ireland, thousands of units)

COUNTRY	YEAR	VEHICLES					INFRASTRUCTURE						TOTAL INVESTMENT IN ROAD SECTOR (5 + 11)
		UTILITY VEHICLES		PRIVATE CARS AND MOTOR CYCLES		SUB-TOTAL (1 + 2 + 3)	ROADS MAINTENED BY THE STATE		ROADS MAINTENED BY REGIONAL AUTHORITIES	ROADS MAINTENED BY LOCAL AUTHORITIES	OTHERS ROADS	SUB-TOTAL (6 TO 10)	
		FOR GOODS TRANSPORT	BUSES, COACHES AND TROLLEY BUSES	TOTAL EXPENDITURE	INCLUDING PART TO BE CONSIDERED AS INVESTMENT		HIGHWAYS	NATIONAL OR FEDERAL ROUTES					
		1	2	3	4	5	6	7	8	9	10	11	12
Germany	1967	2,863	241	9,137	4,782	12,241	1,221.0	2,251.0	1,022.6	3,727.5	-	8,222.1	20,463
	1968	3,186	291	10,310	5,695	13,787	1,058.7	2,317.6	1,010.3	3,728.5	-	8,115.1	21,902
	1969	4,306	371	14,012	8,256	18,689	1,268.0	2,592.6	...	...	...	...	...
Austria	1967	1,191	205	6,528	1,772	7,924	1,322.3	2,070.8	...	...	...	3,393.1	11,317
	1968	1,155	206	7,843	2,193	9,204	1,503.1	1,970.1	...	...	...	3,473.2	12,677
	1969[1]	1,271	277	6,776	1,914	8,354	1,528.8	2,104.4	...	...	...	3,633.2	11,987
Belgium	1967	3,171	356	22,317	7,357	25,844	-	7,874	3,510	-	-	11,384	37,228
	1968	3,358	331	25,475	8,272	29,164	-	10,668	4,207	-	-	14,875	44,039
	1969	3,806	422	29,746	9,513	33,974	-	13,172	4,796	-	-	17,968	51,942
Denmark[2]	1967	188.7	24.2	1,122	...	1,334.9	330	138	498	808	-	1,774	3,108.9
	1968	229.5	21.5	1,110	...	1,361.0	436	139	608	1,005	-	1,991	3,352
	1969	208.3	19.1	1,474	...	1,699.4	422	143	648	999	-	2,212	3,911.4
Spain	1967	21,160	2,867	38,808	...	62,835	1,165	7,521	...	...	...	8,686	71,521
	1968	20,381	2,737	41,285	...	64,403	2,048	9,003	3,000[1]	...	...	14,051	78,454
	1969	22,059	2,444	51,638	...	76,141	9,115	5,212	3,300[1]	...	...	17,627	93,768
France	1967	3,900	200	11,100	...	15,200	900	1,100	1,000	1,600	200	4,800	20,000
	1968	4,600	200	11,600	...	16,400	1,300	1,100	1,100	2,000	300	5,800	22,200
	1969	5,000	300	12,400	...	17,700	1,100	1,200	1,200	2,100	400	6,000	23,700
Greece	1967	890.4	32.3	1,116.7	...	2,039.4	-	1,200	725	-	-	1,925	3,964.4
	1968	714.7	11.3	1,160.6	...	1,886.6	-	1,595	1,416	-	-	2,961	4,847.6
	1969	911.5	15.7	1,029.5	...	1,956.7	-	1,799	1,630	-	-	3,429	5,385.7
Ireland (thousands of units)	1967	10,312		29,184	8,489	39,496	-	-	-	7,929	79	8,008	47,504
	1968	13,712		37,952	11,014	51,664	-	-	-	8,217	67	8,284	59,948
	1969	...		...	...	...	-	-	-	...	...	...	...
Italy	1967	230,000	20,000	1,004.6	...	1,254,600	...	...	...	...	...	470,905	1,725,100
	1968	265,000	24,000	1,112,8	...	1,411,800	...	...	...	...	...	535,654	1,947,454
	1969	291,000	30,000	1,230,7	...	1,551,700	...	...	...	...	...	527,718[1]	2,079,418
Luxembourg	1967	180	34.0	571	...	785	-	204.0	-	6.0	-	209	995
	1968	170	30.0	585.8	...	785.8	-	233.0	-	7.0	-	240	1,025.8
	1969	155.9	29.6	746.5	...	932	40.0	210.0	-	7.0	-	257	1,189
Norway	1967	687	92	1,552	135	2,331	-	605	393	-	37	1,035	3,366
	1968	737	88	1,672	457	2,497	-	636	382	-	46	1,064	3,561
	1969[1]	1,049	97	2,428	666	3,574	-	828	402	-	46	1,276	4,850
Portugal	1967	39	...	1,010	48[3]	...	...	399	...	...	...	922	
	1968	51	206	1,268	49[3]	1,525	...	340	...	...	...	984	
	1969	64	208	...	63[3]	...	...	...	...	...	...	870	
Netherlands	1967	543	62	2,071	...	3,357	419		135	327		881	4,238
	1968	755	55	2,458	...	4,424	538		149	469		1,156	5,580
	1969	826	37	2,679	...	4,752	589		183	438		1,210	5,962
United Kingdom	1967	280	28	934	150	1,242	139[4]		159[4]			298	1,540
	1968	306	29	1,037	170	1,475	156[4]		193[4]			349	1,824
	1969	345	29	969	187	1,343	214[4]		197[4]			411	1,754
Sweden	1967	336	41.3	2,780	686[5]	3,157.3	57.0[6]	359.2	319.1	847.3	...	1,583.6	4,740.9
	1968	111	6.0	3,542	859[5]	3,659.0	143.0[6]	326.4	323.7	845.0	...	1,638.1	5,297.1
	1969	124	22.2	3,962	944[5]	4,108.2	179.3	305.2	314.8	873.0	...	1,672.3	5,780.5
Switzerland	1967	266.9	50.7	1,560.2	...	1,877.8	...	...	...	...	...	1,206.5	3,084.3
	1968	310.8	41.4	1,709.8	...	2,062.0	...	...	...	...	...	1,278.0	3,340.0
	1969	357.4	43.8	2,007.1	...	2,408.3	...	...	...	...	...	1,449.8	3,858.1
Turkey	1967												
	1968												
	1969												
Yugoslavia	1967												
	1968												
	1969												

1. Provisional figures.
2. The figures concerning infrastructure expenditure correspond to the financial year beginning 1st April of the reference year and ending 31st March of the following year.
3. Taxis and cars for hire only.
4. The figures also include the value of land.
5. Only private cars.
6. Estimates.

Table 1c. BREAKDOWN OF INVESTMENT IN THE INLAND WATERWAYS

Million of national currency units (For Ireland thousands of units)

COUNTRY	YEAR	CRAFT			INFRASTRUCTURE			TOTAL INVESTMENT (AFFECTING NAVIGATION)
		BARGES AND PUSHERS	OTHER CRAFT	SUB-TOTAL (1 + 2)	CLASS I, II AND III WATERWAYS[1]	CLASS IV, V AND VI WATERWAYS[2]	SUB-TOTAL (4 + 5)	
		1	2	3	4	5	6	7
Austria	1967	...	...	...	-	32.7	32.7	32.7
	1968	...	...	...	-	55.2	55.2	55.2
	1969	...	...	...	-	72.7	72.7	72.7
Belgium	1967	...	...	450	...	...	2,032	2,482
	1968	...	...	352	...	...	2,237	2,589
	1969	...	...	450	...	...	2,527	2,977
France	1967	17.8	22.3	40.1	162	149	311	351.1
	1968	10.1	5.7	15.8	176	130	306	321.8
	1969	12.6	11.9	24.5	127	121	248	272.5
Germany	1967	...	...	53.2	...	...	185.2	238.4
	1968	...	...	72.4	...	...	171.2	243.6
	1969	...	...	114.4	...	...	272.4	386.8
Ireland (thousands of units)	1967	-	-	-	...	...	94	94
	1968	-	-	-	...	...	174	174
	1969	-	-	-	...	...	...	...
Italy	1967	-	917	917	130	-	130	1,047
	1968	-	1,216	1,216	205	-	205	1,421
	1969	100	1,820	1,920	7	-	7	1,927
Luxembourg	1967	-	-	-	-	68.7	68.7	68.7
	1968	-	-	-	-	17.1	17.1	17.1
	1969	-	-	-	-	25.6	25.6	25.6
Netherlands	1967	...	...	...	6[3]	80[3]	86[3]	86[3]
	1968	...	...	...	5[3]	177[3]	182[3]	182[3]
	1969	...	...	...	6[3]	119[3]	125[3]	125[3]
Portugal	1967	...	-	-	-	-	-	-
	1968	...	-	2	-	-	-	2
	1969	...	-	15	-	-	-	15
Switzerland	1967	...	...	5.8	...	...	21.9	27.7
	1968	...	...	2.4	...	...	44.6	47
	1969	...	...	...	...	...	...	...

1. Waterways for craft carrying loads of up to 1,000 tons.
2. Waterways for craft carrying loads of over 1,000 tons.
3. Figures for waterways maintained by the State.

REPORT BY THE COMMITTE OF DEPUTIES
ON TRAFFIC AND INVESTMENT TRENDS IN 1969

Chapter II - Railways

Contents

FORWARD

1. This report is based on the data supplied by Member countries for the year 1969. It also outlines certain trends in 1970 and draws comparisons with 1968.

2. Unless otherwise stated, the figures given are for the 18 Member countries combined, and the figures in brackets are for the six Member countries of the E. E. C.

A. TRAFFIC TRENDS

I. Passengers

1. The decline in passenger traffic experienced in recent years - in terms of passengers carried - continued in only six countries in 1969. In the other, countries an opposite trend emerged, numbers of passengers-km, increasing except in Norway. This improving trend was undoubtedly due not only to the economic situation but also in many cases to improved services such as faster and more comfortable trains, especially on long-distance routes ; special terms for certain categories of passengers ; more intensive publicity; and similar measures. The results were obtained despite the drift from rail travel to private cars which continues in most countries, and despite competition from air transport. Average journey lengths increased appreciably in certain countries, as is shown by Table 3.

2. In all, numbers of passengers carried showed an increase of the order of 0. 5 per cent (1. 9 per cent) compared with the previous year, and passenger-km increased by 5. 1. per cent (6. 0 per cent).

3. The trend for 1969 and the early months of 1970 is shown in Annex 3 (including Table 16).

II. Freight

1. The economic trend in 1969 led to an overall increase in tonnes carried of 5. 1 per cent (8. 2 per cent) and an increase in tonne-km, of the order of 7. 2 per cent (9. 2 per cent). There were however significant departures from this general trend in various countries, as shown in Table 2. Some countries also experienced an appreciable increase in the average length of haul for freight as for passenger traffic (see Table 3).

2. The trend for 1969 and the early part of 1970 is shown in Annex 4 (including Table 17).

III. Length of network and transport output

1. The overall length of the Member countries' combined networks at the end of 1969 was 174, 073 (90, 456) km, compared with 175, 963 (91, 475) km at the end of 1968. Only France (660 km), Great Britain (652 km), the German Federal Republic (294 km) and Sweden (264 km) reported significant line closures. (See Table 4).

2. Table 5 summarises operations in terms of train-km with separate figures for steam, electric and diesel traction. Comparison with the figures for the previous year shows the progress made with structural changes in traction.

3. Table 8 shows the transport output of the various systems in terms of gross tonne-km (excluding the United Kingdom, Ireland and Norway) for each mode of traction, with the previous year's figures for comparison. The share of steam traction has now fallen to 11 per cent, while that of electric traction has risen to 70 per cent, although the proportion of lines electrified is only 31 per cent.

4. Tables 6 and 7 give fuller information concerning this trend.

B. ROLLING STOCK

I. Tractive stock

1. The total number of locomotives at the end of 1969 was 32, 611 (18, 379) compared with 33, 027 (18, 837) at the end of the previous year. The breakdown by type of traction is shown in Table 9.

2. Table 10 shows the changes in numbers of electric locomotives for each type of current, including multi-current units.

The outstanding feature of this trend is the increase in the number of main-line locomotives running on DC 3,000 V and on single-phase AC 16 2/3 and 50 HZ.

3. Table 11 shows the development of the diesel locomotive fleet. There has been an appreciable increase in the group of locomotives of more than 350 CV and slight fall in the numbers in the other groups. The United Kingdom still accounts for most of the fleet of diesel locomotives of more than 1,000 CV.

4. The number of electric railcars was 11,057 (2,494) compared with 10,934 (2,396) in the previous year. Here, too, the United Kingdom fleet of DC railcars predominates.

5. The number of diesel railcars fell slightly compared with last year, from 8,726 (3,343) to 8,553 (3,289). Approximately 67 per cent of these units are in the category up to 350 CV, the remainder having a higher output. Very few units, however, exceed 1,000 CV. Approximately 43 per cent of the diesel railcars (motor and trailer units) are in the United Kingdom. It must also be mentioned that the Federal Republic of Germany, France and Italy each has approximately 1,000 diesel railcars.

6. The following details should be noted :

The Federal Republic of Germany plans to replace steam locomotives by diesel and electric locomotives by 1976.

In Belgium, the main developments are as follows :

In 1969 :

- delivery of 12 3,000 V, 3,500 CV electric locomotives ;

- conversion of one type 2,000 1,950 CV diesel locomotive to a 4,000 CV locomotive (study in progress).

In 1970 and subsequently :

- delivery of 18 3,000 V, 3,500 CV electric locomotives ;

- delivery of 42 3,000 V, 1,000 CV electric locomotives (of which 12 with thyristor starting equipment) ;

- study of a 7,000 CV electric locomotive to operate at 4 voltages ;

- continuation of the conversion of the type 2,000 diesel locomotive begun in 1969, which it is planned to complete by the beginning of 1971 ;

- plans to order 60 750 CV diesel shunting locomotives during the last quarter of 1970.

In France, the main developments in tractive equipment are as follows :

- the putting into service of high-power electric locomotives either for one (type 6,500) or two types of current (type 21,000) fitted with two gear ratios, one for hauling heavy freight trains at 100 km/hour and the other for hauling passenger trains at 200 km/hour ;

- the putting into service of a gas-turbine four-coach unit passenger train.

Gas turbine engines are to be developed for traction in the next few years.

In Italy, deliveries of rolling stock in 1969 were : 27 diesel locomotives, 23 for main line operation and four for shunting. The last eight locomotives in this order are to be delivered in 1970.

Thirty railcars will also be put into service this year to replace outdated railcars and to provide additional services.

The following deliveries are also envisaged starting next year :

- 95 diesel locomotives ;

- 102 self-propelled units ;

- 15 electric shunting locomotives ;

- 110 other electric locomotives.

The programme for the next few years includes the delivery of 40 electric locomotives and 178 motor and trailer units.

In Luxembourg, it is planned to :

- replace 10 320 CV railcars ;

- replace 5 450 locomotives and 2 600 CV locomotives ;

- acquire 4 250 CV light motor tractors.

In Austria, the Federal Railways continued the conversion of steam traction to electric and diesel traction in 1969, bringing into service 14 electric locomotives, one electric railcar, and 12 diesel locomotives.

It is planned to carry out further conversions of traction in the next few years, at a rate depending on the resources made available to the railway administration. According to the present programme, the last steam locomotive will be withdrawn from service in 1975.

In Spain, the following new rolling stock was delivered in 1969 :

- 37 diesel locomotives (18 main line and 19 shunting) ;

- 2 TALGO diesel locomotives ;

- 15 dual-voltage electric locomotives ;

- 7 Ferrobus railcars.

The deliveries planned for the next four years are of the order of 52 diesel locomotives, 43 electric locomotives, 27 electric multiple-unit trains, 47 Ferrobus railcars and 20 electric trains.

In Greece, the public investment programme for 1968-1972 makes various appropriations, and orders are already being place for :

a) 20 high-speed main line diesel locomotives ; and

b) 25 diesel shunting locomotives.

In Norway, 27 steam locomotives were scrapped during 1969. The gradual withdrawal of the remaining steam locomotives is continuing and will probably be completed towards the end of 1970.

The withdrawal from service of the type El. 1 and El. 5 electric locomotives is also continuing.

In Portugal, the following deliveries were made in 1969 ;

- 17 diesel locomotives from Sorefame ;

- 9 diesel locomotives from England ;

- 24 three-unit lectric trains are to be delivered in 1970 and 1971.

In Sweden, the following deliveries were made during 1969 ; 17 thyristor locomotives in the Rc series, 3,600 kW 16 2/3 HZ, 15 kV, maximum speed 135 dm/hr, and 26 self-propelled thyristor units (one motor + one "pilot" trailer unit), series X1, 1,120 kW, 16 2/3 cycles, 15 kV, maximum speed 120 km/hour, and 20 diesel electric locomotives in the T44 series, with an effective power rating of 1,650 CV.

In the next few years it is planned to acquire approximately 40 thyristor locomotives, series Rc, of which 10 will have a maximum speed of 160 km/hour, 30 self-propelled units, series X1, 10 diesel electric locomotives, series T44, 5 diesel-electric locomotives series T45, 2 locomotives for ore trains, series Dm3 and Dm, prototypes of a new CoCo locomotive, and a number of diesel-hydraulic motor tractors.

In Switzerland, 40 Re 4/4 II and Bm 4/4 locomotives were delivered during the reference period. Delivery is also planned of :

- 37 units Re 4/4, Eem 6/6 and Bm 4/4 for 1970 ;

- 30 units Re 4/4 II and III for 1971 ;

- 34 units Re R/R II and Re 6/6 for 1972.

In Turkey, the investment plans adopted provide for dieselisation and electrification. No development of steam traction is therefore envisaged.

Two electrification projects are envisaged, i. e. the Haydarpasa- Adapazari line and Ankara suburban lines. The two projects would involve 15 electric locomotives with the following specifications : 25 KV, 50 Hz, 400 CV.

The TCDD plans to expand its diesel stock. As a first step, 10 complete locomotive units were bought and came into service in June 1970. As a second stage, the Eskisehir work-shops are to build, under French licence, 45 locomotives a year. It is hoped that the first 45 will be completed by the end of 1971.

II. Freight and coaching stock

a) Freight wagons

1. The total number of railway freight wagons (excluding the United Kingdom) at the end of 1969 was 965, 585 (694, 121) compared with 968, 678 (694, 049) at the end of 1968. To these must be added 409, 374 freight wagons belonging to British Rail and 176, 002 privately-owned wagons. Despite the general downward trend which these figures suggest, the capacity of wagons increased to 25, 362 25, 362, 400 (19, 222, 600) tonnes, average pay-load capacity per wagon being 26. 3 (27. 7) tonnes. The figure for privately-owned wagons was 30. 9 (34. 0) tonnes.

2. Table 12 shows numbers of wagons in the various Member countries, while Table 13 groups them by type and shows the shares of the EUROP and POOL fleets.

3. By the end of 1969 the number of standard and unified wagons accounted for one-third of the total. It now remains to see what the railway administrations will decide as regards the second stage of standardization, since the construction of standard and unified wagons cannot continue if automatic coupling is introduced, and moreover a change of approach approach is needed to cope with the altered pattern of traffic, especially with regard to fuel and power. Freight wagons with four or more axles which are suitable for conversion to automatic coupling account for only a very small part, i. e. 9. 0 per cent 10. 7 per cent) of the total fleet. A survey in 1966 showed that about one-quarter of them were open or covered wagons, the others being listed as "other wagons".

b) Coaches and vans

4. The fleet of coaches fell from 87, 082 (47, 582) units at the end of 1968 to 83. 525 (43, 669) units in 1969. As new acquisitions were of bogie stock to replace two-axle coaches, the seating capacity is unlikely to have been affected.

In the United Kingdom, and to a limited extent in other countries, the transition from locomotive traction to multiple units played a considerable part.

The same reasons doubtless account for the decline in the number of luggage vans from 23, 438 (10, 744) to 17. 976 (6, 235).

5. The following details are given concerning individual countries :

In Germany, the factors are still, as in 1969 :

for passenger coaches :

- improved comfort, economical construction, higher speeds, separate power take-off, inclinable bodies for negotiating curves, replacement of articulated coaches by bogie coaches ;

for freight wagons :

- an increase in the number of bogie wagons ;

- an increase in the number of specialised wagons.

In Belgium, the main items are as follows :

In 1969

- conversion of existing wagons to types for transport of specific freight

(parcels, glass, transcontainers, etc.) ;

- construction of 1,484 new wagons to replace old wagons ;

- improved equipment for existing wagons.

In 1970 and subsequent years :

- conversion and rebulding of equipment ;

- construction of new wagons ;

- improved equipment for existing wagons ;

- first conversions of existing wagons to automatic coupling ;

- air-conditioning on new international passenger stock (planned) ;

- automatic coupling (planned).

In France, the main developments in 1969 and those envisaged in the next few years are as follows :

Passenger coaches - 1969 :

direct Paris-Madrid sleeping-car service with change of axles at Hendaye ; automatic gauge change for TALGO stock at Cerbère for the Barcelona-Geneva service.

Subsequently : development of luxury "grill-express" self-service restaurant cars.

Freight wagons - 1969 and subsequently :

development of bogie and specialised wagons for the S.N.C.F. fleet.

In Italy, a total of 139 passenger coaches, 1 luggage van and 1,962 freight wagons was delivered in 1969. Deliveries for 1970 are expected to be : 432 passenger coaches, 24 luggage and postal vans, and 2,904 freight wagons.

In Luxembourg. No new coaches or wagons came into service in 1969.

During the period under review, however, the C.F.L. placed orders for 540 wagons to be delivered in 1970, as follows :

60 2-axle automatic discharge
100 2-axle sliding-roof wagons
180 bogie flat wagons
200 2-axle flat wagons

In the Netherlands the passenger coach fleet was increased by 16 electric two-coach units ; in 1972 28 units of this type will be delivered. The limited number of locomotives, which must be increased shortly, was supplemented by six British locomotives constructed in 1964. To keep pace with the rapid expansion of container traffic, the N.S. placed an order for 850 flat container-carrying wagons.

In Austria, the fleet was increased by 69 four-axle passenger coaches for internal traffic, and 6 four-axle trailer coaches for electric multiple unit trains. Delivery of 57 four-axle coaches for internal traffic is expected.

The following wagons were delivered in 1969 :

- 505 high-capacity two-axle covered wagons ;

- 744 high-capacity two-axle covered wagons with sliding roofs ;

- 128 four-axle flat wagons.

In Spain, new stock delivered during 1969 was as follows :

- 36 trailer coaches for electric multiple-unit trains ;

- 36 TALGO trailer coaches ;

- 44 TALGO trailer coaches with variable gauge ;

- 25 second-class passenger coaches ;

- 500 two-axle covered freight wagons ;

- 295 bogie flat wagons ;

- 185 four-axle flat wagons ;

- 150 bogie open wagons ;

- 68 four-axle open wagons

Deliveries expected during the next four years are of the order of 4 Ferrobus trailers, 46 TALGO trailers

with variable gauge, 20 sleeping-cars and 3,285 ordinary and special freight wagons.

In the United Kingdom the reduction of the coach and wagon fleet continued, although to a small extent, in view of the changes in market requirements and standards.

Of the new deliveries, mention will only be made of 60-foot container-carrying wagons and self-discharging coal hopper wagons for supplying electric power stations.

In Greece, the public investment programme for 1968-1972 makes various appropriations, and orders are already in hand for :

a) 20 passenger coaches ;

b) 5 sleeping-cars ;

c) 10 luggage vans ;

d) 220 wagons of various types ;

e) 21 coaches for the Akropolis Express.

In Norway, there was a slight decline in the number of covered and open wagons in 1969 compared with 1968.

In Portugal, a total of 648 freight wagons and 9 luggage vans was delivered in 1969 (of which 470 were from Austria). In 1970 delivery is planned of 200 other wagons (of which 140 will come from Austria).

Wagons

Deliveries in 1969 : 380 wagons

Deliveries planned for 1970 : 560 wagons.

Deliveries planned for 1971 : 650 wagons.

Orders to be placed in 1970 :
150 silo wagons
400 wagons with slidinn doors
550 wagons.

In Sweden, 329 wagons were delivered in 1969, including standard SJ types and special wagons. Manufacture of the Ros seires high-ended flat bogie wagons ceased, and work started on the Rs series flat bogie wagons with hinged ends and a height of 900 mm., which are to replace them. More wagons in the Hbis series with sliding doors were delivered. Among the special wagons delivered are some for ore transport, some tank wagons for petroleum products and powders, wagons for transporting containers and/or semi-trailers.

The reconstruction of a few wagons in the Gs to Hs series was started during 1969 ; their sides have been replaced by four plastic sliding doors. Prototypes were delivered of a special wagon desinged for transporting timber, which is increasingly being carried by rail instead of being floated. Wagons in the Om series, whose loading surface has been increased to a length of 12.5 m, were used for these prototypes. They are fitted with special beams and high stanchions, the wooden floor being removed. The last 15 of the 25 self-service restaurant cars were delivered in 1969. The conversion of a number of passenger coaches dating from the 1940s to a standard almost equal to the latest second-class coaches has begun.

Work has begun on reconstruction of restaurant cars with the kitchen in the middle of the coach and a restaurant section at each end. One of these sections will be converted to self-service in line with the new deliveries mentioned above.

The following is the situation in Switzerland :

Passenger coaches and vans

Deliveries in 1969 :
29 RIC coaches
54 unified coaches (for internal services)
31 coaches for the Brünig line
25 luggage vans

Total 139 units

Deliveries expected in 1970 :

26 RIC coaches
54 unified coaches
9 Brünig coaches
34 vans

Total 139 units

Deliveries expected in 1971 :

40 RIC coaches
90 unified coaches
30 vans

Total 160

Deliveries expected in 1972 :

15 RIC coaches
36 unified coaches
20 vans

Total 71

Orders expected to be placed in 1971 and 1972 :

200 unified coaches
50 vans

In Turkey

Planned deliveries are as follows :

1969 : 84 coaches and 614 wagons
1970 : 118 coaches and 964 wagons
1971 : 116 coaches and 770 wagons
1972 : 80 coaches and 480 wagons

III. The Role of EUROFIMA

1. In all, EUROFIMA operations in 1969 involved new resources amounting to approximately Sw. Frs. 195 million. At the same time loan repayments amounted to approximately Sw. Frs. 60 million

2. The company financed a large number of new orders. Following an international tender, it was possible to order, inter alia, more than 800 flat bogie wagons, with the participation of the D. B., the S. N. C. F., the S. N. C. B., the F. S. and the C. F. L.

3. During the trading year, 91 diesel locomotives, 15 electric locomotives, 9 rail buses, 131 passenger coaches, and 872 freight wagons (of which 324 were bogie wagons) were delivered.

4. The EUROFIMA working party on automatic coupling held its second session on 30th September, 1970, which was concerned with the preparatory work for an international tender. The timing of this operation still awaits the results of the negotiations between the U. I. C. and the O. S. J. D. recently begun in Paris.

C. INFRASTRUCTURE

I. Fixed installations (excluding electrification)

In Germany, investment was mainly devoted to track improvements, important junction stations, installations for trans-shipment of freight, and infrastructure for short hauls in intensive urban areas. Details of the work done are as follows :

- The installations required for the large-scale experiment being tried in the Hannover area for automation of traffic movements and commercial operations (computer information centre) are almost completed ; operational trials are now being carried out, so that the whole electronically-controlled system will probably be able to go into service in 1971.

- In the Hambourg City-S-Bahn urban network, the preliminary work on the particularly difficult underground section of the Hamburg Hbf. - Hamburg-Dammtor spur has been completed.

The work on the section of the S-Bahn from Duisburg to Essen in the Ruhr has proceeded according to plan. The study is also continuing of a second improvement project for the S-Bahn in the direction of Dortmund.

The further improvement of the Munich urban S-Bahn has also gone ahead without noticeable difficulties.

This year marked the start of work on the main station at Frankfurt (Frankfurt Hbf), on the "Limesbahn", and on the Frankfurt airport underground station.

- The modifications to the marshalling yards at Saarbrücken and Köln-Eifeltor have been started. The Mannheim

marshalling yard is complete with the exception of a few minor details.

The marshalling yard at Maschen is is to be resited south of Hamburg as a yard designed to combine, at a later date, the functions of various existing yards in the Hamburg area. This yard will be equipped with ultra-modern wagon-sorting installations with a daily capacity of 10,000 wagons.

- In the wagon sidings at Hamburg-Langenfelde, work has begun on the construction of a shed 420 m long and 50 m wide, and preliminary work has begun on wagon-cleaning installations ; at the main station of Frankfurt (Frankfurt Hbf), construction work is continuing on the new wagon sidings and on modifications to the motive power depot.

- New branch lines have been built in most of the regional directorates of the D.B., in order to promote transport via branch lines. Other projects of this kind are being studied.

- During 1969, 162,445 tonnes of new points and minor track equipment were installed, and 1.34 million wooden and 0.36 million concrete sleepers. As a result of modernisation of stations, the numbers of points have been reduced by approximately 40,000 since 1960.

- Eight railway bridges and several large structures connected with the urban networks (S-Bahnen) of Frankfurt, Munich, and Essen have been completed.

- Fifty-eight new relay-operated remote control signal-boxes have been brought into service during the year, increasing the total of these to 967. The network equipped with the automatic block system now extends to 4,500 km, an increase of approximately 450 km.

At the end of 1969 approximately 16,000 km of track and 6,200 traction units were fitted with the Indusi automatic braking system.

The total number of level crossings has been reduced to 30,699, 10,126 of these being manned and 3,635 equipped with flashing or colour light signals.

After a construction period extending over seven years, the new through station at Ludwigshafen on the Rhine was brought into operation on 29th May, 1970. This large installation enables traffic to be handled on four levels.

Mention must finally be made of the construction of further handling centres for container transport. In all, 38 such centres are now in service and 9 others are being built.

In Belgium, railway work in connection with the extension of the ports of Antwerp and Ghent is proceeding according to plan.

The laying of long welded rails continues at the same rate as in previous years. 110 km of track was equipped in 1969, bringing the total length of track so equipped to 1,014 km.

The building of bridges and rerouting of roads made it possible to abolish nine level crossings during 1969. In addition, 110 new automatic road traffic signal installations were brought into service at level crossings, 77 of these being automatic half-gate systems.

Continuing its policy of concentration of signalling and train control, the S.N.C.B. completed the installation of five route relay interlocking units, and one signalling and control unit with static elements (an entirely new technique worked out by the S.N.C.B. in collaboration with industry) ; the number of old type electro-mechanical signal boxes has been reduced to 30.

In France, the following are the main items in the technical modernisation of the European trunk routes :

- extension of the automatic colour-light block system ;

- development of a signalling system for high speeds (early warning system) ;

- station modernisation ;

- automatic detection of hot axle-boxes ;

- automation of level-crossing barriers ;

- automation of marshalling yard operations ;

- installations for transcontainers.

In addition the following important work was carried out in 1969 ;

- bringing into service of the underground Austerlitz Station, Paris ;

- progress with the installation of the coulour-light automatic block system on the Marseille-Ventimiglia line ;

- installation of gantries for handling transcontainers at the principal S. N. C. F. stations ;

- progress with the installations for operating the system of centralised management of freight services ;

- opening of two sections of the Paris Regional Express metro system, one between the Place de l'Etoile and the Place de la Défense, the other between the Place de la Nation and the town of Boissy-Saint-Léger.

In Italy, the main achievements of the F. S. in technical modernisation of the European trunk routes were as follows :

- renewal of track, using 60 kg/m and 50 kg/m rails on reinforced concrete sleepers ;

- introduction of long welded lengths of rail ;

- modification of points on the most important main lines, using manganese steel cores and bonded joints.

Among the main works completed mention should be made of :

- repair of the double track destroyed during the war between Portogruaro and Cervignano stations (42 km) on the Venise-Trieste line ;

- renewal of 600 km of track on the main routes of the system ;

- track repairs to 170 km of other less important lines, using rails taken from the main lines.

In the Netherlands, the total length of track equipped with automatic block signalling was increased by 138 km to 1,441 km.

The length of line equipped with centralised traffic control at the end of 1969 was 536 km, and with automatic train control, 427 km.

More than 157 km of track were equipped with long welded rails, so that by the end of 1969 a total length so equipped was 947 km.

The number of level crossings equipped with automatic flashing lights in 1969 was 691.

The number of level crossings equipped with automatic half-gates was 429.

In Austria, conversion from single to double track on busy routes continued in 1969. The doubling of the Arlberg line between Kematen and Zirl was completed.

In Denmark, simplification of track layout at stations was continued by the construction of avoiding lines and rerouting of crossing lines.

It is also planned to equip stations with safety devices controlled by the most up-to-date relay systems, and track with automatic block systems. It is intended to extend the remote control system to the greatest possible number of stations.

Modernisation was carried out on the following lines during the year under consideration :

Køben havn - Helsingør
Roskilde - Kalundborg
Lunderskov - Padborg
Fredericia - Arhus
Langa - Struer
Vejle - Holstebro

In Spain the most important work completed during 1969 was as follows ;

Renewal of 530 km of track, mostly with rails of 54 kg/m and concrete sleepers.

Strengthening and renewal at several points.

Cleaning of tunnesl.

Completion of the automatic gauge-change installation for TALGO trains at Port-Bou.

Construction of new bridges between Montmelo and Breda for laying of double track.

Modernisation of 30 stations and improvements to 97 other buildings in accordance with the station modernisation plan.

Modernisation of workshops and depots.

Safety installations : mechanical interlocking systems with light signals at 35 stations on various lines ; electrical interlocking systems in 18 stations ; manual blocking systems on the Fuente Piedra-Malaga, Alar-Torrelavega and Baides-Arcos lines ; installation of C. T. C. at Tudela Veguin-Lugo de Llanera.

Telecommunications : installation of signalling equipment at the boxes of Madrid-Atocha, Zaragoza, Barcelona and Tarragona ; intensification of the high-frequency network in the North ; installation of telephone cables on the Alsasua-Irun route.

In Greece, the most important work carried out with the funds allotted out of the 1968-1972 public investment programme was the renewal of a 120km section of track on the Athens-Thessaloniki line, between the points km 174 and km 294.

In Ireland, mention should be made of the construction of a single-track section 2 km in length (Ballynacourty) and the re-opening of 41 km of single track for transport of mineral oils.

In Portugal, it is planned to carry out the following modernisation work :

Complete renewal - 276 km of track

Ballast renewal - 234. 2 km of track

Renewal with re-use of materials- 38. 7 km of track.

Three km of track were entirely renewed in 1969.

In Sweden :

C. T. C. was installed on the single line Avesta-Krampen (70 km).

An automatic block system was installed on the single line Kilafors-Ockelbo (43 km).

Nineteen safety installations controlled by relay systems, of which eight were on double-track routes, were completed.

The station at Nässjö was rebuilt and a new signal box installed.

Stations and track in the Southern part of Norrland were improved and reinforced to take the new timber transport service.

Container terminal installations were built at Malmö and Orebro.

A new station building was erected at Vislanda.

A new building was erected at Tomteboda (Stockholm) for the Swedish railways' electronic computer centre and the new local telephone exchange.

The express freight building of Stockholm C station was enlarged to include the AB Trafikrestauranger, a company affilited to the Swedish railways, and the postal services.

A new rail adjustment installation was completed at Sannahed.

A new freight shed was built at Lulea.

A new railway bridge in prestressed concrete was completed over the river Lögde.

Long welded rails were laid over 203 km of track. The strengthening of track in accordance with the programme comprised the laying of concrete sleepers

over 110 km of track and of Hey-Back fasteners over 93 km of track, both operations being carried out simultaneously with renewal of rails.

Replacement of stone ballast by macadam ballast over 90 km of track.

Sixteen hot axle-box detectors were installed, in the following stations : Alvesta (2), Eslöv, Hässeleholm (3), Mjölby (3), Märsta, Norrköping (2), Nässjö (2), Södertälje and Varberg.

In Switzerland, the main items of technical modernisation carried out were :

Construction of second or third tracks, or of second double tracks.

Extension of stations by construction of avoiding lines and platforms linded linked by subways.

Construction of fly-overs.

Installation of automatic block and two-way working with remote control centres and electrical interlocking installations.

The main works completed in 1969 are as follows :

New two-way working and block installations on the southern approach to the St. Gotthard tunnel (Airolo-Bodio section).

Opening of the connection between Zürich-Alstetten and Zürich-Oerlikon and the main lines of the Zürich-Limmattal marshalling yard.

Centralised control of the Lucerne railway junctions.

Opening of double track between Bienne and Tuscherz (Bienne-Lausanne line).

Opening of the following new double-track sections : Ziegelbrücke-Wesen-Gäsi, and Tiefenwinkel-Murg (Zürich-ZiegelBrücke-Sargans-Buchs/Chur line).

In Turkey, the construction of a 30 km section on the Thrace line began in 1969 and is still proceeding. Track alignments, super elevation and curve radii will be adapted to higher speeds and axle loadings. The construction of the Pehlivanköy-Edirne line has also begun. Its completion will provide a direct link between the Turkish and Bulgarian railway systems.

II. Electrification

1. The length of the electrified network has increased by 970 km since October 1969, and is now 51,276 (28,506) km. Table 14 shows these totals broken down by type of current, at the end of October 1970.

2. Some 63 per cent of the total electrified network is accounted for by four countries, France (9,279 km), Germany (8,328 km), Italy (7,911 km) and Sweden (6,959 km). The remaining 18,799 kilometres, i.e. 37 per cent, are shared by 12 other countries. Two countries (Greece and Ireland) have no electrified lines. The electrified network, which covers about 31 per cent of the whole European system, accounted for approximately 70 per cent of gross tonne-km (excluding the United Kingdom, Ireland and Norway).

3. Existing programmes provide for the following further increases up to 1974 : 1,138 (503) km on trunk lines and 2,741 (1,254) km on other lines. Germany (1,361 km) and Yugoslavia (1,142 km) account for more than 64 per cent of the combined figure of 3,879 km, the remainder being made up as follows ; Spain 359 km, France 270 km, Austria 209 km, Norway 152 km, Portugal 77 km, Belgium 76 km, Italy 50 km, United Kingdom 15 km, Denmark 13 km, and Switzerland 2 km.

4. If these programmes are carried out, 86 (88) per cent of European trunk lines (excluding links between Belgrade and Greece and Turkey, but including the direct Madrid-Burgos line) will be electrified by 1974.

5. The map of the electrified network re-issued this year takes account of all changes since October 1968.

D. POWER CONSUMPTION

1. Electrification and dieselisation have had an entirely beneficial effect on the trend of power consumption.

2. Consumption of electrical power for traction increased from 18.79 (11.97) milliard KWh in 1968 to 21.06 (13.78) milliard KWh in 1969, and consumption of gas-oil from 2.31 (0.71) to 2.61 (1.11) million tonnes, while coal consumption fell from 8.02 (3.28 to 5.23 (2.06) million tonnes over the same period. Consumption of oil fuel for steam traction was the order of 0.71 million tonnes.

3. Table 15 shows power consumption in terms of coal equivalent (CE) for the two years under reference.

Table I. PASSENGER TRAFFIC

	Passengers carried		Passenger-km	
	1969 (thousand)	1969/68 (per cent)	1969 (thousand)	1969/68 (per cent)
Germany	948,879	+ 1.8	36,355,456	+ 6.5
Belgium	202,192	- 0.5	7,515,033	+ 2.5
France	602,802	+ 4.2	39,074,675	+ 8.9
Italy	326,900	+ 1.0	29,993,606	+ 3.7
Luxembourg	9,503	+ 2.8	203,179	+ 0.4
Netherlands	179,788	- 0.3	7,502,156	+ 2.0
E.E.C. countries	2,270,064	+ 1.9	120,644,105	+ 6.0
Austria	157,126	- 3.5	6,195,413	+ 10.3
Denmark	116,020	+ 2.2	3,290,150	+ 2.1
Spain	158,851	+ 7.3	12,647,076	+ 6.9
Great Britain	805,235	- 3.1	29,612,960	+ 3.2
Greece	11,797	+ 5.5	1,437,087	+ 7.8
Ireland	9,957	+ 4.3	579,807	+ 1.7
Norway	29,134	- 4.3	1,563,800	- 4.8
Portugal	104,816	+ 1.5	2,766,366	+ 4.2
Sweden	55,596	+ 8.2	4,631,600	+ 1.7
Switzerland	230,698	+ 1.8	8,063,259	+ 3.0
Turkey	102,569	+ 4.5	4,602,539	+ 1.4
Yugoslavia	163,216	-10.8	10,469,284	+ 1.8
Other countries	1,945,015	- 1.3	85,859,341	+ 3.6
Total	4,215,079	+ 0.5	206,503,446	+ 5.1

Table 2. FREIGHT TRAFFIC

	Tonnes carried		Tonnes-km	
	1969 (thousand)	1969/68 (per cent)	1969 (thousand)	1969/68 (per cent)
Germany	340,334	+ 11.5	66,476,126	+ 14.8
Belgium	69,827	+ 9.4	7,475,576	+ 11.1
France	242,090	+ 5.7	66,918,000	+ 6.3
Italy	55,261	- 1.1	17,221,969	+ 0.5
Luxembourg	18,542	+ 18.6	723,951	+ 13.3
Netherlands	26,337	+ 2.0	3,433,151	+ 4.9
E.E.C. countries	752,391	+ 8.2	162,248,773	+ 9.2
Austria	45,903	+ 6.0	8,822,929	+ 9.7
Denmark	7,104	+ 7.6	1,529,227	+ 3.5
Spain	30,819	- 0.3	9,071,000	+ 5.2
Great Britain	204,284	- 3.0	23,086,000	- 3.9
Greece	2,529	+ 1.2	586,889	+ 7.1
Ireland	3,195	- 3.9	505,029	- 7.0
Norway	28,794	- 2.9	2,600,178	+ 4.5
Portugal	3,494	- 2.4	736,509	- 4.4
Sweden	58,315	+ 9.2	13,947,599	+ 7.9
Switzerland	42,197	+ 7.3	6,134,941	+ 7.7
Turkey	13,241	- 5.7	5,235,045	+ 0.0
Yugoslavia	64,891	+ 2.8	16,833,229	+ 8.4
Other countries	504,766	+ 0.8	89,088,575	+ 3.8
Total	1,257,157	+ 5.1	251,337,348	+ 7.2

Table 3. AVERAGE LENGTH OF JOURNEY OR HAUL

	Per passenger		Per tonne	
	1969 (km)	1968 (km)	1969 (km)	1968 (km)
Germany	38. 3	36. 6	194. 0	188. 0
Belgium	37. 2	36. 1	107. 1	105. 5
France	64. 5	62. 0	277. 0	275. 0
Italy	91. 8	89. 4	311. 7	306. 7
Luxembourg	21. 4	21. 9	39. 1	40. 8
Netherlands	41. 7	40. 8	130. 0	143. 2
Austria	39. 4	34. 5	192. 2	185. 6
Denmark	.	.	.	209. 0
Spain	79. 6	80. 0	294. 5	278. 7
Great Britain	36. 8	34. 5	113. 0	114. 1
Greece	120. 0	.	180. 0	.
Ireland	58. 0	61. 0	169. 0	164. 0
Norway	53. 7	54. 0	91. 1	84. 4
Portugal	26. 4	25. 7	210. 8	215. 2
Sweden	77. 0	80. 5	249. 0	241. 0
Switzerland	34. 9	34. 5	144. 2	143. 5
Turkey	45. 0	46. 2	395. 0	372. 6
Yugoslavia	64. 1	56. 0	251. 9	239. 0

Table 4. SIZE OF NETWORK AT END OF YEAR

	1969 (km)	1968 (km)
Germany	29,688	29,982
Belgium	4,263	4,282
France	36,740	37,400
Italy	16,336	16,351
Luxembourg	281	312
Netherlands	3,148	3,148
E.E.C. countries	90,456	91,475
Austria	5,424	5,432
Denmark	2,354	2,354
Spain	13,672	13,668
Great Britain	19,469	20,031
Greece	1,560	1,560
Ireland	2,146	2,146
Norway	4,242	4,242
Portugal	2,807	2,807
Sweden	11,884	12,148
Switzerland	2,913	2,914
Turkey	7,983	8,008
Yugoslavia	9,161	9,178
Other countries	83,617	84,488
Total	174,073	175,963

Table 5. TRAIN-KM

	Steam traction		Electric traction		Diesel traction	
	1969 (millions)	1968 (millions)	1969 (millions)	1968 (millions)	1969 (millions)	1968 (millions)
Germany	54.2	71.9	348.5	301.6	187.8	197.7
Belgium	-	-	39.0	39.0	41.0	39.0
France	26.2	39.5	331.5	306.8	226.2	210.0
Italy	7.0	9.0	189.0	185.0	69.0	66.0
Luxembourg	0.001	0.001	1.2	1.1	3.2	3.1
Netherlands	-	-	67.4	61.8	22.4	22.3
E.E.C. countries	87.4	120.4	976.6	895.3	549.6	520.1
Austria	7.5	8.6	58.2	56.3	16.7	16.9
Denmark	0.1	0.3	6.6	6.0	34.5	34.6
Spain	13.0	22.0	50.0	48.0	60.0	53.0
Great Britain	-	1.5	144.8	143.0	267.0	270.9
Greece	2.1	1.5	-	-	10.7	10.5
Ireland	-	-	-	-	12.6	12.4
Norway	0.1	0.4	24.1	24.1	8.6	9.1
Portugal	1.6	2.5	8.3	8.2	15.3	13.7
Sweden	-	-	86.5	84.2	22.2	23.6
Switzerland	0.001	0.004	88.1	85.3	0.6	0.7
Turkey	27.0	27.0	2.0	2.0	12.0	11.0
Yugoslavia	47.7	51.5	14.6	10.9	53.7	50.2
Other countries	99.1	115.3	483.2	468.0	513.9	506.6
Total	186.5	235.7	1,459.8	1,363.3	1,063.5	1,026.7

Table 6. TRAIN-KM

	Year 1969				Year 1968			
	(Millions)		Per cent		(Millions)		Per cent	
Steam traction	186.5	(87.4)	6.9	(5.3)	235.7	(120.4)	9.0	(7.8)
Electric traction	1,459.8	(976.6)	53.9	(60.6)	1,363.3	(895.3)	52.0	(58.3)
Diesel traction	1,063.5	(549.6)	39.2	(34.1)	1,026.7	(520.1)	39.0	(33.9)
All types combined	2,709.8	(1,613.6)	100.0	(100.0)	2,625.7	(1,535.8)	100.0	(100.0)

Table 7. GROSS TONNES-KM (1)

	Year 1969				Year 1968			
	(Millions)		Per cent		(Millions)		Per cent	
Steam traction	97,500.7	(50,744.6)	10.8	(7.6)	116,128.4	(66,313.3)	13.9	(10.9)
Electric traction	633,922.4	(501,278.0)	69.8	(75.3)	563,535.8	(440,503.9)	67.1	(72.4)
Diesel traction	175,917.5	(113,533.6)	19.4	(17.1)	159,372.1	(101,541.1)	19.0	(16.7)
All types combined	907,340.6	(665,556.2)	100.0	(100.0)	839,036.3	(608,358.3)	100.0	(100.0)

(1) Excluding Great Britain, Ireland and Norway

Table 8. GROSS TONNES-KM

	Steam traction		Electric traction		Diesel traction	
	1969 (millions)	1968 (millions)	1969 (millions)	1968 (millions)	1969 (millions)	1968 (millions)
Germany	36,286.0	45,352.0	180,832.0	151,551.0	36,456.0	32,485.0
Belgium	-	-	16,019.0	15,620.0	15,779.0	14,249.0
France	12,510.0	19,020.0	184,830.0	171,030.0	46,220.0	39,040.0
Italy	1,947.0	1,940.0	98,844.0	82,914.0	7,298.0	8,161.0
Luxembourg	1.6	1.3	880.2	758.7	1,034.7	980.5
Netherlands	-	-	19,872.8	18,630.2	6,745.9	6,625.6
E.E.C. countries	50,744.6	66,313.3	501,278.0	440,503.9	113,533.6	101,541.1
Austria	3,131.3	3,449.2	24,851.7	23,295.0	2,574.8	2,396.3
Denmark	70.9	116.6	1,425.3	1,255.7	11,402.9	10,912.9
Spain	5,151.0	8,150.0	19,724.0	18,407.0	15,644.0	13,515.0
Great Britain	-	.	.	.	.	.
Greece	647.0	395.1	-	-	2,740.3	2,398.1
Ireland	-	-	-	-	.	.
Norway	.	.	.	.	.	.
Portugal	376.4	586.1	2,781.4	2,725.2	3,171.7	2,743.5
Sweden	7.0	6.0	41,538.0	39,463.0	2,407.0	2,503.0
Switzerland	0.5	1.1	32,315.0	30,610.0	71.2	71.2
Turkey	14,127.0	13,607.0	643.0	488.0	4,899.0	4,424.0
Yugoslavia	23,245.0	23,504.0	9,366.0	6,788.0	19,473.0	18,867.0
Other countries	46,756.1	49,815.1	132,644.4	123,031.9	62,383.0	57,831.0
Total	97,500.7	116,128.4	633,922.4	523,535.8	175,917.5	159,372.1

Table 9. NUMBER OF LOCOMOTIVES

Type of traction	1969				1968			
	Units		Per cent		Units		Per cent	
Steam locomotives	7,095	(3,612)	21.8	(19.6)	8,103	(4,398)	24.5	(23.4)
Electric locomotives	9,849	(6,613)	30.2	(36.1)	9,682	(6,543)	29.3	(34.7)
Diesel locomotives	15,667	(8,154)	48.0	(44.3)	15,242	(7,896)	46.2	(41.9)
Total	32,611	(18,379)	100.0	(100.0)	33,027	(18,837)	100.0	(100.0)

Table 10. NUMBER OF ELECTRIC LOCOMOTIVES, BY TYPE OF CURRENT

Type of current	1969			1968		
	Units		Per cent	Units		Per cent
DC 660-1200 V	73 (1)	(-)	0.7	73 (1)	(-)	0.7
DC 1500 V	1,510	(1,363)	15.3	1,525	(1,376)	15.8
DC 3000 V	2,187	(1,834)	22.2	2,145	(1,812)	22.2
AC single-phase 16 2/3 HZ	4,551	(2,247)	46.2	4,462	(2,204)	46.1
AC single-phase 50 HZ	1,105	(803)	11.2	1,086	(802)	11.2
AC three-phase	141	(137)	1.5	146	(142)	1.5
2 types of current	242	(200)		210	(183)	
3 types of current	8	(7)	2.9	8	(7)	2.5
4 types of current	32	(22)		27	(17)	
Total	9,849	(6,613)	100.0	9,682	(6,543)	100.0

1) Including 59 diesel-electric locomotives

Table 11. NUMBER OF DIESEL LOCOMOTIVES, BY RATED OUTPUT

	1969			1968		
	Units		Per cent	Units		Per cent
Up to 350 CV	4,894	(2,518)	31.3	5,005	(2,538)	32.8
From 351 to 1,000 CV	4,516	(3,263)	28.8	4,731	(3,195)	31.0
From 1,001 to 2,000 CV	4,215	(1,649)	26.9	4,302	(1,983)	28.2
Over 2,000 CV	2,042	(724)	13.0	1,204	(180)	8.0
Total	15,667	(8,154)	100.0	15,242	(7,896)	100.0

Table 12. FREIGHT WAGONS

Year	Total		Wagons belonging to railway administrations Of which "POOL" wagons		Privately-owned wagons Number	
	1969	1968	1969	1968	1969	1968
Germany	273,965	272,197	85,879	86,204	42,088	42,088
Belgium	43,312	43,612	17,707	18,021	4,651	5,106
France	242,969	241,100	89,109	90,000	65,422	75,300
Italy	112,755	113,697	24,000	24,216	12,383	12,070
Luxembourg	3,342	3,483	1,463	1,533	482	487
Netherlands	17,788	19,960	4,800	4,800	-	1,310
E.E.C. countries	694,121	694,049	222,958	224,774	125,026 (1)	136,361
Austria	34,472	33,666	8,212	8,179	4,245	3,682
Denmark	10,265	10,390	4,618	4,591	664	734
Spain	43,953	54,162	-	-	11,289	11,352
Great Britain	409,374	430,275	-	-	19,043	25,296
Greece	7,197	.	-	-	-	.
Ireland	10,012	9,805	-	-	163	163
Norway	9,842	10,089	-	-	459	469
Portugal	8,250	7,671	-	-	649	669
Sweden	47,288	47,555	-	-	5,204	5,266
Switzerland	25,441	25,632	9,157	9,147	6,683	6,699
Turkey	16,675	16,770	-	-	1,247	1,227
Yugoslavia	58,069	58,889	-	-	-	-
Other countries	680,838	704,904	21,987	21,807	49,646	31,328
Total	1,374,959	1,398,953	244,945	246,681	174,672 (1)	191,918

1) Excluding the Netherlands

Table 13. FREIGHT WAGONS (EXCLUDING THE UNITED KINGDOM)

	1969 (Number)		Per cent
A. Railway wagons (1)			
(a) All wagons of which :			
Open wagons	331,094	(222,361)	34.3
Covered wagons	407,201	(290,552)	42.2
Other wagons	227,290	(181,208)	23.5
Total (a)	965,585	(694,121)	100.0
(b) EUROP fleet of which :			
Open wagons	114,844	(105,717)	46.9
Covered wagons	92,597	(81,764)	37.8
(c) POOL fleet :			
Flat wagons	37,504	(35,477)	15.3
Total (b) and (c)	244,945	(222,958)	100.0
(d) Standard wagons	187,217	(176,736)	54.1
(e) Unified wagons	158,677	(106,745)	45.9
Total (d) and (e)	345,894	(283,481)	100.0
(f) Wagons with four or more axles	87,355	(74,283)	9.0
B. Privately-owned wagons (1) of which :			
Open wagons	23,087	(19,788)	14.8
Covered wagons	10,486	(8,585)	6.8
Other wagons	122,076(2)	(97,963)	78.4
Total B of which :	155,649	(126,336)	100.0
Wagons with four or more axles	32,126(2)	(28,393)	20.6

1) Excluding United Kingdom wagons

2) Excluding Netherlands wagons

Table 14. LENTH OF ELECTRIFIED NETWORK BROKEN DOWN BY TYPE OF CURRENT

Type of current	All E.C.M.T. countries			E.E.C. countries		
	km	Per cent		km	Per cent	
DC 600-1,200 V	2,239	4.4		314	1.1	
DC 1,500 V	7,258	14.2	41.4	6,539	22.9	54.4
DC 3,000 V	11,733	22.8		8,649	30.4	
Single-phase AC 16 2/3 HZ	22,654	44.2		8,280	29.0	
Single-phase AC 50 HZ	6,893	13.4	58.6	4,272	15.0	45.6
Three-phase AC	499	1.0		452	1.6	
Total	51,276		100.0	28,506		100.0

Table 15. POWER CONSUMPTION FOR TRACTION

	1969				1968			
	(1,000 t CE) (2)		Per cent		(1,000 t CE) (2)		Per cent	
Steam(1)	6,181	(2,536)	30.4	(23.1)	8,023	(3,275)	40	(32)
Diesel	3,656	(1,552)	17.9	(14.2)	3,239	(991)	15	(10)
Electric	10,535	(6,894)	51.7	(62.7)	9,399	(5,983)	45	(58)
Total	20,372	(10,982)	100.0	(100.0)	20,661	(10,249)	100	(100)

1) Coal including lignite and fuel oil.

2) Conversion of energy into coal equivalent (CE) :

Coal	= 1 t CE
Lignite	= 0.5 t CE
Fuel oil	= 1.35 t CE
Diesel oil	= 1.4 t CE
KWh	= 0.5 t CE

Table 16. PASSENGER TRAFFIC

	Passengers carried		Passenger-km	
	1970 (1) (thousand)	1970-69 (Per cent)	1970 (1) (thousand)	1970-69 (Per cent)
Germany	258,119	+ 7.8	8,185,800	+ 7.6
Belgium	51,811	- 0.6	1,858,619	+ 1.9
France	166,310	+ 3.8	9,445,000	+ 5.1
Italy	88,573	+ 6.9	7,202,267	+ 10.7
Luxembourg	2,464	+ 2.8	50,403	+ 2.2
Netherlands	47,292	+ 5.2	1,844,700	+ 9.2
E.E.C. countries	614,569	+ 5.6	28,586,789	+ 7.2
Austria	38,491	+ 1.7	1,433,499	+ 3.2
Denmark	28,799	- 0.6	753,762	+ 3.1
Spain	34,199	+ 5.4	2,765,441	+ 7.4
United Kingdom	187,850	+ 4.2	.	.
Greece	.	.	.	.
Ireland	2,050	0.0	112,410	+ 10.0
Norway	4,849	- 4.8	216,800	- 7.2
Portugal	26,690	+ 1.2	665,639	+ 5.4
Sweden	16,033	+ 3.8	1,151,000	+ 3.0
Switzerland	57,600	+ 1.1	1,866,000	+ 1.7
Turkey	25,042	+ 8.3	1,382,481	+ 15.5
Yugoslavia	39,928	- 10.8	2,492,233	+ 1.7
Other countries	461,531	+ 1.8	12,839,265	+ 4.7
Total	1,076,100	+ 3.9	41,426,054	+ 6.5

1) Results of first months

Table 17. FREIGHT TRAFFIC

	Tonnes carried		Tonne-km	
	1970 (2) (thousand)	1970-69 (per cent)	1970 (2) (thousand)	1970-69 (per cent)
Germany	84,870	+ 8.9	17,017,100	+ 13.0
Belgium	16,086	- 3.6	1,802,841	+ 1.9
France	63,673	+ 3.5	17,614,000	+ 4.9
Italy	15,208	+ 12.4	4,599,717	+ 2.5
Luxembourg	4,824	+ 12.6	183,163	+ 8.3
Netherlands	6,953	+ 10.1	909,588	+ 9.0
E.E.C. countries	191,614	+ 6.3	42,126,409	+ 7.7
Austria	11,151	+ 9.2	2,264,503	+ 15.8
Denmark	1,936	+ 10.0	416,854	+ 11.6
Spain	7,079	+ 4.7	2,389,549	+ 20.3
United Kingdom	51,690	- 1.3	6,192,290	+ 4.9
Greece	.	.	.	.
Ireland	720	- 13.3	116,340	- 16.2
Norway	2,707 (1)	- 44.8	348,200 (1)	- 11.8
Portugal	977	+ 10.3	199,932	+ 8.3
Sweden	12,194	- 15.3	3,486,715	0.0
Switzerland	10,040	+ 8.9	1,481,000	+ 9.9
Turkey	2,759	+ 1.5	1,329,965	+ 21.5
Yugoslavia	14,673	+ 8.9	3,823,971	+ 7.7
Other countries	115,926	- 1.4	22,049,319	+ 7.9
Total	307,540	+ 3.3	64,175,728	+ 7.8

1) A large decline in traffic during the first quarter of 1970 was due to the decline in transport of Swedish ores following the miners'strike at the end of 1969.

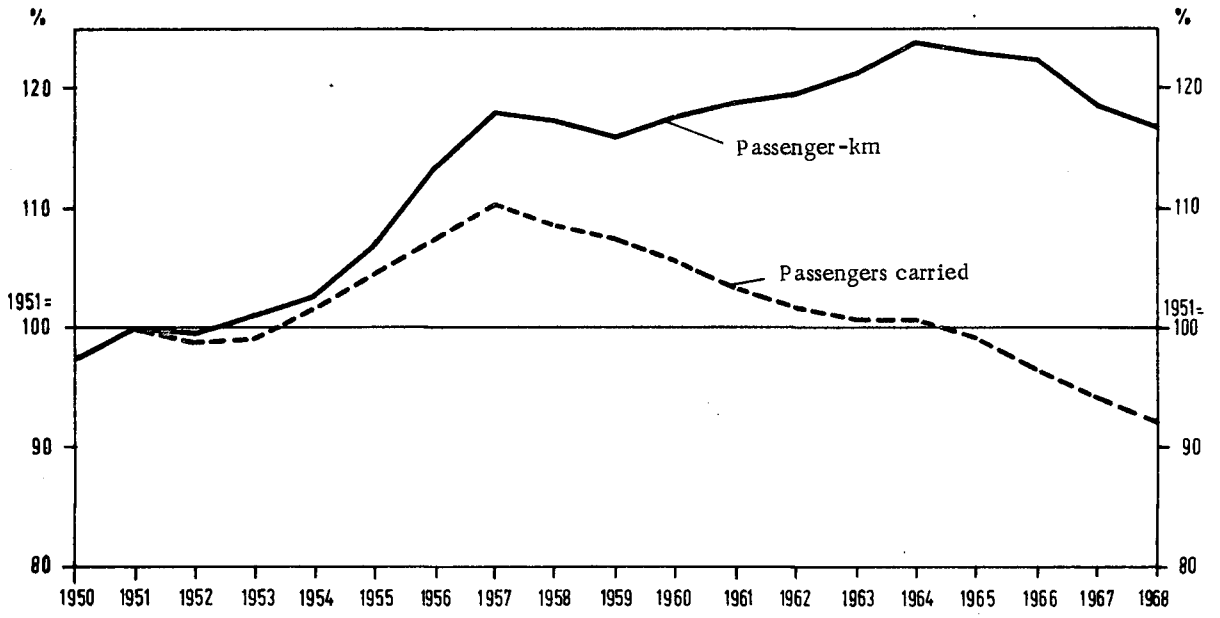
2) Results of first months

Annex 1

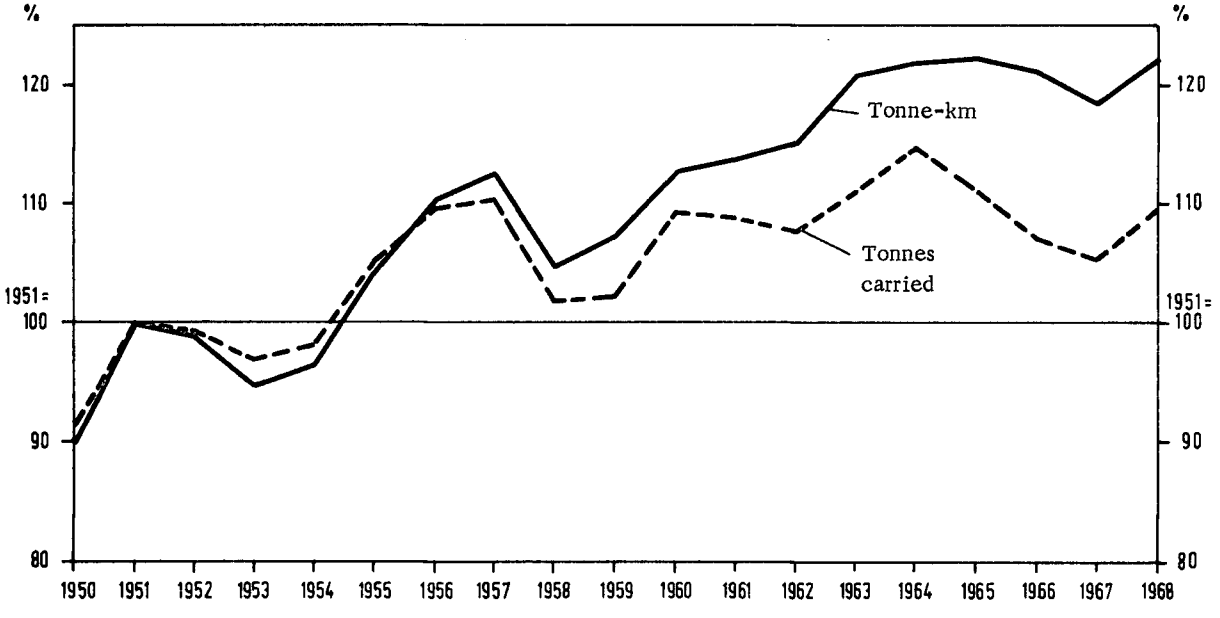
Graph 1

TREND OF RAILWAY TRAFFIC

a) Passengers



b) Freight

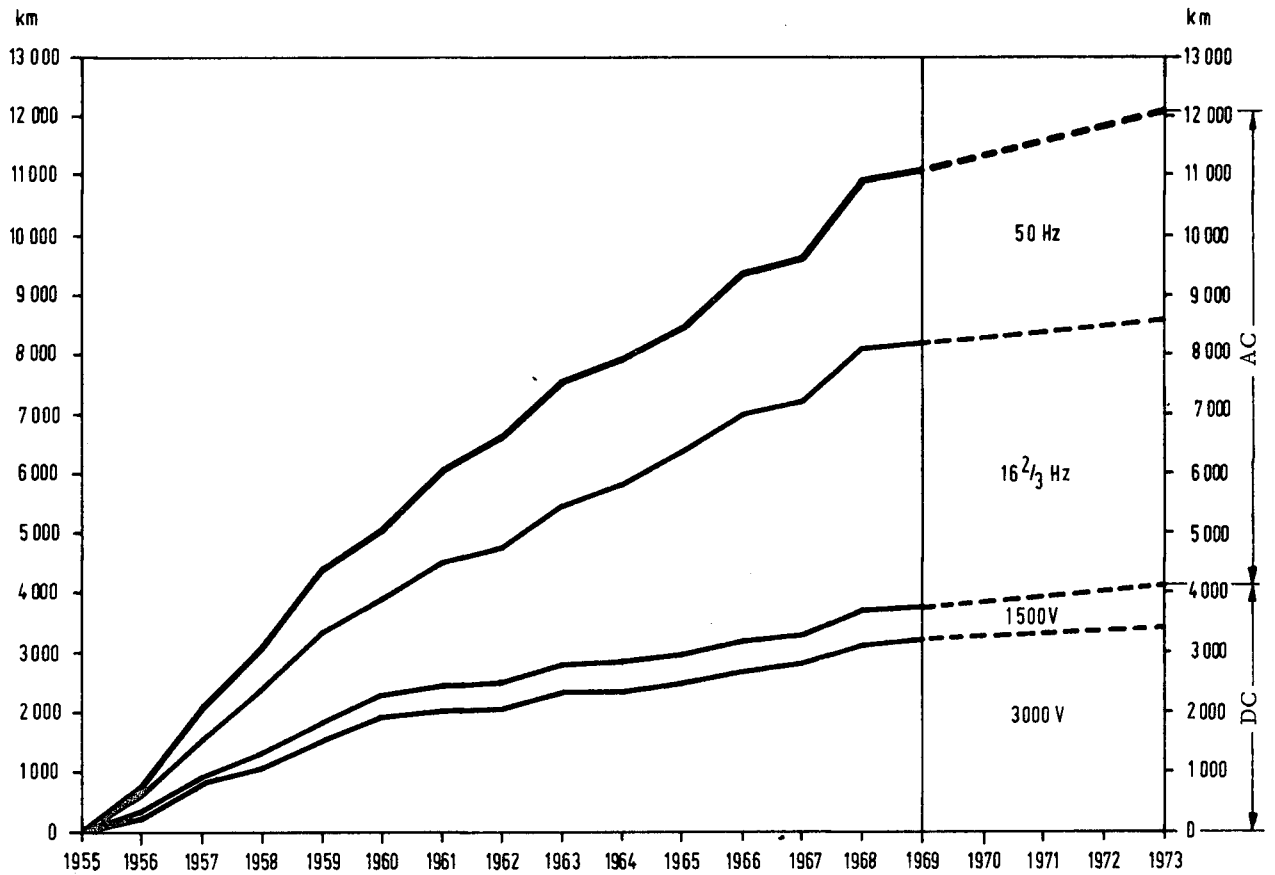


Annex 2

Graph 2

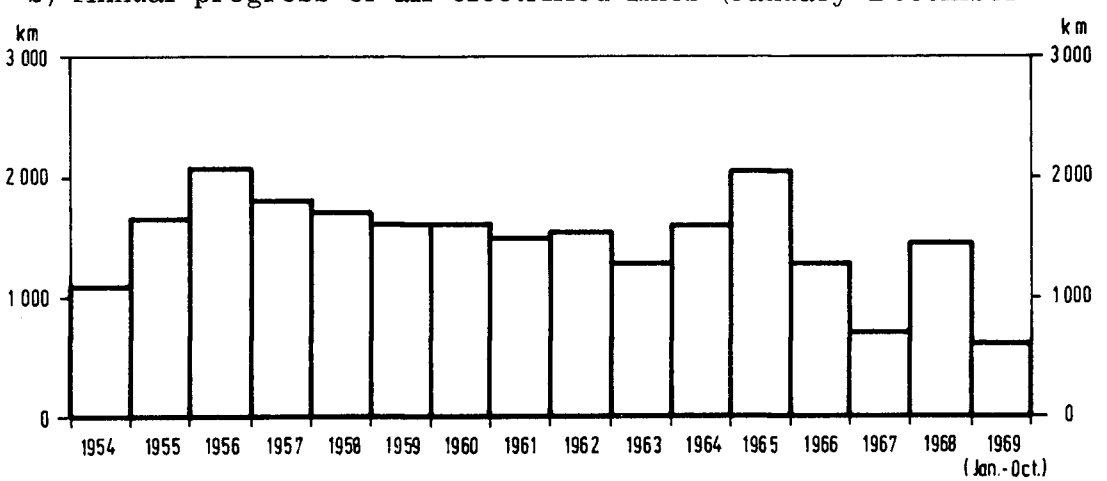
DEVELOPMENT OF ELECTRIFICATION

a) Progress with electrification of European trunk lines (October) (1)



(1) Excluding results of current conversion programme.

b) Annual progress of all electrified lines (January-December



Annex 3

PASSENGER TRAFFIC TRENDS IN INDIVIDUAL COUNTRIES

Germany

The economic upturn in 1970 had a decisive influence on the figures for rail passenger traffic. In addition, the efforts of the Deutsche Bundesbahn to make rail travel more attractive, by offering special terms for off-season travel, began to yield results. The figures for January-April 1970 justified the hope of an improvement compared with 1969.

Belgium

The number of passenger-km has hardly varied. The average journey length has increased slightly, but the number of passengers carried is slightly lower.

The small increase in passenger traffic is the result of different tendencies in the various categories.

The increased number of ticket-holders is mainly due to the rise in international tourism, but this increase in international traffic is offset by a slight fall in internal traffic.

Numbers of full-fare passengers increased by 5. 3 per cent, and those of reduced-fare passengers fell by 3. 3 per cent.

The increase in the number of ordinary season ticket-holders is the result of a growing demand for 5, 10 and 15-day season tickets, and a movement into this category of some weekly reduced-rate season ticket-holders.

The result is a decline in the last-mentioned category, accentuated by the increase in private car ownership and the establishment of new industries in areas where manpower is available.

The number of first-class passenger-km is increasing, especially in the categories of reduced fares and one to three month workers' season tickets ; the increase is however partly offset by the shift from first-class school season tickets to second-class.

1970 traffic :

For the first five months of 1970, passenger traffic amounted to 107. 8 million passengers and 3, 448. 4 million passenger-km.

Compared with the corresponding period of 1969, the number of passengers fell by 0. 5 per cent and the number of passenger-km increased by 0. 4 per cent.

Almost all the increase in the traffic was in the category of full-fare passengers, while there was an appreciable fall in numbers of workers' season ticket-holders.

The trend in this last-mentioned traffic is due to increased private car ownership and the establishment of new industries in areas where manpower is available.

France

1969 traffic was marked by a much larger increase in passenger-km than in passengers carried, which reflects an increase in average length of journey, from 137 km in 1968 to 146 km in 1969 for main-line traffic and from 15. 9 km to 16. 1 km for suburban traffic.

In the first months of 1970, the trend was towards a higher rate of increase in passenger traffic, mainly on the main lines.

Italy

The greater increase in passenger-km than in numbers of passengers carried is due to an increase in average journey length : 91. 8 km in 1969 compared with 89. 4 km in 1968.

The first two months of 1970 showed a favourable trend in passenger traffic, which was 2. 49 per cent higher for passengers carried and 3. 65 per cent higher for passenger-km than in the same period of 1968.

Luxembourg

The increase recorded for passenger traffic is due to a slight improvement in traffic generally and more particularly international traffic. This last type of traffic improved substantially at the beginning of 1970.

Netherlands

An increase in passenger-km can be explained by the better quality of service, by the opening of new suburban stations and by offers of special fares for young people, holders of one-day tickets, and passengers aged 65 and over.

Austria

The Austrian Federal Railways experienced a further decline in numbers of passengers carried, with the exception of the Wiener Schnellbahn. This fall appears to be due to an increase in fares with effect from 1st January, 1969 for distances up to 140 km, and to an increase in private car ownership. For distances over 140 km, numbers of passengers increased by approximately 25 per cent. The increase in passenger-km produced an increase of approximately 14 per cent.

During the first months of 1970, passenger traffic tended to increase, mainly owing to the greater use made of railways because of bad weather.

Denmark

The increase recorded in 1969 which, according to the information at present available, was continuing in January 1970, is due to the persistence of a favourable economic trend.

Spain

Passenger traffic increased by 6.85 per cent in 1969, which was a recovery after the fall in previous years. The upward tendency continued during the first three months of 1970, during which period traffic increased by 7.39 per cent compared with the same period last year.

Some new services were introduced in 1969 ; among them must be mentioned the Barcelona-Geneva TALGO service and the Madrid-Paris "Puerta del Sol" service.

United Kingdom

The number of passengers carried increased by approximately four million, representing a rate of increase of less than 1 per cent. The increase in inter-city traffic, however, was almost 3.6 per cent in terms of average journey length and 4.1 per cent in terms of passenger-km.

Greece

There were favourable results, due to fare policy, the main features of which are :

- reduced prices for certain tickets ;

- reductions of up to 50 per cent for certain categories of passengers (students, etc.) ;

- special rates for excursions ;

- special facilities for groups, etc.

Ireland

The increase in passenger traffic compared with 1968 is possibly due to the following reasons :

a) A vigorous campaign was conducted at the beginning of the year to increase the attractiveness of return rail trips (an increase in the number of trains serving a region, and re-arrangement of timetables). These measures yielded greatly improved results.

b) Various new tariffs were introduced and existing ones adjusted ; this operation was on a large scale, and the results have been very considerable.

A comparison of the first months of 1970 with the year 1969 shows a very large increase in passenger traffic. The new rates continue to give good results.

Norway

There was a fall in passenger traffic

in 1969 similar to that experienced in previous years. This decline was most apparent over short distances, and is directly related to competition from private cars, the number of which increased by the exceptionally large proportion of 13 per cent from 1968 to 1969.

Sweden

The downward trend in numbers of rail journeys was halted in 1968. The recovery is probably mainly due to the creation of new shuttle services in the Stockholm area.

The increase in a number of railway journeys during 1969 was approximately 7 per cent. Traffic in terms of passenger-km increased by approximately 2 per cent. This increase consisted partly of short journeys in the Stockholm area, the remainder being long-distance journeys. Of the total, 26.2 million journeys (compared with 24.9 million in the previous year) were made on monthly and six-monthly tickets.

In the first quarter of 1970, the increase in the frequency of journeys was approximately 4 per cent while the increase in the number of passenger-km slightly exceeded 3 per cent.

Concerning local ferry traffic between Sweden and Denmark and the other continental countries, 3.4 million journeys (17 per cent less than in 1968) were made in 1969. This decline, which is accounted for by crossings to Denmark was partly due to restrictions on frontier trade. During the first half of 1970 the increase in the number of journeys was 10 per cent, which was mainly due to the Easter holiday traffic.

Switzerland

The number of passengers carried increased by 1.8 per cent over 1968, and was 231 million. As a consequence of the increase in the average journey length, the number of passenger-km increased by approximately 3 per cent. An analysis of the various categories of passengers shows that there was an increase in individual travel within Switzerland and internationally, stagnation in work and school traffic, and a fall only in numbers of passengers on season tickets and half-fare tickets, which fell below the level for the previous year. Economic prosperity in the country and abroad favoured passenger traffic in general, though the increasing congestion on the roads must also have grought a number of customers to the railways. During the first five months of the current year, traffic has been practically steady at the level of the previous year. The number of passengers holding season and half-fare tickets and individual passengers, declined, while international traffic increased considerably and work and school traffic also rose slightly. The general trend was probably influenced in a downward direction by the bad weather.

Turkey

The following were the main features of the 1969 trend :

- an increase in the number of long-distance passengers ;

- an increase in the number of second-class passengers using trains offering a high standard of comfort and speed ;

- a decline in the number of third-class passengers.

Annex 4

DETAILED INFORMATION ON FREIGHT TRAFFIC TRENDS

Germany

In 1969, there was an increase in wagon-load traffic, which can be explained by the continued improvement in the economic situation ; special mention should be made in this connection of the iron and steel, motor, and construction industries, which managed to carry even further the remarkable progress achieved in the previous year. The large demand for transport caused by the expansion of the economy was further increased by the transport measures taken by the Federal Government.

The volume of freight also remained high during the first months of 1970, for the same reasons as mentioned above.

Belgium

The increase in traffic observed in 1968 continued in 1969 in step with economic expansion.

The increase in terms of tonne-km, which was proportionately greater than that in terms of tonnes, was accounted for by the increase in the average haul per tonne of 1.5 per cent.

The expansion of traffic was mainly in international transport, and was connected especially with the very buoyant demand in the countries of the Community.

Internal traffic also increased (+ 4.3 per cent), especially in the metals and solid fuel sectors.

The increase in traffic affected all classes of freight except solid fuel.

This category, although sustained by large volumes of coke fines and coke, was affected by the gradual replacement of solid fuels by oil fuel and natural gas. In particular, there was a distinct decline in export and transit hauls, to France in particular. Despite a decline in the volume of sugar-beet transported, traffic in agricultural produce is increasing slightly with the constant expansion of international trade.

Because of increased activity in the iron and steel and other metal industries, transport overseas or to factories in Belgium and Luxembourg increased appreciably. Traffic in the metal products sector increased by 15.7 per cent, the greater part of this increase being in export traffic.

The increase in export shippings of cement and glass was the main reason for the rise in traffic in building materials, though this traffic also benefited from the expansion of the building industry.

In the quarrying products sector, the increase was mainly in export traffic, which was swollen by large despatches of stone blocks, ballast and marble to the Netherlands.

The increased output of the chemicals industry had a favourable influence on international transport, particularly transit traffic in potash fertilizers and sodium carbonate from France.

A large increase in transport of minerals, oils and greases was the result of growing supplies originating in the distribution centres for petroleum products in Belgium and Luxembourg.

The rapid expansion in transcontainer traffic was the main feature of the large increase in the miscellaneous products sector.

1970 results

During the first five months of 1970, wagon-load traffic was 28.7 million tonnes and 3,151.9 million tonne-km.

Compared with the corresponding period in 1969, these figures show increases of 3.1 per cent and 7.1 per cent respectively. This trend is again marked by an increase in the average

haul per tonne (+ 4 per cent).

The increase in traffic due to the continuation of high economic and industrial activity mainly affected the sectors close to the iron and steel, metals and chemical products industries.

The other freight-producing sectors were also in expansion, particularly the agricultural products sector, owing to the increase in international trade, and the petroleum products sector, owing to increased despatches to the distribution centres in Belgium and Luxembourg.

Solid fuels did not on the whole, however, share in this general trend, owing to their gradual replacement by oil, fuel and natural gas, and also to the strikes in the Campine in the coalfields in January and February.

International traffic showed an increasing trend ; internal traffic, on the other hand, an appreciable decline.

France

After being depressed from 1965 onwards, freight traffic showed a slight recovery in 1968 despite the disturbances of the second quarter of that year. In 1969, there was a large increase, almost entirely accounted for by wagon-load traffic.

Chemical products, paper, ores and perishable foodstuffs were among the main items in this improved traffic ; but the most striking increase was in metal products which increased by 20 per cent compared with 1968.

The first months of 1970 showed further progress over 1969, with an increase of the order of 5 per cent. Despite this increase, the number of wagons loaded was distinctly lower in 1970, due to an increase in the capacity of wagons as the freight wagon fleet is modernised.

Italy

Freight traffic declined by 1.06 per cent compared with 1968 in terms of tonnes carried, and increased slightly (+ 0.54 per cent) in terms of tonne-km. It was affected by the long strikes of last autumn, which led to reduced production in very important industrial sectors such as metalworking, iron and steel, etc.

A distinctly favourable trend began, on the other hand, during the first two months of 1970, with an increase of 11.25 per cent in tonnes carried and 10.43 per cent in tonne-km, compared with the corresponding months of 1969.

Netherlands

The volume of freight traffic increased from 25.8 to 26.4 million tonnes.

With the help of the firm of consultants McKinsey, the N. S. studied the profitability of wagon-load traffic. It became clear that because of inadequate returns they would have to withdraw from certain sectors of the market, but that there would in future, on the other hand, be a considerable possibility of expanding transport in whole train-loads, among which container transport in whole train-loads, among which container transport would play a continually increasing part. In 1969, the N. S. transported 66,000 containers to and from the seaports, compared with approximately 20,000 in 1968.

In 1969, normal wagon-load traffic increased by 5.5 per cent. The internal share of this traffic is expected to show a relative decline.

Austria

Despite strong competition, the freight traffic of the Austrian Federal Railways improved in 1969. This was due to a favourable trend in all sectors (internal traffic, imports, exports and transit). Transit traffic showed the largest increase (approximately 9 per cent in services and revenue). This result was due to an appreciable increase in transit tonnage over longer distances.

During the first months of 1970, freight traffic showed a further increase, which was again mainly in transit traffic. These favourable results reflect the economic expansion in Europe generally.

The Austrian Federal railways also obtained a large additional volume of traffic owing to the fact that inland waterway navigation was handicapped by a severe winter and low water levels.

Spain

The regression experienced in 1968 did not continue in 1969. The recovery, moreover, continued in the first three months of 1970, in which traffic increased by approximately 10.03 per cent compared with the same period in the previous year.

In 1969, a comprehensive restructuring operation was carried out with the closing of nearly 1,000 stations and modifications to services at 200 others. A study was made of the export traffic in oranges.

United Kingdom

There was a fall in the volume of coal transported, reflecting the long-term trend in the coal industry and the difficult social climate later in the year which curtailed production by approximately two million tonnes. A counter-vailing factor was the expansion of the iron and steel industry, growth in earth and ore movements, and a steady expansion in mineral oil traffic.

In 1970, traffic as a whole was slightly below the 1969 level (0.4 per cent). The principal cause is, however, to be found in the decline in coal traffic, for which transport of mineral oils provided the largest compensating factor.

Greece

There was an increase in traffic in terms of tonne-km, arising from :

- the introduction of an express freight train between Thessaloniki and Munich ;

- the tariff policy for long-distance hauls ;

- rail links between industrial centres and various factories.

Ireland

The slight decline in freight traffic in 1969 compared with 1968 was due to :

- the general strike of maintenance workers in February and March 1969, which had a serious effect on a large number of Irish industrial sectors ;

- the fall in quantities of fertilizer and sugar-beet carried (1968 having been a record year for sugar-beet production).

There was on the other hand an increase in traffic in :

- mineral oils ;

- cereals ; and

- import/export container traffic.

In the first months of 1970 rail freight traffic was affected by the strike which began on 2nd February, 1970 in the cement industry.

Luxembourg

The sharp increase in tonnes carried and in gross t-km hauled is due to the boom conditions prevailing generally and more particularly in the iron and steel sector which is by far the Luxembourg Railways' biggest customer.

Norway

In 1969, the economy was marked by great industrial prosperity.

This trend led to a rise in demand for transport. At the same time there was an increase in capacity which had the effect of creating severely competitive conditions on the transport market. This trend continued in the early months of 1970.

Sweden

Freight traffic was greatly influenced by the favourable situation of the economy, which created a considerable demand for transport. In the case of the Swedish railways it must be added that wagon-load traffic, on both internal and international routes, continued to rise steadily. In 1969, the total volume of freight carried on the S.J. network was 60 million tonnes. This is the highest volume ever transported, exceeding the 1968 figure by 60 per cent. Traffic in

terms of tonne-km amounted to 14.7 milliard, an increase of 8 per cent over 1968. This increase came mainly from wagon-load transport, transport of Lapland ores and parcels traffic having declined slightly compared with the previous year. The fall in Lapland ore traffic was due to a miners' strike in December 1969 and January 1970. Parcels traffic declined more slowly during 1969 than in the previous year. In order to improve the competitive position of rail parcels traffic, it is planned gradually to introduce arrangements for transporting them by container. Road deliveries of freight transported by rail will also be on a bigger scale from 1970 onwards.

The increase in the total volume of wagon-load traffic on the S.J. is mainly accounted for by forest products (mainly the raw material for the paper industry), iron and steel products, petroleum products and ores. Freight transported by containers or trailers continued to expand rapidly. In 1969, the volume of this traffic was approximately 350,000 tonnes, and the number of containers and pallets transported was approximately 78,000.

During the first half of 1970, the increase in the total volume of full wagon-loads was 7 per cent, while the Lapland ore tonnage fell by 44 per cent because of the strike mentioned above.

Switzerland

The C.F.F. achived several records in freight traffic in 1969. Among these were a monthly capacity exceeding 4 million tonnes, transit traffic of more than 10 million tonnes, and total traffic of 42.2 million tonnes, an increase of 7.3 per cent over 1968. The average length of haul also increased slightly, so that traffic in terms of tonne-km exceeded the level of the preivous year by 7.7 per cent. Transit, import/export and internal traffic all experienced a particularly remarkable rise in 1969. The positive results for freight traffic are also due to the business expansion in Switzerland and abroad ; this is especially true of transit traffic, which was considerably increased by the boom conditions in the German Federal Republic and Italy. In an exceptional year, all categories of freight, with the exception of inland traffic in coal (import/export and domestic traffic) and timber in transit, showed considerable increases. During the period January-May 1970, total traffic showed a further increase of the order of 7.8 per cent, which was even larger than in the previous year. Imports increased by 14.5 per cent, transit traffic by 6.4 per cent, internal traffic by 4.4 per cent and exports by 2.2 per cent. This result must also be ascribed to the favourable economic situation which is persisting in Europe. The particularly large increase in the import traffic was due to the increasing saturation of Swiss industrial capacity, which is also the explanation of the smallness of the rise in export traffic. Transit traffic was helped by the boom in the German Federal Republic and by increased import requirements in Italy (Italy's industry having been unable to meet domestic demand fully because of strikes).

Turkey

The following points must be mentioned :

- increase in traffic in live animals, fuel, iron ore, coal, fodder crops and straw ;

- a decline in traffic in sugar-beet, cattle, cement, fertilizers and cereals ;

- an increase in the average length of freight hauls.

REPORT BY THE COMMITTEE OF DEPUTIES ON TRAFFIC AND INVESTMENT TRENDS IN 1969

Chapter III - Roads

Contents

REPORT OF THE ROAD INVESTMENT SUB-COMMITTEE ON THE POSITION CONCERNING ROAD TRANSPORT AND THE INTERNATIONAL ROAD NETWORK AS AT THE END OF 1969

For the first time, this report contains information obtained from the questionnaire produced by the Working Party for the Improvement of Road Statistics.

The report falls into two parts.

Part I (vehicle numbers and transport output) is based on the questionnaire referred to. Some tables (e. g. Tables 6 to 10) contain relatively little information but they are included nonetheless to highlight the gaps in transport statistics and so help to see where improvements could be made

Part II concerns the infrastructure and broadly conforms to the traditional layout.

Part I

VEHICLE NUMBERS AND TRANSPORT OUTPUT

1. TREND OF MOTOR VEHICLE NUMBERS

1.1 Motor vehicles

Table 1 shows the changes in numbers of motor vehicles for eleven countries. The following points emerge :

a) Two-wheeled vehicles : the general decline (except in Switzerland) amounting in all to 3 per cent, confirms the tendency already apparent earlier on.

b) Private cars, which account for 86 per cent of the total vehicle population, are still increasing at rates ranging from 4 per cent (United Kingdom) to 22 per cent (Spain). The overall rate of increase is 7. 2 per cent. Though still fast, the pace is slackenging for it was 7. 8 per cent in 1968 and 9. 3 per cent in 1967. This declining trend has been apparent since 1964 when the rate of increase was 12. 3 per cent.

c) Public transport vehicles : the overall increase is 2. 2 per cent, but slight decreases are recorded for Belgium (-0. 2 per cent) and the United Kingdom (-0. 6 per cent). As only three countries gave the number of vehicles mainly assigned to urban transport no conclusions could be drawn on this point.

d) The number of road tractors (recorded for the first time in this report) is increasing fast (+ 5. 2 per cent on average), in some cases at a quicker pace than private cars (e. g. in Denmark, Norway and Switzerland). In the United Kingdom, however, there is a decrease of 11 per cent.

e) The number of lorries increased at rates ranging from 0 to 11 per cent depending on the country, the average being 3. 6 per cent. This rate of growth has remained fairly constant for some years, albeit with a very slight tendency to slacken off.

f) In all, the number of motor vehicles with more than two wheels has increased by 6. 7 per cent. As in the case of private cars, this rate of growth has shown a falling tendency for some years.

1.2 Goods vehicles

1.2.1 Numbers

In Table 2, the vehicles shown in column 6 of Table 1 are broken down into four payload categories ; trailers and semi-trailers (not shown in Table 1 as they are not classifiable as motor vehicles) are also included.

The overall increase in numbers

is 4.2 per cent.

Sharp increases are recorded for semi-trailers (+11.1 per cent) and lorries exceeding 10 tons payload (+11.6 per cent) even though the figures for this latter category dropped heavily in Austria and Switzerland.

For other categories of vehicles, the increase is much smaller ; in some countries there is even a decrease.

1.2.2 Capacity

Table 3 gives total capacity, in payload tons, for the categories of vehicles shown in Table 2.

On the whole, the overall increase in capacity (+6.3 per cent) exceeds the increase in the number of vehicles (+4.2 per cent) and so implies a higher average vehicle capacity.

If the column figures in Tables 2 and 3 are compared separately, however, it will be seen that the increase in average capacity mainly applies to lorries ; average capacity for trailers and semi-trailers has actually decreased.

However, this is not consistent with Table 4, which gives the average capacity of vehicles for the same categories as in Tables 2 and 3.

According to this Table, there is apparently an increase in payload for all categories, but it must be borne in mind that the figures for trailers and semi-trailers do not include Austria and Spain.

2. TRANSPORT OUTPUT

2.1 Vehicle-km on national territory

These figures cover both national and foreign vehicles.

Table 5 summarises the information collected.

The following points emerge :

a) Two-wheeled vehicles : the decrease in terms of vehicles-km is greater than that for the number of vehicles, at least for the six countries shown in Table 5. This implies not only fewer vehicles but less use of existing ones.

b) For private cars, the increase in terms of vehicle-km is 6.1 per cent (eight countries), but generally smaller than the increase in numbers, again implying less intensive use. Austria, Denmark and Ireland are the only exceptions to this rule.

c) For public transport vehicles (nine countries) the increase (2.3 per cent) is, on the whole, comparable with the increase in numbers, but the figures for individual countries indicate increased use of such vehicles as a general rule, except in Denmark, France and Norway.

d) For goods vehicles (four countries), the overall increase (3.6 per cent) is comparable with the increase in numbers, but the figures for individual countries show a bigger increase for vehicle-km in five countries out of the nine for which data are available (Austria, Denmark, Luxembourg, the United Kingdom and Ireland). The breakdown between articulated vehicles and other vehicles (column 4 and 5 of Table 5) contains too few data for any conclusions to be drawn on this point.

2.2 Passenger transport

To cover the entire range of transport operations involving a given country, they must be subdivided under three heads according to whether they are performed by :

- national vehicles on national territory ;

- foreign vehicles on national territory ;

- national vehicles on foreign territory.

When several countries are involved, the last two sub-divisions overlap and obviously must not be counted twice.

In Tables 6, 7 and 8 passenger transport is sub-divided in this way.

They contain so many gaps that no general conclusion can be drawn

2. 3 Goods transport

In tables 9 and 10 the breakdown referred to in the foregoing paragraph is set out in slightly different form. This is mainly due to the method of data collection.

"Internal transport" means transport operations performed inside the frontiers of a given country by vehicles of that country or by foreign vehicles, excluding those starting or ending abroad.

"International transport" means transport operations performed by vehicles of the country concerned crossing at least one frontier, and transport operations performed within the country concerned by foreign vehicles coming from abroad.

Clearly, these definitions are fully in line with the three sub-divisions referred to in the foregoing paragraph.

Tables 9 and 10 cover total goods transport and transport for hire or reward respectively.

Here too there are many gaps as no column contains more than five replies, and it is therefore difficult to draw any general conclusion. It may be noted however, that with a slight decline (-1. 8 per cent) for tonnes carried and -0. 4 per cent for t/km in international transport, the Luxembourg figures somewhat contrast with the increases - sometimes of considerable size - reported by other countries.

2. 4 Average distance travelled yearly

This information had been requested for all categories of vehicles listed in Tables 1 and 2. As very few countries were able to give the breakdown in so much detail, the figures availabe are grouped together for a few major categories of vehicles in Table 11.

The countries concerned did not indicate how these figures were evaluated. In any event, they do not match the distances on national territory that could be calculated by dividing the number of vehicle-km on national territory (as shown in Table 5) by the number of vehicles (as shown in Tables 1 and 2). It follows that these estimates must be based on other methods.

Differences as compared with the previous year are shown in brackets but no particular tendency can be traced.

3. Fuel consumption

Table 12 shows the figures for nine countries.

The seven countries for which comparison with 1968 is possible show an overall increase (by weight) of 5. 4 per cent for petrol and 9. 49 per cent for diesel oil.

By comparison with other types of fuel, L. P. G. consumption is relatively insignificant.

Part II

INFRASTRUCTURE

1. MOTORWAYS IN SERVICE

Table 13 shows, for countries, the total length of motorways in service at the end of 1968 and the end of 1969.

The increase for the countries concerned is 884 km, as compared with 712 km in 1968. The United Kingdom scores the highest increase with 244 km put into service, followed by France (181 km) and Germany (143 km).

A noteworthy point is the large proportion of single-carriageway motorways in certain countries (notably Norway and Switzerland).

2. INTERNATIONAL NETWORK

The "E" network is defined only by the names of places served by each route. No obligation is laid down as to the category (i. e. width) of the roads that it comprises. This is left to each country to decide in the light of its own requirements, and most countries have found it necessary to draw up a development programme providing :

- either for the improvement of existing roads to bring them up to international standards ;

- or the construction on different alignments of entirely new trunk roads, usually motorways, which are anly partly in existence at present. Obviously, these new trunk roads can be integrated only gradually into the "E" network as and when they can be substituted for existing roads without this involving any break in the route to which they belong.

The following distinction must therefore be borne in mind :

- the existing network, meaning the unbroken routes at present constituting, whether on a permanent or provisional basis, the international network;

- the future network, meaning the "theoretical" network defined above, which comprises some sections not yet built and others which are not necessarily integrated in the existing network.

Table 14 shows, for 11 countries, the length of the existing international network. This has increased by 12 per cent (2,963 km), mainly as a consequence of the inclusion of additional routes in the United Kingdom where the length of the international network has risen from 1,629 to 4,540 km, i. e. an increase of 2,911 km.

The proportion of the total length of the network accounted for by motorways has risen from 20 to 22 per cent.

Table 15 shows, for these same countries, how much of the existing network conforms to the dimensional standards specified in the 1950 Declaration on the construction of international roads.

The overall proportion that does comply with these standards has risen from 66 to 69 per cent. For motorways taken singly, however, the proportion is unchanged (97 per cent) as a consequence of the coming into service (in Switzerland for instance) of single-carriageway motorways which - for the purposes of this review - are not regarded as complying with the standards in question.

Table 16 shows how much of the network is regarded as being of adequate capacity for the traffic it handles, irrespective of whether the sections concerned are or are not up to standard.

For the 10 countries whose figures can be compared with those for the previous year, the overall proportion remains unchanged (78 per cent).

There is however an improvement for roads in Category II (i. e. roads with more than two lanes). For roads in Category I and motorways, the proportion has dropped, which means that in their case road congestion is becoming worse.

Moreover, if the figures are compared with those in Table 15, it can be seen that the length of sections of adequate capacity has fallen below that of "standardized" sections, even in the case of motorways and roads in Category II. This means that, even though "standardized", some sections are still of inadequate capacity. The only remedy in such cases is to move them into a higher category.

Table 17 relates to the future network. The total length of this network (or at least that which follows from existing programmes) and the length already completed are shown side by side.

It will be seen that the total length of the planned motorways network has increased substantially in certain countries (Germany, Norway and Swit-

zerland), but at the expense of lower categories of roads, the total length of the network remaining practically unchanged.

This state of affairs shows that programmes are being adapted to present-day needs, but it also means that, with the exception of motorways, the length of roads in the future network which already are in final form has decreased and, for the eight countries under review taken together, the overall rate of completion has dropped from 45 to 41 per cent.

3. INVESTMENT

Table 18 contains the data which could be collected on this point. The figures refer to gross investment.

Investment in the international network of the 11 countries which supplied information has risen by 12 per cent as compared with 1968 but falls short of the forecasts (by about 91 per cent). The forecasts for 1970 (for eight countries) exceed expenditure in 1969 by about 13 per cent, and the corresponding forecasts for 1969 by about 3 per cent.

For road networks as a whole (9 countries) the forecasts for 1970 are 7 per cent below those for 1969.

For the seven countries whose figures can be compared, planned investment in the international network in 1970 amounts to 21 per cent of the total as compared with 19 per cent in 1969.

4. CURRENT DEVELOPMENTS ON MAIN EUROPEAN ARTERIES

Information concerning each route is grouped in such a way as to give a general idea of the work in progress.

The figures given for length are net, and do not therefore include any sections overlapping with a route identified by a smaller code number, nor do they include any sections outside the territory of the E. C. M. T. countries.

E1. United Kingdom - Italy (3,095 km)

In France, 131 km of new motorway were put into service in 1969. The sections concerned were : Athie - Pouilly (57 km), Mâcon Nord - Villefranche (42 km), Bonpas - Sênas (22 km) and Roquebrune - Menton (10 km). 189 km of motorway are expected to be completed in 1970 on the following sections : Rouen Sud- Louviers (22 km), Pouilly - Mâcon-Nord (116 km), Limonest - Ecully (6 km), and Sênas - Vitrolles (39 km). Projects for 1972 provide for the construction of 51 km of motorway : 17 km on the section west of Aix-en-Provence, and 34 km on the section linking Le Luc and Puget sur Argens. A further section linking Nice Nord-Est to Roquebrune is planned for the near future

E2. United Kingdom - Italy (Brindisi) - (2,233 km)

In Switzerland, 27 km of two carriageway motorway and 13 km of two lane road (Category I) are being built on this route.

E3. Portugal - Sweden (3,586 km)

In Spain, development work is in progress at various points on route E 3; in particular, a new bridge on the Tormes at Salamanca and an alternative route at St. Sebastian.

In France, the 4 km by-pass south of Tours is to come into service in 1970. The 8 km Saint-Jean-de-Luz by-pass is to come into service in 1971. Projects for motorway construction in 1972 provide for 10 km on the Lille Nord-Est - Tourcoing - Mouscron section and, for 1973, 40 km on the section south west of Paris to Orléans. Large sections between Orléans and Tours are likely to be put in hand in 1972. The link-up of French and Belgian motorways between Lille and Courtrai is also likely to be achived in 1972.

In Belgium, the construction of the E3 is proceeding on its entire length in Belgian terriotry. Various sections amounting in all to 42 km will be completed in 1970.

In the Netherlands, the Ommel - Middenpeelweg section, approximately 17 km in length, came into service on 26th June, 1969. The construction of the section running from Middenpeelweg to Maasbrug near Venlo is proceeding and is likely to be completed in 1970. The section between the Meuse bridge and the German frontier is open to traffic since 16th February, 1970.

In Germany, two motorway sections are under construction : Hamburg - Flensburg (185 km), including the Elbe tunnel (scheduled for completion : 1969-1974), and the section from the frontier between Germany and the Netherlands to Duisburg (scheduled for completion : 1975-1976).

In Denmark, 19 km of motorway linking up with the tunnel under the Limfjord at Aalborg are under construction ; a 10 km motorway section is under construction around the town of Randers.

E4. Portugal - Finland (4,883 km)

In Spain, various development work's are in progress, including an alternative route through Torrejon, a motorway section between Barcelona and Gerona and another between Barcelona and Molins de Rey.

In France, the sections from Béziers to Narbonne (33 km) and north west of Nîmes (18 km) are to come into service in 1971. Projects for motorway construction in 1972 include a 15 km section north west of Nîmes (2nd section).

Large sections are likely to be put in hand in 1972 between Chambéry and Annecy. The Perpignan - Le Perthus motorway (E4 - 25 km) is to be undertaken shortly to improve the link with Barcelona.

In Switzerland, 29 km of two carriageway motorway are under construction on this route.

In Germany, the Hamburg - Basel section up to the Frankfurt - Mainz junction is being developed (date of completion : 1972) and 10 km are being widened on the Hamburg - Lübeck North section (date of completion : 1974).

In Denmark, two motorway sections are under construction : 20 km between the Copenhagen ring road and the south of Køge and 5 km on the Copenhagen ring motorway.

E5. United Kingdom - Turkey (4,085 km)

In Belgium, the construction of the Brussels - Liège motorway (90 km) is proceeding. Planned date of completion : 1972-1973.

In Germany, 51 km of motorway are under construction between Nürnberg and Pasberg (date of completion : 1971) on the Deggendorf - Passau section up to the bridge on the Danube near Schalding and Deggenau (date of completion : 1972), and 5.5 km on the Schalding - Heining section (date of completion : 1970).

E6. Italy - Norway (2,485 km)

In Germany, 37 km of motorway are under construction on this route.

E8. United Kingdom - Poland (610 km)

In the Netherlands, the section between Terschuur and Apeldoorn is expected to come into service at the end of 1971. In the meantime, work has also begun on the construction of the road between Apeldoorn and Holten ; this too is expected to be completed by the end of 1971.

In Germany, 109 km of motorway are under construction between Rheine and Bad Oeynhausen (schedule for completion : 1975-1980).

E9. Italy - Netherlands (1,217 km)

In Switzerland, 66 km of motorway are under construction : 43 km of two carriageway motorway, 16 km of single carriageway motorway (St. Gothard road tunnel) and 7 km of two lane road (Category I).

In Belgium, a motorway over the entire Belgian section of this route (160 km) is planned. An "inter-communal"

company (i. e. made up of local authorities) has been formed for this purpose. At present, 7 km of motorway are in service north of Liège.

In France, 14 km of motorway were put into service in 1969 on the Habsheim - Bartenheim section and 5 km on the section north west of Basle are to come into service in 1970 ; 3 km of motorway are to come into service on the Strasbourg "west link road" in 1971. Plans are being made for linking up the Habsheim - St Louis motorway with the urban area around Basle.

In the Netherlands, the Europaplein clover leaf at the intersection of national roads Nos. 78 and 75 (E9) was opened to traffic on 27th June, 1969, as was the Kelpen - Nederweert section on 27th June, 1970. The conversion of the Weert - Leende section to motorway standards is in progress (date of completion : 1972) Work on the 's-Hertogenbosch motorway by-pass is proceeding. The section south of the Meuse, including the Eupel bridge, and the section north of this river, will both be completed by the end of 1970.

E10. France - Netherlands (546 km)

In France, 36 km of motorway are to come into service in 1971 on the Hordain - Crespin section. Projects for 1973 provide for the construction of 43 43 km of motorway on the Combles - Hordain section. The link-up of French and Belgian motorways between Valenciennes and Mons is likely to be completed by 1972.

In Belgium, construction of a motorway from the French to the Dutch frontier is in progress on the best part of this route. 23 km have come into service south of Brussels.

In the Netherlands, a 21 km section has been widened to motorway standards on the main dyke and a by-pass with separate carriageways was open to traffic near Franeker on 16th September, 1969.

E. 12. Paris - Sarrebrüchen - Nürnberg (623 km)

In France, 4 km of the section to the west of Sarrebrüchen came into service in 1969, 5 km of this same section will be put into service in 1970 and 44 km on the Metz - Freyming section in 1971. Projects for 1973 provide for the construction of 6 km on the Merlebach - Morsbach section.

In Germany, three motorway sections are under construction : 138 km on the Heilbronn - Nürnberg section (scheduled for completion : 1974-1980), 53 km on the Nürnberg - Amberg section (date of completion : 1971) and 8 km on the Altensittenbacl - Pommelsbruun part of the Lauf - Hartmannshof section (date of completion : 1971).

E13. Lyons - Venice (688 km)

In France, 43 km of motorway to the east of Lyons are planned for 1973 and large sections are likely to be put in hand between Lyons and Chambéry in 1972.

The Frejus tunnel is still under consideration but the Lyons - Chambéry Chamous motorway will be completed fairly quickly.

E17. Chagny (France) - Salzburg (Austria) (799 km)

In Switzerland, 60 km of two carriageway motorway are under construction on this route.

E18. Stavenger - Oslo - Stockholm (1, 063 km)

In Norway, 21 km of motorway are under construction on this route.

E19. Corinth - Igonmenitsa (Greece) (469 km)

In Greece, the Corinth - Patras section (128 km) is completed except between Acrata and Diakofto and the junction to Aigion.

5. WORK IN PROGRESS ON ROADS OUTSIDE THE E NETWORK

In Germany, 183 km of motorway

were put into service on the "urban" network (motorways north-east of Paris, north of Nancy and east of Saint-Etienne). 26 km of motorway will be put into service in 1970 (east of Lille, Paris-Rungis, east of Toulon). The recent completion of the Paris ring motorway will also provide a fast link between the radial motorways (routes E1, 3, 10, 11 and 12). Various major urban road projects designed to clear bottlenecks near large conurbations are planned for 1971 (various sections round Paris and Metz, and between Lille and Dunkirk ; the big Caronte viaduct west of Marseilles and the tunnel under the "Colline de Fourvières" at Lyons).

In Luxembourg, the major projects in progress mainly concern the construction of an expressway, partly conforming to motorway standards, between the city of Luxembourg and Esch/Alzette. Other projects for the coming years include a by-pass for the city of Luxembourg and the linking of the Luxembourg road network with the motorways of neighbouring countries.

In the Netherlands, several sections were opened to traffic in 1969 ; the Gooimeer bridge near Muiderberg on National Road N° 6, a 25 km section of National Road N° 17 between Moerdijk and Roosendaal (National Road N° 16/E10 intersection) which came into service as a motorway, a 5 km section south of the city of Rotterdam, and the tunnel under the Oude Maas near Heinenoord on National Road N° 29.

On National Road N° 50, south-east of Apeldoorn, the construction of a 15 km motorway section has begun (probable date of completion : end of 1972).

Table 1. ROAD VEHICLES - POSITION AS AT END OF 1969

Motor vehicles (numbers)

- Figures in brackets show percentage charge as compared with previous year
- E. E. C. countries are underlined

Country	Two-wheeled vehicles including cycles with auxiliary engines	Vehicles with more than two wheels					
		Passenger transport			Goods transport		Total for vehicles with more than two wheels
		Private cars, including taxis	Public transport		Road tractors	Lorries	
			total	of which mainly urban			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Germany	1,278,508 (-3)	12,584,564 (+8)	44,039 (+5)		82,096 (+7)	966,192 (+5)	13,676,891 (+8)
2. Austria	610,871 (-3)	1,124,183 (+6)	6,614 (+3)		240,362 (+4)	112,958 (+6)	1,484,117 (+6)
3. Belgium	430,248 (in 68)	1,920,636 (+6)	14,424 (-0.2)	840 (-3)	10,793 (+9)	181,128 (+2)	2,129,081 (+6)
4. Denmark	453,980 (-1)	1,023,790 (+7)	4,713 (+5)		1,510 (+15)	255,131 (+2)	1,285,144 (+6)
5. Spain	1,281,863 (0)	1,998,838 (+22)	28,965 (+7)		5,430 (+14)	654,088 (+11)	2,687,321 (+19)
6. France	5,320,000 (-4)	12,400,000 (+8)	54,000 (+1)	22,000 (+10)	61,000 (+6)	2,524,000 (+5)	15,039,000 (+7)
7. Greece							
8. Italy							
9. Luxembourg	6,992 (-6)	84,816 (+9)	560 (+2)	150	348 (0)	11,376 (+2)	97,100 (+7)
10. Norway	172,726 (-0.8)	699,683 (+13)	7,304 (+3)		1,195 (+21)	137,723 (+5)	845,905 (+12)
11. Netherlands							
12. Portugal							
13. United Kingdom	1,143,580(-8)(1)	11,620,440 (+4)(2)	80,820 (-0.6)		5,880 (-11)	1,604,660 (-0.2)	13,311,800 (+3)
14. Sweden							
15. Switzerland	624,353 (+7)	1,282,889 (+9)	4,921 (+6)		2,504 (+12)	105,498 (+7)	1,395,812 (+8)
16. Turkey							
17. Yugoslavia							
18. Ireland	41,474 (-6)	358,001 (+5)	1,946 (+1.5)		810 (+3)	45,838 (+0.5)	406,595 (+5)
Total E. C. M. T. 69	11,364,595	45,097,840	248,306	22,990	441,928	6,598,592	52,356,666
68	11,717,692	42,050,832	243,003	20,862	391,419	6,366,555	49,051,809
	(-3.0)	(+7.2)	(+2.2)		(+5.2)	(+3.6)	(+6.7)

1) This group covers mopeds, scooters and all other types of "solo" machines.

2) Covers all types of wheeled motor vehicles (other than motorcycles and sidecars) under 400 kg (8 cwt.) unladen weight.

Table 2. ROAD VEHICLES - POSITION AS AT END OF 1969

Goods vehicles (numbers)

- Figures in brackets show percentage change as compared with previous year
- E.E.C. countries are underlined

Country	Vehicles : not self-propelled		Lorries				Total
	Trailers	Semi-trailers	Payload under 1,500 kg	Payload from 1,00 to 4,999 kg	Payload from 5 to 9,999 tonnes	Payload 10 tonnes and over	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Germany	403,011 (+3)	33,259(+9)	419,221 (+4)	352,064 (+4)	173,954 (+3)	20,953 (+26)	1,402,462 (+4)
2. Austria	83,998 (+5)	1,168 (+15)	52,814 (+8)	31,179 (+1)	27,827 (+8)	1,138 (-33)	198,124 (+6)
3. Belgium	9,016 (+20)	15,801 (+10)	86,496 (+0.6)	52,991 (+0.5)	33,339 (+2)	7,902 (+15)	205,545 (+3)
4. Denmark	27,817 (+12)	2,993 (+13)	201,658 (+0.1)	22,755 (+6)	28,245 (+3)	2,473 (+37)	285,941 (+3)
5. Spain	11,691 (+3)	4,124 (+29)	516,807 (+11)		95,480 (+3)	41,801 (+23)	669,903 (+10)
6. France	344,000 (+10)	82,000 (+11)	1,812,000 (+5)	396,000 (+4)	200,000 (+5)	116,000 (+5)	2,950,000 (+5)
7. Greece							
8. Italy							
9. Luxembourg			7,193 (+5)	2,116 (-6)	1,516 (-2)	551 (+4)	11,376 (-2)*
10. Norway	43,320 (+25)	1,430 (+17)	87,241 (+4)	31,002 (-5)	18,203 (+22)	1,277 (+71)	182,473 (+9)
11. Netherlands							
12. Portugal							
13. United Kingdom			1,020,250 (+2)	146,340 (-12)	263,880 (-7)	174,220 (+12)	1,604,690 (+0)*
14. Sweden							
15. Switzerland	46,600 (+5)	1,370 (+25)	57,776 (+8)	22,856 (+3)	24,799 (+6)	67 (-8)	153,468 (+6)
16. Turkey							
17 Yugoslavia							
18 Ireland							46,648 (+1)*
Total E.C.M.T. 69	969,453	142,145	3,744,649**	1,057,303**	867,243	366,382	7,710,630***
68	907,158	127,996	3,617,548**	1,046,600**	862,465	328,434	7,402,492***
	(+6.9)	(+11.1)	(+3.5)	(+1.0)	(-0.6)	(+11.6)	(+4.2)

(*) Motor vehicles only

(**) Excluding Spain

(***) Including Ireland

Table 3. ROAD VEHICLES - POSITION AS AT END OF 1969

Goods vehicles (total capacity)

- Figures in brackets show percentage change as compared with previous year
- E. E. C. countries are underlined.

Tonnes

Country	Vehicles : not self-propelled		Lorries				Total
	Trailers	Semi-trailers	Payload under 1,500 Kg	Payload from 1,500 to 4,999 Kg	Payload from 5 to 9,999 tonnes	Pay load 10 tonnes and over	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Germany	1,513,998 (+3)	537,932 (+12)	388,485 (+4)	937,528 (+5)	1,216,093 (+3)	249,058 (+25)	4,843,094 (+5)
2. Austria	333,321 (+5)		39,610 (+8)	98,167 (+0.4)	207,075 (+9)	12,444 (+52)	690,617 (+4)
3. Belgium	52,631 (+12)	286,677 (+15)	66,702 (+2)	146,858 (-0.3)	219,621 (+3)	95,786 (+16)	868,275 (+8)
4. Denmark	87,121 (+6)	32,779 (+15)	138,360 (+0.5)	64,756 (+2)	178,880 (+4)	27,493 (+37)	529,389 (+5)
5. Spain			747,638 (+10)		677,815 (+4)	522,512 (+23)	1,947,965 (+11)*
6. France	850,000 (+10)	410,000 (+11)	1,300,000 (+8)	1,020,000 (+10)	1,170,000 (+9)	1,250,000 (+12)	6,000,000 (+10)
7. Greece							
8. Italy							
9. Luxembourg							
10. Norway	89,590 (+19)	10,720 (+17)	58,890 (+7)	106,340 (-7)	112,200 (+25)	18,260 (+64)	396,000 (+12)
11. Netherlands							
12. Portugal							
13. United Kingdom			667,705 (+0.2)	520,385 (-10)	1,876,714 (-6)	2,639,842 (+13)	5,704,646 (+2)*
14. Sweden							
15. Switzerland	140,000 (+6)	9,600 (+25)	55,269 (+9)	60,166 (+0.7)	179,796 (+8)	745 (-8)	445,576 (+6)
16. Turkey							
17. Yugoslavia							
18. Ireland							
Total E. C. M. T. 69	2,733,340***	1,287,708***	2,715,021**	2,954,200**	5,838,194	4,816,140	21,425,562
68	2,577,122***	1,175,459***	2,585,748**	2,889,060**	5,740,819	4,195,425	20,157,683
	(+6.1)	(+9.5)	(+5.0)	(+2.3)	(+1.7)	(14.8)	(+6.3)

(*) Motor vehicles

(**) Excluding Spain

(***) Excluding Austria

Table 4. ROAD VEHICLES - POSITION AS AT END OF 1969

Goods vehicles (average capacity)

Tonnes

Country	Vehicles : not self-propelled		Lorries				Combined
	Trailers	Semi-trailers	Payload under 1,500 kg	Payload from 1,500 to 4,999 kg	Payload from 5 to 9,999 tonnes	Payload 10 tonnes and over	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Germany	3.756	16.174	0.926	2.662	6.990	11.886	3.453
2. Austria	3.913		0.749	3.148	7.441	10.934	3.485
3. Belgium	5.839	18.142	0.771	2.771	6.587	12.122	4.224
4. Denmark	3.131	10.951	0.686	2.845	6.333	11.117	1.851
5. Spain			1.446		7.099	12.499	2.907
6. France	2.470	5.000	0.717	2.575	5.850	10.775	2.033
7. Greece							
8. Italy							
9. Luxembourg							
10. Norway	2.068	7.496	0.675	3.430	6.163	14.299	2.170
11. Netherlands							
12. Portugal							
13. United Kingdom			0.654	3.555	7.111	15.152	3.554
14. Sweden							
15. Switzerland	3.004	7.007	0.962	2.632	7.250	11.119	2.903
16. Turkey							
17. Yugoslavia							
18. Ireland							
E.C.M.T. average 69	3.128*	9.409*	0.726**	2.800**	6.744	13.165	2.800
68	3.118*	9.257*	0.715**	2.779**	6.666	12.793	2.739

(*) Excluding Austria

(**) Excluding Spain

Table 5. VEHICLE-KM ON NATIONAL TERRITORY

(National and foreign vehicles) - 1969

- E.E.C. countries are underlined
- Figures in brackets show percentage change as compared with 1968

Million vehicle-km

Country	Two-wheeled motor vehicles, including cycles with auxiliary engines	Motor vehicles with more than two wheels					Total (2 + 3 + 6)
		Private cars, including taxis	Coaches Buses Trolley buses	Goods vehicles			
				Articulated vehicles	Other vehicles including special vehicles	Total (4 + 5)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Germany							
2. Austria	1,763 (-3.4)	18,917 (+7.3)	1,875 (+7.7)				
3. Belgium		14,100 (+0.5)	372 (+6.4)			3,353 (+15.1)	22,642 (+8.4)
4. Denmark		15,500 (+ 9.3)	335 (+17)	545 (+3.4)	2,468 (0.2)	3,013 (+0.8)	17,448
5. Spain	3,681 (-3)	25,035 (+18)	260 (+4)			5,240 (+4.6)	21,000 (+7.7)
6. France	9,000 (-10)	132,000 (+7)	1,182 (+10)			13,874 (+9)	40,091 (+15)
7. Greece			1,500 (0.0)	7,400 (+6)	13,000 (+4)	20,400 (+5)	153,900 (+7)
8. Italy							
9. Luxembourg				3 (+8.2)	62 (+9.3)	65 (+9.3)	
10. Norway	599 (-1)	7,243 (+10.5)	235 (0.0)			1,544 (+3.1)	9,022 (+8.9)
11 Netherlands							
12. Portugal							
13. United Kingdom (2)	4,200 (-10.6)	151,000 (+3.8)	3,900 (0.0)			36,700 (0.5)	191,600 (+3)
14. Sweden							
15. Switzerland							
16. Turkey							
17. Yugoslavia							
18. Ireland	267 (-6.3)	7,418 (+5.3)	109 (+1.9)			838 (+1.9)	8,365 (+4.9)
Total 69	19,510	371,213	9,768	7,948	15,530	85,027	464,068
68	21,375 (-8.7)	349,916 (+6.1)	9,546 (+2.3)	7,530 (+5.6)	15,018 (+3.4)	82,041 (+3.6)	439,704 (+5.5)

1) Excluding "service" traffic

2) Excluding Northern Ireland

Table 6. PASSENGER TRANSPORT IN NATIONAL VEHICLES ON NATIONAL TERRITORY

- E.E.C. countries are underlined
- Figures in brackets show percentage change as compared with 1968

Million passenger-km

Country	Two wheeled motor vehicles, including cycles with auxiliary engines	Private cars, including taxis	Public transport	Total for motor vehicles
(0)	(1)	(2)	(3)	(4)
1. Germany				
2. Austria				
3. Belgium				
4. Denmark				
5. Spain	4,006 (-3)	47,243 (+19)	19,537 (+13.5)	66.780
6. France	9,000 (-10)	204,000 (+7.1)	43,000 (2.4)	247,000
7. Greece				
8. Italy				
9. Luxembourg				
10. Norway				
11. Netherlands		69,330 (+11)		
12. Portugal				
13. United Kingdom				
14. Sweden				
15. Switzerland				
16. Turkey				
17. Yugoslavia				
18. Ireland				

Table 7. PASSENGER TRANSPORT IN NATIONAL AND FOREIGN VEHICLES ON NATIONAL TERRITORY

SITUATION AS AT THE END OF 1969

- E.E.C. countries are underlined
- Figures in brackets show percentage as compared with 1968

million passenger-km

Country	Two-wheeled motor vehicles, including cycles with auxiliary engines	Private cars, including taxis	Public transport	Total for motor vehicles (2+3)
(0)	(1)	(2)	(3)	(4)
1. Germany				
2. Austria	2,031 (-4)	39,455 (+7.9)	91,604 (+3.8)	131,059
3. Belgium			5,383	
4. Denmark				
5. Spain	4,022 (-3)	51,138 (+18)	19,746 (+13)	70,884
6. France	9,000 (-10)	211,000 (+7)	44,000 (+3)	255,000
7. Greece				
8. Italy				
9. Luxembourg				
10. Norway				
11. Netherlands				
12. Portugal				
13. United Kingdom(1)	4,700 (-13)	291,400 (+4.1)	57,400 (-2.9)	348,800
14. Sweden				
15. Switzerland				
16. Turkey				
17. Yugoslavia				
18. Ireland				

1) Excluding Northern Ireland

Table 8. PASSENGER TRANSPORT IN NATIONAL VEHICLES ON NATIONAL AND FOREIGN TERRITORY - 1969

- E.E.C. countries are underlined
- Figures in brackets show percentage change as compared with 1968

Million passenger-km

Country	Two-wheeled motor vehicles, including cycles with auxiliary engines	Private cars including taxis	Public transport	Total for motor vehicles (2+3)
(0)	(1)	(2)	(3)	(4)
1. Germany				
2. Austria				
3. Belgium				
4. Denmark				
5. Spain				
6. France	9,000 (-10)	222,000 (+8.3)	45,000 (+2.3)	267,000
7. Greece				
8. Italy				
9. Luxembourg				
10. Norway				
11. Netherlands		75,200 (+11)	1,874 (+11)	77,074
12. Portugal				
13. United Kingdom				
14. Sweden				
15. Switzerland				
16. Turkey				
17. Yugoslavia				
18. Ireland				

Table 9. GOODS CARRIED IN NATIONAL AND FOREIGN VEHICLES
TOTAL FIGURES FOR 1969

- E.E.C. countries are underlined
- Figures in brackets show percentage change as compared with 1968

Country	million tonnes			million tonne-km		
	Internal transport	International transport (including transit)	Total (1+2)	Internal transport	International transport	
					on reporting country's territory	on other countries' territory in national vehicles
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1. Germany			158 (+3.5)(1)			
2. Austria (2)	104 (+19.4)	9 (+7.8)	113 (+18.4)	1 (+6.4)	1 (+4.7)	1 (+12.7)
3. Belgium						
4. Denmark						
5. Spain				0,047 (+7)		
6. France	1,480 (+7)	11 (+10)	1,491 (+7)	58,000 (+3)	2,000 (0.0)	1,000 (0.0)
7. Greece						
8. Italy						
9. Luxembourg (3)	9 (+31.7)	1 (-18)	10 (+26.4)	136 (+18)		225 (-0.4)
10. Norway						
11. Netherlands		29 (+12)				
12. Portugal						
13. United Kingdom	1,638 (+1.2)		1,638 (+1.2)	74,700 (1.1)		
14. Sweden						
15. Switzerland						
16. Turkey						
17. Yugoslavia						
18. Ireland						
Total	3,231	50	3,410	132.837	2,001	1,226

1) Long-distance hauls only

2) Excluding "service" traffic

3) National vehicles only.

Table 10. GOODS CARRIED IN NATIONAL AND FOREIGN VEHICLES FOR HIRE OR REWARD - POSITION AS AT THE END OF 1969

E.E.C countries are underlined

Country	Million tonnes			Million tonne-km		
	Inland transport	International transport (including transit)	Total (1+2)	Internal transport	International transport	
					On reporting country's territory	On other countries' territory in national vehicles
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1. Germany						
2. Austria	3			0,731		1,296
3. Belgium						
4. Denmark						
5. Spain						
6. France	970	6	976	32,000	1,000	1,000
7. Greece						
8. Italy						
9. Luxembourg (1)	2	1	3	39		191
10. Norway						
11. Netherlands		23				
12. Portugal						
13. United Kingdom	865		865	28,200		
14. Sweden						
15. Switzerland						
16. Turkey						
17. Yugoslavia						
18. Ireland						
Total 69	1,840	30	1,844	60,239	1,000	2,487

1) National vehicles only

Table 11. AVERAGE DISTANCE TRAVELLED YEARLY FOR EACH TYPE OF NATIONAL VEHICLE SITUATION AS AT THE END OF 1969

- E.E.C. countries are underlined
- Figures in brackets show percentage changes as compared to 1968.

Country	Two-wheeled motor vehicles including cycles with auxiliary engines	Motor vehicles other than those in column (1)		
		Private cars, including taxis	Public transport	Average for goods vehicles
(0)	(1)	(2)	(3)	(4)
1. Germany				
2. Austria	3,325 (-0.7)	14,000 (0.0)	51,336 (-0.6)	29,100 (+9.4)
3. Belgium				
4. Denmark				
5. Spain	7,700 (+1.3)	11,600 (-5.0)	51,600 (-2.6)	35,000 (-8.6)
6. France	2,600 (+4.0)	13,000 (+1.03)	22,500 (+3.0)	29,000 (+3.6)
7. Greece				
8. Italy				
9. Luxembourg				
10. Norway	4,000 (0.0)	11,500 (0.0)		
11. Netherlands			52,000 (+0.77)	
12. Portugal				
13. United Kingdom	3,701 (-4.2)	13,196 (0.0)	47,313 (+0.3)	22,047 (+0.7)
14. Sweden				
15. Switzerland				
16. Turkey				
17. Yugoslavia				
18. Ireland				
Average	3,584	12,983	40,335	27,616

Table 12. YEARLY CONSUMPTION OF MOTOR FUEL
YEAR 1969

- E. E. C. countries are underlined

Tonnes

Country	Petrol	Gasoil (Diesel)	L. P. G.
1. Germany	13,700,000	5,900,000	
2. Austria			
3. Belgium	2,100,000*	674,000*	16,600
4. Denmark	1,485,476*	439,734*	30,766 *
5. Spain			
6. France	11,248,000*	3,984,000 *	0
7. Greece	497	806	0
8. Italy			
9. Luxembourg	96,082	45,328	2,998
10. Norway	765,900*	477,250 (1)*	
11. Netherlands	2,737,000	879,000	53,000
12. Portugal			
13. United Kingdom	13,443,000	4,868,000	0
14. Sweden			
15. Switzerland			
16. Turkey			
17. Yugoslavia			
18. Ireland			
Total 1969	45,575,955	17,268,118	103,364
Total 1968 (2)	40,616,380	14,966,560	

* Specific gravity adopted for conversion from volume to weight :
(petrol : 0.74
(gasoil : 0.83
(L. P. G. : 0.536

1) Including fuel consumed by railways and farm tractors

2) 1968 total for same countries except Greece and the Netherlands

Table 13. TOTAL LENGTH OF MOTORWAYS IN SERVICE

- E.E.C. countries are underlined

Country	Total at end of 1968		Total at end of 1969		Motor-ways put into service in 1969
	Total	of which single carriage-way	Total	of which single carriage-way	
1. Germany	3,967	0	4,110	0	143
2. Austria					
3. Belgium	386	0	420	0	34
4. Denmark	125	6	164	6	39 (1)
5. Spain	82		150 (1)	0	68
6. France	1,087	0	1,268	0	181
7. Greece	0	0	0	0	0
8. Italy					
9. Luxembourg	0	0	9	0	9
10. Norway	54	35	67	41	13
11. Netherlands	790	0	881	0	91
12. Portugal					
13. United kingdom	855	0	1,099	0	244
14. Sweden					
15. Switzerland	508	255	570	269	62
16. Turkey					
17. Yugoslavia					
18. Ireland					
Total	7,854		8,738		884
Total for previous year	7,142		7,854		712

1) Up to 31 May, 1970

Table 14. INTERNATIONAL NETWORK
(POSITION AS AT END OF 1969)

- E.E.C. countries are underlined

Country	Length by category (km)				Total (km)
	A (motorways) km	A (motorways) % total	II (more than two lanes)	I (two lanes)	
1. Germany	3,582	58	174	2,370	6,126
2. Austria					
3. Belgium	290	26	480	342	1,112
4. Denmark	130 (1)	14	367	389	886
5. Spain	66	14	585	5,270	5,921
6. France	1,198	20	1,849 (2)	2,896	5,943
7. Greece	0	0	67	2,675	2,742
8. Italy					
9. Luxembourg	0	0	76	12	88
10. Norway	67 (3)	2	9	3,852	3,928
11. Netherlands	682	50	104	559	1,345
12. Portugal					
13. United Kingdom (4)	937	21	1,382	2,221	4,540
14. Sweden					
15. Switzerland	399 (5)	30	127	783	1,309
16. Turkey					
17. Yugoslavia					
18. Ireland					
Total 1969	7,351	22	4,220	21,369	33,940
Total 1968	6,299	20	4,620	20,058	30,977

1) Of which 6 km single carriageway.

2) Of which 771 km of 9m carriageway and 35 km of expressways (single carriageway).

3) Of which 41 km single carriageway

4) The addition of new routes to the United Kingdom E network have considerably increased its length, i.e. from 1,629 to 4,540 km. The length of motorway incorporated in the E network has risen from 318 to 937 km.

5) Including 153 km single carriageway

Table 15. DEVELOPMENT OF THE INTERNATIONAL NETWORK
LENGTH STANDARDIZED AND DEGREE OF STANDARDIZATION
AT THE END OF 1969

- E.E.C. countries are underlined

Country	Category						Total length standardization	Degree of standardization
	A		II		I			
	km	%	km	%	km	%	(km)	(%)
1. Germany	3,581	100	144	83	1,433	60	5,158	84
2. Austria								
3. Belgium	289	100	301	63	172	50	762	69
4. Denmark	124	95	290	79	341	88	755	85
5. Spain	66	100	345	59	3,215	61	3,626	61
6. France	1,198	100	1,064	57	2,725	94	4,987	84
7. Greece			67	100	1,478	55	1,545	56
8. Italy								
9. Luxembourg			68	90	6	50	74	84
10. Norway	26	39	9	100	1,219	32	1,254	32
11. Netherlands	682	100	90	86	470	84	1,242	92
12. Portugal								
13. United Kingdom	937	100	939	68	1,138	51	3,014	66
14. Sweden								
15. Switzerland	246	62	81	64	661	84	988	75
16. Turkey								
17. Yugoslavia								
18. Ireland								
Total 1969	7,149	97	3,398	65	12,858	60	23,405	69
Total 1968	6,158	97	2,976	64	11,478	57	20,612	66

Table 16. INTERNATIONAL NETWORK
LENGTH AND PERCENTAGE OF SECTIONS OF ADEQUATE CAPACITY (END OF 1969)

- E.E.C. countries are underlined

Country	Category						Total length (km)	Percentage of total network
	A		II		I			
	km	%	km	%	km	%		
1. Germany	3,030	85	85	49	1,743	73	4,858	79
2. Austria								
3. Belgium	239	83	269	56	273	80	781	70
4. Denmark							444	50
5. Spain	66	100	585	100	4,801	91	5,453	92
6. France	1,198	100	510	28	1,630	56	3,338	56
7. Greece								
8. Italy								
9. Luxembourg	-	-	76	100	12	100	88	100
10. Norway	62	92	0	0	3,228	84	3,290	84
11. Netherlands	654	96	53	51	324	58	1,031	77
12. Portugal								
13. United Kingdom	933	99	1,250	90	1,943	87	4,126	91
14. Sweden								
15. Switzerland	399	100	81	64	367	47	847	65
16. Turkey								
17. Yugoslavia								
18. Ireland								
Total 69	6,581	91	2,909	61	14,321	78	24,256	78
Total 68	5,852	94	2,006	48	13,693	81	21,993	78

Table 17. FUTURE INTERNATIONAL NETWORK

a) Length already in service in its final form (position at end of 1969) ;

b) Total length of future international network

E.E.C. countries are underlined

Unit : km

Country	Category						Total length		Overall rate of completion per cent
	A (motorways)		II (more than 2 lanes)		I (2 lanes)				
	a	b	a	b	a	b	a	b	
1. Germany	3,618	5,655 (1)	45	45	333	333	3,997	6,033	66
2. Austria									
3. Belgium	333	1,117	-	-	-	-	333	1,117	29
4. Denmark	124	633	35	81	117	117	276	831	33
5. Spain	66	630					5,921		
6. France	1,198	3,421 (1)	722	2,115	194	240	2,114	5,776	36
7. Greece									
8. Italy									
9. Luxembourg	-	-	68	76	6	12	74	88	84
10. Norway	67	528 (1)	9	27	368	3,253	444	3,808	11
11. Netherlands	649	1,257	3	85	8	10	660	1,352	49
12. Portugal									
13. United Kingdom									
14. Sweden									
15. Switzerland	396	1,135 (1)	1	4	64	148	461	1,287	35
16. Turkey									
17. Yugoslavia									
18. Ireland									
Total 69	6,451	14,376	3,883	2,433	1,090	4,114	8,359	20,293	41
Total 68	5,918	13,081	1,038	2,722	2,277	5,114	9,197	20,254	45

1) Substantial increase in length

Table 18. INVESTMENT

- E.E.C. countries are underlined

Unit : million $

Country	Exchange rate (1)	International network 1969	Forecasts for 1970		
			International network	Total network	of which roads under central government control and motorways
1. Germany	3.66	289	353	2,560	1,025
2. Austria					
3. Belgium	50	258	304		392
4. Denmark	7.50	45 (2)			
5. Spain		81.3	66	136	70
6. France	5.52	250	330	1,260	220
7. Greece		26	23	68 (3)	25
8. Italy					
9. Luxembourg	50	0.5		5	5
10. Norway	7.15	44	45	178	115
11. Netherlands	3.62	93	86	359	173
12. Portugal					
13. United Kingdom(4)	0.4166	127.2	145	491	248
14. Sweden					
15. Switzerland	4.30	158	168	508 (5)	
16. Turkey					
17. Yugoslavia					
18. Ireland					
Total		1.372,0	1.520	5.565	2,273
Previous total		1.225,5	1.479	5.973	
Difference (per cent)		(+12)	(+3)	(- 7)	

1) Value of $ 1 in national currency.

2) Financial year 1st April to 31st March.

3) Not including appropriations already authorised.

4) Net investment.

5) Including maintenance work accounting for about 25 per cent

REPORT OF THE COMMITTEE OF DEPUTIES ON TRAFFIC AND INVESTMENT TRENDS IN 1969

Chapter IV - Inland Waterways

A. TRANSPORT TRENDS

1. All countries under review

The trend of waterway traffic (in terms of tonnes carried) in the eight E. C. M. T. countries (1) in which it is on a sizeable scale may be summarised as follows :

TONNES CARRIED

('000 tonnes)

Year	Internal traffic	International t traffic	Total
1962	230, 545	103, 896	334, 441
1963	220, 212	106, 397	326, 609
1964	258, 748	117, 282	376, 030
1965	265, 263	128, 463	393, 726
1966	267, 789	138, 961	406, 750
1967	275, 996	152, 827	428, 823
1968	285, 851	171, 693	457, 544
1969	289, 782	171, 620	461, 402

The low figure for 1963 was due to heavy frost.

The above table shows that the increase in 1969 was very small : only 3, 858, 000 tonnes (0. 8 per cent) more than in 1968. This was due to bad weather conditions.

The increase from 1962 to 1969 works out at 126. 9 million tonnes, or 40. 0 per cent.

International traffic has risen more steeply than internal traffic since 1962 (65. 2 per cent as compared with 25. 7 per cent).

After the period of declining freight rates in 1966 and 1967, the trade considers that the prospects have now improved. The increase in traffic in 1969, together with higher freight rates, brought an improvement in profitability, but this was partly offset by a prior increase in costs.

2. Remarks on the trend of traffic in various countries.

Total freight traffic carried on inland waterways in the Federal Republic of Germany, at 233. 8 million tonnes in 1969 showed a slight increase of 0. 5 million tonnes, or 0. 2 per cent, over the previous year. In terms of tonne-km there was even a downturn of 300 million tonne-km, or 0. 6 per cent, (47, 932 million tonne-km in 1968, 47, 650 million tonne-km in 1969).

1) Austria, Belgium, France, Federal Republic of Germany, the Netherlands and Switzerland. The figures for Yugoslavia and Italy are not included.

This relatively unfavourable development (particularly when compared with the corresponding figures for rail freight traffic) is mainly due to poor conditions on the waterways as a result of low water levels early in the year and during the last quarter, and more especially to February and December frosts.

The increase in internal traffic (+ 1.0 million tonnes), inbound freight (+ 1.8 million tonnes), transit traffic (+ 0.2 million tonnes) and shipments to East Germany (+ 0.2 million tonnes) were largely offset by a decline in outbound traffic (-2.7 million tonnes). The growth in internal traffic relates mainly to grain (+ 0.4 million tonnes), oil (+ 0.4 million tonnes) and rolling mill products (+ 0.2 million tonnes). The main increases in inbound traffic related to grain (+ 0.4 million tonnes), coal (+ 0.4 million tonnes) and building materials (+ 0.6 million tonnes). Ore carryings (+ 0.2 million tonnes) accounted for the increase in transit traffic.

The decline in outbound traffic is mainly due to the fall in exports of metal products (- 1.3 million tonnes), coal (- 1.7 million tonnes) and oil (- 0.3 million tonnes). These decreases were partially offset by bigger exports of building materials (+ 0.7 million tonnes).

In Austria, traffic on the Danube totalled 7,238,311 tonnes in 1969, a 10.3 per cent drop compared with 1968. In terms of tonne-km (1,194.2 million) traffic fell by 7.1 per cent. This unfavourable trend was primarily due to the fact that shipping on the Danube was seriously handicapped by an exceptionally long low-water period during the autumn of 1969.

Imports accounted for the biggest decrease (-15.3 per cent), the main items affected being solid fuels, oil and oil products.

Outbound traffic fell by 8.2 per cent as compared with 1968. Though consignments to, and via, Germany went up by 5.9 per cent, those to other countries fell by 24.8 per cent, due mainly to a decrease in carryings of chemicals and metal products. Compared with 1968, traffic in transit fell by 3.4 per cent.

Internal traffic on the other hand, went up in both directions, the increase in upstream traffic being mainly accounted for by oil and oil products. The main items accounting for the increase in downstream traffic were chemicals and metal products.

The figures so far available for traffic on the Danube from January to May 1970 inclusive, are below those for the same period of 1969. This is largely due to the exceptionally poor water level in the spring.

However, Austrian waterway transport operators report that the trend improved during the record half of 1970.

In Belgium, total traffic on the inland waterways fell from 93,330,000 tonnes in 1968 to 92,657,000 tonnes in 1969, a drop of 0.8 per cent. The decline is due to smaller carryings in dumb craft.

Despite the decrease in tonnes carried, traffic in terms of tonne-km rose by 3.2 per cent from 6,650 to 6,870 million from 1968 to 1969, as a consequence of an increase in average length of haul. This is in keeping with the previous trend. It more especially confirms the growth of transit traffic.

Transit and internal traffic (tonnes carried) went up by 15.0 and 3.7 per cent respectively, but international traffic fell (imports by 2 per cent and exports by 7.7 per cent).

The breakdown by type of goods hardly changed in 1969. The main items were crude or processed minerals and building materials (+ 4 per cent during the year under review). Oil products come next with an increase of 3.4 per cent over 1969.

Increases were also recorded for carryings of agricultural products (+ 23 per cent), foodstuffs (+ 10 per cent),

and chemical products (+ 7 per cent). Lower figures than last year were recorded for the following products : solid mineral fuels (- 9.7 per cent) ore and ferrous scrap (- 26 per cent) and metal products (- 10.8 per cent).

As regards the future outlook, although traffic in 1969 levelled off and some previously expanding traffic flows (imports and exports particularly) even declined, a slight upturn is apparent in 1970. The monthly figures available at present are of course limited, but, although no higher than, and sometimes even below those for 1968 (a peak year for inland waterway transport), they do show an increase as compared with 1969.

In France total traffic rose from 101.7 million tonnes in 1968 to 110.2 million tonnes in 1969 (+ 8.4 per cent) whilst output in terms of tonne-km rose from 13,250 million to 14,600 million, an increase of 10.2 per cent.

Internal traffic went up by 6.1 million tonnes (9.8 per cent), import traffic by 1.0 million tonnes and export traffic by 1.2 million tonnes (7.4 per cent).

Transit traffic showed a slight increase over 1968.

The figures for practically all categories of goods are up on those for 1968, except for :

- Solid mineral fuels, which fell by 323,483 tonnes (-4 per cent). This is in line with the general decline of coal production and carryings which has been going on for some years. The decrease affects internal and import traffic and outweighs a sharp increase in exports.

- Fertilizers. The decrease of 161,317 tonnes (-7 per cent) in this case is almost entirely due to the decline in exports via the Rhine (- 32 per cent).

- Chemical products, which were 26,702 tonnes down (- 1 per cent).

The main categories of freight contributing to the growth of traffic in 1969 are the following :

- Agricultural products : carryings under this head rose by 1,906,176 tonnes (+ 24 per cent) compared with 1968, grain exports (+ 50 per cent) were the main contributing factor.

- Foodstuffs : up by 181,640 tonnes (+ 6 per cent) ; international traffic, especially exports (+ 21 per cent), accounted for this increase.

- Oil products : up by 1,504,282 tonnes (+ 9 per cent). This increase is mainly noticeable in internal traffic and imports.

- Ore and ferrous scrap : here, the increase is 138,915 tonnes (+ 6 per cent), and is due to bigger imports, especially via the Rhine and Moselle.

- Metal products : up by 152,268 tonnes (+ 3 per cent). Internal traffic and exports went down slightly but imports rose steeply (+ 38 per cent).

- Minerals and building materials : an increase of 4,969,432 tonnes (+ 10 per cent) made up of the following three components :

internal traffic : + 13 per cent
exports : (Moselle + 12 per cent)
imports : (Rhine + 48 per cent ; Moselle + 33 per cent).

- Machinery, vehicles, manufactured goods : up by 125,010 tonnes (+ 22 per cent). Motor vehicles carried on the Seine were the biggest item contributing to this increase.

As a rough estimate, traffic in France in 1970 is put at 110 million tonnes of freight. This implies no increase as compared with 1969.

This levelling off may be put down to the decline in carryings of agricultural products, solid mineral fuels and building materials during the first half of 1970.

For Luxembourg no figures are given for the stretch of waterway common to Germany and Luxembourg as they are already included in the German

statistics.

Inland waterway traffic (tonnes carried) in 1970 went up by 10 per cent over 1969.

In the Netherlands inland waterway traffic fell from 242.2 million tonnes in 1968 to 237 million tonnes in 1969, a decline of 5.2 million tonnes (-2.5 per cent). In terms of tonne-km there was a 3.1 per cent drop (31,044 million tonne-km in 1968, 30,072 million tonne-km in 1969). Internal traffic fell by 4.3 million tonnes (-4.5 per cent) and international traffic declined slightly from 147.4 million tonnes in 1968 to 146.5 million in 1969, a decrease of 0.6 per cent. Exports went up by 4.9 per cent whereas imports and transit traffic decreased by 3.1 per cent and 12.2 per cent respectively.

Rhine traffic showed a slight fall (- 900,000 tonnes). Rhine traffic at the German-Netherlands frontier totalled 108.9 million tonnes.

Rhine traffic moving downstream fell from 48.4 million tonnes in 1968 to 45.2 million tonnes in 1969, a decrase of 6.6 per cent due largely to smaller carryings of oil (- 0.6 million tonnes), coal (1.3 million tonnes), and metal products (1.1 million tonnes). There was also a decrease in the "other goods" category which fell from 5.4 million tonnes in 1968 to 5 million tones tonnes in 1969, a drop of 7.4 per cent.

Rhine traffic moving upstream went up by 61.5 million tonnes in 1968 to 63.7 million tonnes in 1969, an increase of 2.3 million tonnes or 3.6 per cent. This was mainly accounted for by carryings of sand and gravel, which increased by 1 million tonnes.

According to the figures available, Rhine traffic during the first five months of 1970 fell by 1.6 million tonnes as compared with the corresponding period of 1969.

In Switzerland, traffic at the Basle ports went up in 1969 by about 200,000 tonnes (2.5 per cent) compared with 1968.

Traffic to and from the Basle ports during the first half of the year was as follows :

('000 tonnes)

Year	Inbound	Outbound	Total
1969	3,901	164	4,065
1970	4,062	135	4,197

Total traffic for the first half of 1970 thus shows a slight increase (about 3 per cent) over that for the same period of 1969. It seems likely that this trend will be maintained during the second half of 1970.

B. DEVELOPMENT OF THE FLEET

In 1969, the total capacity of the waterway fleet (1) fell by 216,844 tonnes or - 1.2 per cent. The total number of craft went down to 40,279, a decrease

1) The figures for Austria, Italy and Yugoslavia are not included

of 2.5 per cent. The average capacity of craft rose by 5.3 tonnes (+ 1.2 per cent).

In Germany. The capacity of the fleet (freight craft) fell by 76,940 tonnes in 1969. The power rating of tugs and pushers dropped by 12,120 h.p.

As in 1968, the fall in capacity mainly affected pull-towed barges (approximately 126,000 tonnes) and the principal factors accounting for it were : vessels scrapped (113,500 tonnes), sold to other countries (approximately 15,600 tonnes), converted to self-propulsion (approximately 16,000 tonnes), converted to pull-towing (approximately 6,700 tonne tonnes). Pazt of this decrease was offset by purchases of pull-towed barges from other countries. A notable increase in capacity as compared with 1968 was recorded for the pull-towed fleet but only a slight increase for self-propulled barges.

In France, the total number of craft fell from 7,532 units in 1968 to 7,209 in 1969, a decrease of 4.3 per cent.

The total capacity of the fleet dropped by 3.4 per cent from 3,098,362 to 2,994,491 tonnes.

The number of self-propelled craft dropped by 1.9 per cent to 5,570 in 1969 as compared with 5,677 in 1968, that is, to a lesser degree than the fleet as a whole.

The number of dumb barges (including push-towed) fell from 1,855 units in 1968 to 1,639 units in 1969, a decrease of 11.6 per cent.

In the Netherlands, the total number of carrying craft decreased, chiefly owing to scrapping and motorisation. The total number of towed barges and self-propelled craft also fell but that of tugs and pusher craft went up. Carrying capacity of towed barges, self-propelled craft, increased, as did the power rating of tugs and pushers.

As regards carrying capacity by class of craft, decreases for dumb barges (pull-towed and push-towed combined) were recorded in Germany (- 75,876 tonnes or - 6.0 per cent), Belgium - 7.2 per cent) and Switzerland (- 11,156 tonnes or - 9.5 per cent). In the Netherlands, however, there was an increase of 5,000 tonnes (+ 0.2 per cent).

In 1969, the carrying capacity of self-propelled craft fell in Belgium by 29,537 tonnes (- 1.2 per cent), in France by 36,044 tonnes (- 1.7 per cent), and in Switzerland by 20,226 tonnes (- 5.8 per cent) but went up in Germany by 15,998 tonnes (+ 0.5 per cent) and in the Netherlands by 51,200 tonnes (+ 1.4 per cent).

The total power rating of tugs and pushers rose in France (+ 7.4 per cent) and the Netherlands (+ 1.5 per cent) but fell in Germany (- 6.5 per cent), Switzerland (-12.9 per cent) and Belgium (- 18.1 per cent).

C. INFRASTRUCTURAL DEVELOPMENT

Progress report on studies and achievements concerning waterways of interest to Europe as a whole. (Resolution N° 9 : Inland Waterways - 3rd September, 1964).

1. Improvement of the Dunkirk-Scheldt link and its international extensions

Improvements on the Upper Scheldt to accommodate 1,350 tonne craft continued in 1969 with calibrating and realignment work on several sections.

The Western and Southern branches with the tidal locks and Merelbeke dam having come into service in November 1969, the entire Ghent ring canal is now open to 2,000 tonne craft.

On the French side, the Dunkirk-Denain section came into service in 1968. Additional improvements designed to increase the wetted cross-section and to provide better operating conditions are in progress.

Work in hand between Denain and

Valenciennes includes the construction of the Trith and Denain locks, improvements to the Trith reach and, downstream of Valenciennes, minor works in the vicinity of Condé.

2. Improvements to the Scheldt-Rhine link

Work on the Scheldt-Rhine link continued as planned in 1969.

Work has started on the building of the Kreekrak locks and has continued on the southern part of the canal, the tidal water defences at various points along the Scheldt and the new dykes along the Eendracht.

3. Improvement of the Meuse and its international links

On the Belgian side, work is proceeding on the design of new structures above Ampsin-Neuville and below Liège ; local improvements have been carried out on these two sections of the river as part of the existing programme.

On the Netherlands side, improvements to the Linne-Bruggenum lateral canal and the building of the twin locks (with chambers) at Linne are making satisfactory progress.

4. Meuse-Rhine link with connection to Aix-la-Chapelle

No further developments to report.

5. Canalisation of the Moselle

This project is completed as far as the section below Metz is concerned. The Metz-Frouard section is in course of completion and all the facilities for the river port at Frouard are in commission.

The first stage of the project concerning the Frouard-Neuves Maisons section has begun (the Frouard lock and dam, the Toul lock and the Fontenoy rail bridge).

6. Improvement of navigation conditions on the Rhine between Strasbourg and Saint-Goar

Under a treaty signed on 4th July, 1969 the Federal Republic of Germany and France agreed to undertake joint development work on the Rhine along the frontier stretch from Kehl-Strasbourg to Neuburgweier-Lauterbourg.

The main works are as follows :

- construction of two locks on the Rhine, one at Gambsheim, to be built by France and the other at Iffeszheim to be built by the Federal Republic of Germany ;

- action to prevent erosion of the river bed near Iffeszheim ;

- flood dykes.

Each country is bearing half the construction costs. Work began on the Gambsheim lock on the 1st January, 1970.

Training works between Neuburgweier-Lauterbourg and Saint-Goar (in order to improve navigation conditions and deepen the Channel by 40 cm) have been stepped up. Work on the Rüdesheim-Bingen section is now sufficiently advanced for the main effort to be switched to the Bingen-Riff section. Work is proceeding on the other sections of the upper Rhine.

7. Rhône-Rhine link

In Switzerland, studies and discussions continued on the action required to ensure future development of the Aar between its confluence with the Rhine and the lowland lakes of the Jura.

In France, technical studies in depth for the entire link under review are proceeding according to plan.

The Kembs-Niffer-Mulhouse section of the Rhône-Rhine canal is now completed.

On the Saône, work in progress concerns the completion of the Couzon reach, reconstruction of bridges at Lyon and the Charnay dam.

On the Rhône, the Vallabrègues falls came into service in 1970 and work began on the St. Vallier falls in 1969.

8. Development of the Rhine between Rheinfelden and Lake Constance

In Switzerland studies and discussions continued on the action required to ensure future development of the navigable reaches of the upper Rhine between Rheinfelden and Lake Constance.

9. Rhine-Main-Danube link

The Forchheim-Erlangen section is well advanced and likely to be opened to shipping in 1970. The Erlangen-Nuremberg section is in process of completion. Work is mainly centred on the locks and other structures, and on the re-alignment of the Kriegenbrunn and Nuremberg-North canal sections.

It is expected to be open to shipping by about the end of 1972.

Work continued on the first stage of the project involving the Nuremberg-Kelheim canal section and the canalisation of the Danube between Kelheim and Vilshofen.

10. Development of the Elbe with a link from Hamburg to the waterways network of western Europe including the Mittelland-kanal

Work on the construction of the approximately 115 km long Elbe Seitenkanal is making rapid progress. The re-alignment of a number of sections totalling 70 km in length has been started or at least commissioned. Work is proceeding on the two-stage lock system at Luneburg, with a lift of 38 m, and on the Uelzen locks (lift of 23 m).

In 1970 some 70 of the 110 other structures were either commissioned, under construction or completed.

The improvement of the Mittellandkanal for use by 1, 350 tonne craft is going forward. Construction work is mainly focussed on the section to the west of the Weser. Work is proceeding on other canal sections between the Dortmund-Ems Canal and the Weser and in the Hanover and Braunschweig areas.

11. Oder-Danube link

No information for the time being.

12. Link between Lake Maggiore and the Adriatic

No further developments to report.

The following information concerns waterways not covered by Resolution N° 9 of the Council of Ministers :

In Germany, work on the canalisation of the 14 km section of the Neckar between Stuttgart and Plochingen has continued.

Improvements to the Küsten Kanal to make it accessible to 1, 350 tonne craft (as part of the broader plans for improving the waterways system of Western Germany are now completed. As regards the other canals in Western Germany work is continuing on the Rhine-Herne, Wesel-Datteln, Datteln-Hamm and Dortmund-Ems canals. This work involves the widening of some sections, the construction of sections for overtaking and the building and modification of locks. A second lock has come into service at Datteln on the upper section of the Wesel-Datteln canal. Further downstream, two more locks are likely to come into service before the end of 1970.

In Belgium, modernisation work is proceeding on the Lys to make it accessible to 1,350 tonne craft between Deinze and Courtrai.

The Basse-Sambre was opened, without restriction, to 1, 350 tonne craft in June 1969 throughout its length, i. e. from Monceau (above Charleroi) to Namur ; work is proceeding on the Upper Sambre to make it accessible to craft with a draught of 2. 20 m (as compared with 1. 90 m at present).

Construction work on locks for 1, 350 tonne craft has begun on the old Mons-Condé canal, at Hensies and on the Canal du Centre at Havre.

The building of the Zemst lock on the Brussels-Rouppel ship canal continued.

As part of the project for making the Albert Canal accessible to 9,000 tonne pusher convoys, work has begun on the construction of four locks and the widening of a section 13 km long.

In the Netherlands canalisation work has been in progress since 1954 on the lower Rhine, the Lekentre Arnhem and Vreeswijk. Two dam and lock systems were completed some years ago. The third dam near Arnhem will come into service in 1970.

In 1969, work began on improvements to the Wilhelmina and Mark canals, between Oosterhout and Amer, to make them accessible to 1,350 tonne craft. This includes the building of two locks at Oosterhout.

Large-scale improvements to the Amsterdam-Rhine canal have been in progress for some years. The work started in 1969 included the building of second locks suitable for Rhine pusher convoys at Wijk bij Duurstede and Tiel.

D. TREND OF PIPELINE TRANSPORT

As in the previous year, this type of transport increased in several countries. New pipelines were added to the existing network and branches of main trunk-lines came into service. Details for individual countries are given below.

In the Federal Republic of Germany, the pipeline network totals 1,571 km in length. In 1969, total oil carryings were 73,600,000 tonnes (14,773,000 million tonne-km). Crude oil pipelines are planned from Ingolstadt to Eggolsheim and from Wilhelmshaven to Hamburg.

No new legislation on pipeline transport came into force in 1969.

In Belgium, the total carryings amounted to 2,175,000 tonnes (108.75 million tonne-km) in 1968 ; and to 5,556,000 tonnes (178.30 million tonne-km) in 1969.

No new pipelines came into service in 1969.

The following pipelines are planned:

- Rotterdam-Antwerp (RAPL), 105 km in length (34 km in Belgium) and 86.4 cm in diameter ; this is intended for crude oil and intermediates requiring further refinery treatment. It is scheduled to come on stream in the first half of 1971 ;

- the Antwerp-Brussels products pipeline, 50 km in length ;

- the Antwerp-Felluy crude oil pipeline, 88 km in length, and 55.8 cm in diameter. This is scheduled to come on stream mid-1971 ;

- the Felluy-Antwerp products pipeline, also 88 km in length but 32.385 cm in diameter. This pipeline is also scheduled to come on stream mid-1971.

No legislation or regulations were introduced in 1969.

In Spain the network was not expanded in 1969 and no pipelines were built, nor was there any new legislation concerning pipelines. As regards internal traffic the total tonnage carried through the 267 km Malaga- Puertollano pipeline remained at roughly the same level (2.3 million tonnes).

In the Netherlands, the pipeline linking Rotterdam with the German frontier carried 20,658,000 tonnes in 1969 as against 17,171,000 tonnes in 1968, an increase of 16.9 per cent.

The 85 km, 4,000,000 tonne capacity Rotterdam-Europoort-Amsterdam pipeline carried a total of 600,000 tonnes in 1968.

The 34-inch diameter RAPL crude oil pipeline to be laid between Rotterdam and Antwerp (69 km in the Netherlands) is under construction. It will have a capacity of 20 to 30 million tonnes and is scheduled to come into service during the first half of 1971.

In Portugal, pipelines linking oil company tank parks to the southern

jetty of the Port of Leixoes have been in service since August 1969. There are also pipelines linking oil tanker marine terminals to the Boa Hora refinery. Fuel carried during 1969 between the southern jetty at this port and the oil company's parks totalled 620,387 tonnes. 452,192 tonnes of fuel were carried from the oil tanker terminal to the Boa Hora refinery and 87,520 tonnes in the reverse direction.

In the United Kingdom, total carryings (internal traffic) amounted to 20,649,000 tonnes (1,658,7 million tonne-km), including 6,285,000 tonnes of products.

The following pipelines have come into service :

- Finnart-Grangemouth, diameter 20 inches, length 92 km, replacing the former 12 inch diameter pipeline (crude oil) ;

- Buncfield-London Airport, diameter 6 inches and 8 inches, length 97 km, (white oils) ;

- Fawley-West London, diameter 10 inches, length 103 km, (fuel oil).

Work on the Tetney-Immingham crude oil pipeline, 24 km long and 22 inches in diameter, was in progress on the 31st December, 1969, and is due for completion in spring 1970. In 1969 pipelines in the United Kingdom totalled 1,577 km. No legislation or regulations on this subject were introduced in 1969.

In France, pipelines in service at the end of 1969 totalled 3,407 km in length. Total carryings amounted to 58,308,000 tonnes in 1969 (22,042 million tonne-km) ; internal carryings accounted for 44,488,000 tonnes (11,190 million tonne-km). Of the total tonnage carried, 10,442,000 tonnes (1,973 million tonne-km) were oil products.

In 1969 the following pipelines came into service :

- Vernon-Vigny branch line of Trapil system ; 59 km ; (products) ;

- Gargenville-Orly branch line of Trapil system ; 79 km ; (products) ;

- Verdon-Pauillac branch line ; 50 km ; (crude) ;

- pipeline (crude) linking Valenciennes refinery with Le Havre ; 284 km (268 km belonging to N. A. T. O.), and a number of links on the Mediterranean-Rhône pipeline system (products).

The new 46 km Donge-Chevire pipeline supplying heavy fuel oil to the Electricité de France power stations at Cordemais and Chevire is not included in the statistics because of its short length, less than 50 km, and its low throughput. The same applies to the 41 km Pauillac-Ambes products pipeline.

On 31st December, 1969, only one pipeline was under construction :

- Strasbourg-Hauconcourt (Lorraine refinery) ; 142 km ; crude oil ; came into service in January 1970.

The two pipelines parallel to the P. L. S. E. are to be built in 1971 between Fos and Lyons (260 km for crude oil). One of these will subsequently be extended to Strasbourg.

No amendments were made to legislation and regulations concerning pipelines in 1969.

In Switzerland, total carryings amounted to 5,088,462 tonnes, plus 7,469,227 tonnes in transit.

No pipelines came into service. in 1969.

Plans for a products pipeline on the following route : Marseille - Lyons-Grenoble-Annecy-St. Julien-en-Genevois-Geneva were, on the 31st December, 1969, going through the approval procedure. Work on this project is likely to begin in autumn 1970 and the pipeline should come into service in 1971.

No legislation or regulations were introduced in 1969.

E. SEAPORTS

Table VIII gives some idea of the scale of seaport traffic. In all countries providing information total traffic increased in 1969 as compared with 1968.

Table I. FREIGHT TRAFFIC CARRIED ON INLAND WATERWAYS

('000 tonnes)

Country	Year	Internal traffic	International traffic		Freight in transit	Total tonnage carried	Total tonne-km (millions)	Tonne - km index 1955=100
			Loaded	Discharged				
Federal Republic of Germany	1955	64,418	21,908	31,606	6,680	124,612	28,624	100
	1962	90,818	30,626	42,951	6,379	170,774	39,936	139
	1963	84,995	30,698	45,127	6,506	167,327	39,513	138
	1964	96,013	29,022	52,627	6,133	183,795	40,609	142
	1965	98,180	32,409	57,007	8,098	195,694	43,552	152
	1966	100,313	39,688	58,655	9,238	207,894	44,826	157
	1967	94,576	47,869	62,089	9,905	214,439	45,785	160
	1968	100,077	52,772	69,795	10,683	233,328	47,932	167
	1969	101,069	50,253	71,598	10,879	233,800	47,650	166
Austria	1955	284	616	1,378	473	3,112	507	100
	1962	691	1,239	2,708	753	5,391	919	181
	1963	510	1,074	3,440	769	5,793	995	196
	1964	560	953	3,663	731	5,907	1,032	204
	1965	765	1,040	3,491	689	5,985	977	193
	1966	722	1,099	4,199	721	6,741	1,055	208
	1967	512	1,094	3,903	915	6,424	1,077	212
	1968	562	1,342	5,298	865	8,067	1,285	253
	1969	684	1,232	4,486	836	7,238	1,194	236
Belgium	1955	22,572	15,826	16,441	2,001	56,840	4,617	100
	1962	25,522	15,709	22,156	3,254	66,641	5,421	117
	1963	22,778	16,156	22,599	3,268	64,801	5,201	113
	1964	26,356	18,522	26,195	4,235	75,308	5,543	120
	1965	25,778	18,867	27,806	4,580	77,031	6,087	132
	1966	26,456	19,785	28,865	4,488	79,594	5,970	129
	1967	27,111	20,999	32,601	4,621	85,332	6,262	136
	1968	28,168	22,657	37,644	4,861	93,330	6,649	144
	1969	29,213	20,916	36,926	5,602	92,657	6,870	149
France	1955	40,211	7,752	5,475	4,817	58,255	8,917	100
	1962	29,713	6,470	8,064	7,289	71,536	11,234	126
	1963	51,208	9,115	8,209	7,657	76,189	11,358	127
	1964	58,805	11,490	9,097	6,227	85,619	12,470	140
	1965	58,311	15,129	9,344	6,972	89,756	12,510	140
	1966	59,283	17,082	9,989	7,098	93,452	12,652	142
	1967	61,139	18,284	11,243	6,970	97,635	12,965	145
	1968	62,243	20,601	11,939	6,956	101,739	13,254	149
	1969	68,315	21,882	12,985	7,023	110,205	14,601	164
Italy	1955	2,135	-	120	-	2,256	..	..
	1962	2,553	..	291	-	2,844	..	..
	1963	2,471	175	363	-	3,009	..	..
	1964	2,394	23	178	-	2,595	..	..
	1965	2,753	-	24	-	2,777	..	..
	1966	3,149	-	-	-	3,149	..	..
	1967	3,687	-	-	-	3,687	..	..
	1968	4,388	-	-	-	4,388	..	..
Netherlands	1955	44,426	33,889	20,369	13,589	112,273	15,255	100
	1962	63,801	49,558	22,868	18,037	154,264	20,328	133
	1963	60,719	48,858	22,278	19,584	151,439	20,201	132
	1964	77,012	56,921	25,931	21,381	181,245	22,712	149
	1965	82,229	60,357	28,222	23,184	193,992	24,070	158
	1966	81,015	60,912	32,424	24,617	198,963	25,315	166
	1967	92,654	64,239	39,928	27,369	224,190	28,568	187
	1968	94,800	73,439	44,481	29,497	242,217	31,044	204
	1969	90,500	77,028	43,561	25,913	237,002	30,072	197
Switzerland	1955	2	456	4,131	164	4,753	14	100
	1962	0	294	6,788	182	7,264	31	222
	1963	2	321	7,960	186	8,469	37	264
	1964	2	397	7,133	218	7,750	34	243
	1965	0	661	7,955	211	8,827	40	286
	1966	0	395	8,012	241	8,648	39	279
	1967	4	342	7,595	280	8,221	38	271
	1968	1	320	7,515	284	8,120	39	279
	1969	1	309	7,737	268	8,315	41	293
Yugoslavia	1955	2,763	400	122	2,875	6,160	2,106	100
	1962	4,154	717	736	3,854	9,501	3,194	152
	1963	5,180	784	891	3,964	10,819	3,518	167
	1964	6,043	817	1,091	4,829	12,780	4,282	203
	1965	6,443	849	1,026	4,716	13,034	4,354	207
	1966	7,287	1,143	1,235	5,651	15,307	5,196	247
	1967	7,933	1,106	1,475	4,996	15,510	4,690	223
	1968	9,744	1,308	2,111	5,451	18,614	5,318	253

Table II. RHINE TRAFFIC AT THE GERMAN-NETHERLANDS FRONTIER EMMERICH/LOBITH

('000 tonnes)

	1968	1969	1970	1970 as % of 1969
Upstream				
January	4,961	5,060	5,337	105
February	4,776	5,068	4,518	89
March	4,933	5,289	6,093	115
April	4,488	5,294	6,478	122
May	5,300	5,984	5,845	98
June	5,173	5,744		
July	5,111	5,928		
August	5,877	5,594		
September	5,478	5,695		
October	5,645	4,488		
November	5,180	4,843		
December	4,531	4,717		
Year	61,453	63,704		
Downstream				
January	3,286	3,591	2,512	70
February	3,876	3,365	2,446	73
March	4,294	4,203	3,807	91
April	4,168	4,103	4,172	102
May	4,598	4,371	3,610	83
June	4,171	4,287		
July	4,067	4,457		
August	4,634	3,887		
September	4,230	4,047		
October	4,333	3,289		
November	3,708	3,134		
December	3,005	2,485		
Year	48,370	45,219		

Table III. DEVELOPMENT OF THE FLEET

Country	At end of year	Self-propelled craft			Dumb craft (1)			Total cargo-carrying craft			Tugs and pushers		
		Number	Cargo capacity		Number	Cargo capacity		Number	Cargo capacity		Number	Horsepower (cv)	
			Total (tons)	Average (tons)		Total (tons)	Average (tons)		Total (tons)	Average (tons)		Total	Average
Federal Republic of Germany	1955	3,094	1,363,870	441	3,614	2,650,609	733	6,708	4,014,479	598	834	319,130	383
	1962	5,152	2,843,322	552	2,469	2,130,834	863	7,621	4,974,156	658	753	283,678	372
	1963	5,382	3,054,336	568	2,248	1,946,874	866	7,630	5,001,211	655	750	279,525	373
	1964	5,554	3,249,726	581	2,058	1,745,761	848	7,612	4,995,487	656	729	276,235	399
	1965	5,681	3,404,784	599	1,836	1,540,864	839	7,517	4,945,648	658	687	261,385	380
	1966	5,662	3,432,924	606	1,726	1,452,611	842	7,388	4,885,535	661	610	222,078	364
	1967	5,614	3,416,812	608	1,558	1,292,866	830	7,172	4,709,678	657	582	220,917	380
	1968	5,589	3,433,902	614	1,473	1,253,076	851	7,062	4,686,978	664	531	200,487	378
	1969	5,442	3,432,838	634	1,323	1,177,200	852	6,765	4,610,038	684	469	187,967	400
Austria	1955	2	1,118	559	261	205,729	788	263	206,847	786	35	26,490	757
	1962	2	896	448	312	264,441	848	314	265,337	845	40	33,095	827
	1963	4	2,604	651	312	265,700	852	316	268,304	849	40	33,045	826
	1964	6	5,126	854	303	259,736	857	309	264,862	857	39	32,245	827
	1965	12	11,321	943	286	247,590	866	298	258,911	869	41	34,760	848
	1966	13	12,845	988	271	237,788	877	284	250,633	812	36	32,655	907
	1967	21	20,453	974	259	228,917	884	280	249,370	891	39	32,070	822
	1968	22	21,500	977	248	221,900	895	270	243,400	901	36	30,000	833
Belgium	1955	4,386	1,522,546	347	1,764	879,238	498	6,150	2,401,784	391	225	26,140	116
	1962	5,120	2,060,895	403	807	564,958	700	5,927	2,625,853	443	177	23,643	134
	1963	5,123	2,124,562	415	766	562,514	734	5,889	2,687,076	456	176	26,466	150
	1964	5,187	2,224,423	429	724	541,204	748	5,911	2,765,627	468	160	25,890	162
	1965	5,212	2,294,383	440	689	520,288	755	5,901	2,814,671	477	165	26,321	160
	1966	5,264	2,352,942	447	678	522,287	770	5,942	2,875,229	484	152	23,509	155
	1967	5,247	2,369,643	451	629	494,503	786	5,876	2,864,146	487	153	26,500	173
	1968	5,180	2,354,273	455	587	454,907	775	5,767	2,809,180	487	95	19,904	210
	1969	5,047	2,324,736	461	516	406,331	787	5,563	2,731,067	491	91	16,300	179
France	1955	3,925	1,396,719	356	6,506	2,378,053	366	10,431	3,774,772	362	429	135,025	315
	1962	5,435	2,008,204	369	4,137	1,526,996	369	9,572	3,535,200	369	473	128,855	272
	1963	5,640	2,085,608	370	3,996	1,508,545	378	9,636	3,594,153	373	485	152,269	314
	1964	5,821	2,158,057	371	3,850	1,464,851	380	9,671	3,622,908	375	504	152,269	302
	1965	5,916	2,211,539	373	3,737	1,401,371	374	9,653	3,612,910	374	520	164,125	316
	1966	5,981	2,230,304	373	3,018	1,202,743	399	8,999	3,433,047	381	521	161,843	311
	1967	5,784	2,190,526	396	1,992	978,180	491	7,776	3,168,706	407	199	103,620	521
	1968	5,677	2,158,698	380	1,855	939,664	507	7,532	3,098,362	411	190	103,740	546
	1969	5,570	2,122,654	381	1,639	871,837	532	7,209	2,994,491	415	197	111,400	565
Italy	1955	353	36,766	104	1,256	102,686	82	1,609	139,452	87	80	6,323	79
	1962	571	52,034	91	2,039	104,458	61	2,610	156,492	60	116	7,221	62
	1963	598	55,645	93	2,080	104,366	50	2,678	160,011	60	114	7,484	66
	1964	616	58,992	96	2,103	108,942	52	2,719	167,934	62	123	8,346	68
	1965	645	60,623	94	2,177	98,685	45	2,822	159,308	56	123	8,215	67
	1966	607	58,743	97	2,155	98,365	46	2,762	157,108	57	122	8,287	68
Netherlands	1955	8,068	1,473,189	195	7,420	2,732,459	368	15,488	4,205,648	272	..	..	..
	1962	11,153	2,836,775	254	8,522	2,778,231	326	19,675	5,615,006	286	2,174	383,550	176
	1963	11,514	3,038,800	264	8,567	2,782,172	325	20,081	5,820,972	290	2,174	389,071	179
	1964	11,885	3,284,555	276	8,661	2,854,418	329	20,546	6,138,973	298	2,194	397,051	180
	1965	12,152	3,486,702	287	8,658	2,902,264	335	20,810	6,388,966	307	2,262	425,780	188
	1966	12,157	3,588,019	295	8,612	2,882,634	335	20,769	6,470,653	312	2,232	409,323	183
	1967	12,115	3,648,047	328	8,397	2,844,678	339	20,512	6,492,725	333	2,275	448,728	197
	1968	12,152	3,706,400	305	8,327	2,842,700	341	20,479	6,549,100	319	2,224	450,100	202
	1969	12,087	3,757,600	311	8,247	2,847,700	345	20,334	6,605,300	325	2,232	456,800	205
Switzerland	1955	274	203,896	744	64	63,636	994	338	267,532	792	19	24,800	1,305
	1962	357	316,472	886	76	99,693	1,312	433	416,165	961	16	25,205	1,576
	1963	364	326,721	898	80	106,001	1,325	444	432,722	975	18	29,555	1,642
	1964	373	337,072	904	82	108,737	1,326	455	445,980	980	20	29,255	1,463
	1965	371	337,455	910	87	115,800	1,331	458	453,255	990	21	30,715	1,463
	1966	370	338,812	916	88	118,204	1,343	458	457,016	998	21	28,555	1,360
	1967	359	340,471	948	96	126,932	1,322	455	467,403	1,027	21	27,335	1,302
	1968	355	342,397	965	90	117,830	1,309	445	460,227	1,034	18	23,445	1,303
	1969	326	322,371	990	82 (2)	106,674	1,300	408	429,045	1,052	15 (3)	20,425	1,362
Yugoslavia	1955	18	5,137	285	726	302,327	416	744	307,464	413	145	34,685	239
	1962	18	5,791	322	654	404,160	618	672	409,951	610	217	60,977	281
	1963	21	6,702	319	662	406,412	614	683	413,114	605	243	69,573	286
	1964	19	6,350	334	729	472,869	649	749	479,219	641	241	71,395	296
	1965	20	6,370	319	729	480,819	660	749	487,189	650	240	72,101	300
	1966	20	6,372	319	751	505,041	672	771	511,413	663	231	65,776	285
	1967	20	5,372	268	766	506,108	661	786	511,480	651	247	82,681	338

1) Including push-towed craft

2) Including 11 push-towed barges

3) No pusher-tugs

Table IV. CRAFT IN SERVICE, CLASSIFIED BY AGE GROUPS AT END OF 1969

	Self-propelled craft				Dumb craft				Total cargo-carrying craft				Tugs			
Federal Republic of Germany	Number	%	Capacity	%	Number	%	Capacity	%	Number	%	Capacity	%	Number	%	Horsepower	%
Before 1900	687	12.4	355,200	10.3	280	21.3	232,300	19.7	968	14.2	687,500	12.7	55	11.8	18,900	10.1
1900-1909	948	17.2	399,400	11.5	314	23.7	249,100	21.2	1,262	18.4	648,500	14.0	85	18.3	31,200	16.6
1910-1919	712	13.0	310,900	9.0	217	16.5	157,000	13.3	929	13.5	467,900	10.1	46	10.1	17,600	9.4
1920-1929	831	15.0	492,900	14.3	209	15.7	203,100	17.3	1,040	15.2	696,000	15.0	82	17.7	31,700	16.9
1930-1939	472	8.4	272,200	7.9	56	4.3	39,900	3.4	528	7.6	312,100	6.8	75	16.2	20,900	11.2
1940-1949	301	5.3	239,700	7.0	69	5.3	64,200	5.5	310	5.3	303,900	6.6	57	12.3	24,200	12.9
1950-1959	1,077	19.5	864,800	25.1	58	4.3	52,900	4.5	1,135	16.6	917,700	19.8	41	8.8	19,500	10.5
1960-1969	514	9.2	515,000	14.9	119	8.9	178,500	15.1	633	9.2	693,500	15.0	27	5.8	23,300	12.5
Unspecified																
Total	5,442	100	3,432,838	100	1,323	100	1,177,200	100	6,765	100	4,610,038	100	469	100	187,967	100
Austria																
Before 1900	1	4.5	300	1.4	35	14.1	21,800	9.8	36	13.3	22,100	9.1	1	2.8	200	0.7
1900-1909	-	-	-	-	13	5.2	8,300	3.8	13	4.8	8,300	3.4	1	2.8	300	1.0
1910-1919	1	4.5	600	2.8	15	6.1	10,600	4.8	16	5.9	11,200	4.6	1	2.8	1,300	4.3
1920-1929	1	4.5	700	3.3	27	10.9	20,700	9.3	28	10.4	21,400	8.8	1	2.8	300	1.0
1930-1939	-	-	-	-	6	2.4	5,400	2.4	6	2.2	5,400	2.2	2	5.7	400	1.3
1940-1949	-	-	-	-	65	26.2	63,900	28.8	65	24.1	63,900	26.2	10	27.7	11,000	36.4
1950-1959	8	36.4	6,800	31.8	60	24.2	58,900	26.5	68	25.2	65,700	27.0	10	27.7	8,500	28.1
1960-1969	11	50.1	13,000	60.7	27	10.9	32,500	14.6	38	14.1	45,500	18.7	10	27.7	8,200	27.2
Unspecified	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	22	100	21,400	100	248	100	222,100	100	270	100	243,500	100	36	100	30,200	100
Belgium																
Before 1900	209	4.1	90,480	3.9	53	10.3	41,042	10.1	262	4.7	131,522	4.8	2	2.2	444	2.7
1900-1909	482	9.6	215,118	9.2	122	23.6	122,018	30.0	604	10.9	337,136	12.3	5	5.5	965	5.9
1910-1919	614	12.2	233,555	10.1	133	25.8	87,996	21.7	747	13.4	321,551	11.8	13	14.2	1,999	12.3
1920-1929	1,226	24.3	539,064	23.2	127	24.6	87,774	21.7	1,353	24.3	626,838	23.0	16	17.6	2,650	16.3
1930-1939	729	14.4	296,141	12.7	42	8.1	23,427	5.7	771	13.9	319,568	11.7	18	19.8	3,288	20.2
1940-1949	386	7.7	169,781	7.3	15	2.9	11,887	2.9	401	7.2	181,668	6.7	9	9.9	1,452	8.9
1950-1959	723	14.3	337,443	14.5	6	1.2	8,912	2.1	729	13.1	346,355	12.7	8	8.8	1,174	7.2
1960-1969	668	13.2	442,183	19.0	18	3.5	23,275	5.7	686	12.3	465,458	17.0	5	5.5	2,319	14.2
Unspecified	10	0.2	971	0.1	-	-	-	-	10	0.2	971	-	15	16.5	2,009	12.3
Total	5,047	100	2,324,736	100	516	100	406,331	100	5,563	100	2,731,067	100	91	100	16,300	100
France																
Before 1900	154	2.8	47,700	2.3	64	3.9	17,900	2.0	218	3.0	65,600	2.2	4	5.5	600	3.0
1900-1909	135	2.4	43,500	2.1	55	3.4	23,500	2.7	190	2.6	67,000	2.2	5	6.9	1,200	5.9
1910-1919	193	3.5	61,100	2.9	72	4.4	36,400	4.1	265	3.7	97,500	3.3	6	8.2	1,700	8.4
1920-1929	1,182	21.2	410,100	19.3	380	23.2	144,000	16.5	1,562	21.6	554,100	18.5	13	17.8	3,200	15.8
1930-1939	1,261	22.6	447,100	21.1	270	16.5	105,500	12.2	1,531	21.2	552,500	18.5	24	32.9	7,600	37.7
1940-1949	605	10.9	257,800	12.1	63	3.8	21,900	2.5	668	9.3	279,700	9.3	8	10.9	3,200	15.8
1950-1959	1,609	28.6	684,800	32.2	286	17.4	142,700	16.4	1,895	26.4	827,500	27.6	4	5.5	1,200	5.9
1960-1969	376	6.7	151,000	7.1	445	27.2	378,500	43.5	821	11.4	529,500	17.7	1	1.4	500	2.5
Unspecified	55	1.0	18,900	0.9	4	0.2	800	0.1	59	0.8	19,700	0.7	8	10.9	1,000	5.0
Total	5,570	100	2,121,900	100	1,639	100	871,200	100	7,209	100	2,993,100	100	73	100	20,200	100
Italy																
Before 1900																
1900-1969																
Unspecified																
Total																
Netherlands																
Before 1900	968	8.0	215,100	5.7	507	6.2	201,500	7.1	1,475	7.3	416,600	6.3	40	1.8	7,500	1.7
1900-1909	2,303	19.1	475,700	12.7	1,195	14.5	425,700	14.9	3,498	17.2	901,400	13.7	150	6.7	27,600	6.1
1910-1919	2,063	17.1	465,100	12.4	1,229	14.9	385,800	13.5	3,292	16.2	850,900	12.9	261	11.7	43,500	9.6
1920-1929	3,079	25.5	755,900	20.1	2,129	25.8	708,200	24.9	5,208	25.6	1,464,100	22.2	447	20.0	83,800	18.3
1930-1939	1,115	9.2	366,700	9.7	917	11.1	257,700	9.0	2,032	10.0	624,400	9.4	350	15.7	54,100	11.8
1940-1949	332	2.7	168,200	4.5	197	2.4	75,700	2.7	529	2.6	243,900	3.7	305	13.7	65,300	14.2
1950-1959	1,001	8.3	560,500	14.9	580	7.0	186,800	6.6	1,581	7.8	747,300	11.3	376	16.9	90,000	19.6
1960-1969	1,118	9.2	739,100	19.7	736	8.9	529,700	18.6	1,854	9.1	1,268,800	19.2	195	8.7	75,500	16.6
Unspecified	108	0.9	11,300	0.3	757	9.2	76,600	2.7	865	4.2	87,900	1.3	108	4.8	9,500	2.1
Total	12,087	100	3,757,600	100	8,247	100	2,847,700	100	20,334	100	6,605,300	100	2,232	100	456,800	100
Switzerland																
Before 1900	1	0.3	493	0.1	6	7.3	6,801	6.3	7	1.7	7,294	1.7	-	-	-	-
1900-1909	1	0.3	669	0.2	3	3.7	4,282	4.0	4	1.0	4,951	1.1	2	13.3	1,500	7.4
1910-1919	1	0.3	1,268	0.4	6	7.3	9,997	9.3	7	1.7	11,265	2.6	1	6.7	1,200	5.9
1920-1929	32	9.8	24,959	7.7	39	47.5	48,611	45.5	71	17.4	73,570	17.2	4	26.7	4,800	23.5
1930-1939	48	14.7	35,487	11.0	-	-	-	-	48	11.8	35,487	8.3	1	6.7	3,600	17.6
1940-1949	74	22.7	73,633	22.8	5	6.1	5,883	5.6	79	19.4	79,516	18.5	3	20.0	7,850	32.2
1950-1959	130	40.0	142,427	44.3	3	3.7	4,909	4.7	133	32.5	147,336	34.3	2	13.3	1,065	5.4
1960-1969	39	11.9	43,435	13.5	20	24.4	26,191	24.6	59	14.5	69,626	16.3	2	13.3	410	2.0
Unspecified																
Total	326	100	322,371	100	82	100	106,674	100	408	100	429,045	100	15	100	20,425	100
Yugoslavia																
Before 1900																
1900-1969																
Unspecified																
Total																

Table V. NUMBER OF CRAFT, BROKEN DOWN BY CARGO CAPACITY, AT END OF 1969

Country	Class	Self-propelled craft			Dumb craft (1)			Total cargo-carrying craft			Tugs + pushers			
		Cargo capacity			Cargo capacity			Cargo capacity				Horsepower (cv)		
		Number	Total (tonnes)	Average (tonnes)	Number	Total (tonnes)	Average (tonnes)	Number	Total (tonnes)	Average (tonnes)	Type	Number	Total (tonnes)	Average (tonnes)
Federal Republic of Germany														
Up to 250 t.	0	1,031	146,100	141	139	20,500	147	1,170	166,600	142	Up to 250 cv			
From 251 to 400 t.	I	901	291,600	324	116	37,200	321	1,017	328,800	323	From 251 to 400 cv			
From 401 to 650 t.	II	969	499,300	515	238	128,400	539	1,207	697,700	520	From 401 to 1,000 cv			
From 651 to 1,000 t.	III	1,551	1,311,900	843	392	309,500	832	1,923	1,621,400	843	Over 1,000 cv			
From 1,001 to 1,500 t.	IV	957	1,163,600	1,215	316	416,800	1,319	1,273	1,579,400	1,241				
Over 1,500 t.	V	23	37,500	1,630	142	264,900	1,865	165	302,400	1,833				
Total		5,442	3,432,838	630	1,323	1,117,200	852	6,765	4,610,038	681	Total	469	187,967	400
Austria														
Up to 250 t.	0										Up to 250 cv			
From 251 to 400 t.	I										From 251 to 400 cv			
From 401 to 650 t.	II										From 401 to 1,000 cv			
From 651 to 1,000 t.	III										Over 1,000 cv			
From 1,001 to 1,500 t.	IV													
Over 1,500 t.	V													
Total											Total			
Belgium														
Up to 250 t.	0	360	52,245	145	56	7,479	134	416	59,724	144	Up to 250 cv			
From 251 to 400 t.	I	3,179	1,132,032	356	129	46,316	359	3,308	1,178,348	356	From 251 to 400 cv			
From 401 to 650 t.	II	866	413,701	513	122	60,709	498	928	474,410	511	From 401 to 1,000 cv			
From 651 to 1,000 t.	III	421	356,722	847	31	26,121	843	452	382,843	847	Over 1,000 cv			
From 1,001 to 1,500 t.	IV	243	304,284	1,252	120	163,338	1,361	363	467,622	1,288				
Over 1,500 t.	V	38	65,752	1,730	58	102,368	1,765	96	168,120	1,751				
Total		5,047	2,324,736	461	516	406,331	787	5,563	2,731,067	491	Total			
France														
Up to 250 t.	0	269	48,327	180	195	26,366	135	464	74,693	161	Up to 250 cv			
From 251 to 400 t.	I	4,365	1,557,483	357	651	226,068	347	5,016	1,783,551	356	From 251 to 400 cv			
From 401 to 650 t.	II	704	312,992	445	458	204,658	447	1,162	517,650	445	From 401 to 1,000 cv			
From 651 to 1,000 t.	III	216	183,089	848	163	125,239	768	379	308,328	814	Over 1,000 cv			
From 1,001 to 1,500 t	IV	13	14,995	1,153	39	45,844	1,175	52	60,839	1,170				
Over 1,500 t.	V	3	5,768	1,923	133	243,662	1,832	136	249,430	1,834				
Total		5,570	2,122,654	381	1,639	871,837	532	7,209	2,994,491	415	Total			
Italy														
Up to 250 t.	0										Up to 250 cv			
From 251 to 400 t.	I										From 251 to 400 cv			
From 401 to 650 t.	II										From 401 to 1,000 cv			
From 651 to 1,000 t.	III										Over 1,000 cv			
From 1,001 to 1,500 t.	IV													
Over 1,500 t.	V													
Total											Total			
Netherlands														
Up to 250 t.	0	6,521	750,000	115	5,731	461,800	81	12,252	1,211,800	99	Up to 250 cv			
From 251 to 400 t.	I	2,400	785,400	327	444	141,200	318	2,844	926,600	326	From 251 to 400 cv			
From 401 to 650 t.	II	1,846	949,900	515	659	339,700	515	2,505	1,289,600	515	From 401 to 1,000 cv			
From 651 to 1,000 t.	III	963	794,200	825	492	410,800	835	1,455	1,205,000	828	Over 1,000 cv			
From 1,001 to 1,500 t.	IV	304	377,400	1,241	516	666,600	1,292	820	1,044,000	1,273				
Over 1,500 t.	V	53	100,700	1,900	405	827,600	2,043	458	928,300	2,027				
Total		12,087	3,757,600	311	8,247	2,847,700	345	20,334	6,605,300	325	Total	2,232	456,800	205
Switzerland														
Up to 250 t.	0	1	186	186	-	-	-	1	186	186	Up to 250 cv	4	735	184
From 251 to 400 t.	I	8	2,495	312	-	-	-	8	2,495	312	From 251 to 400 cv	-	-	-
From 401 to 650 t.	II	24	13,771	574	-	-	-	24	13,771	574	From 401 to 1,000 cv	5	3,540	708
From 651 to 1,000 t.	III	162	139,283	860	29	27,943	967	191	167,226	876	Over 1,000 cv	6	16,150	2,691
From 1,001 to 1,500 t.	IV	111	133,219	1,201	37	49,716	1,344	148	182,935	1,236				
Over 1,500 t.	V	20	33,417	1,671	16	29,015	1,814	36	62,432	1,734				
Total		326	322,371	990	82	106,674	1,300	408	492,045	1,052	Total	15	20,425	1,362
Yugoslavia														
Up to 250 t.	0										Up to 250 cv			
From 251 to 400 t.	I										From 251 to 400 cv			
From 401 to 650 t.	II										From 401 to 1,000 cv			
From 651 to 1,000 t.	III										Over 1,000 cv			
From 1,001 to 1,500 t.	IV													
Over 1,500 t.	V													
Total											Total			

1) Pushers

Table VI. NEW CRAFT BROUGHT INTO SERVICE DURING 1969

Country	Self-propelled craft				Dumb craft			Total cargo-carrying craft				Tugs + pushers		
			Cargo capacity			Cargo capacity			Cargo capacity				Horsepower (cv)	
	Class	Number	Total (tonnes)	Average (tonnes)	Number	Total (tonnes)	Average (tonnes)	Number	Total (tonnes)	Average (tonnes)	Type	Number	Total (tonnes)	Average (tonnes)
Germany														
Up to 250 t.	0										Up to 250 cv			
From 251 to 400 t.	I										From 251 to 400 cv			
From 401 to 650 t.	II										From 401 to 1,000 cv.			
From 651 to 1,000 t.	III										Over 1,000 cv			
From 1,001 to 1,500 t.	IV													
Over 1,500 t.	V													
Total											Total			
Austria														
Up to 250 t.	0										Up to 250 cv			
From 251 to 400 t.	I										From 251 to 400 cv			
From 401 to 650 t.	II										From 401 to 1,000 cv			
From 651 to 1,000 t.	III										Over 1,000 cv			
From 1,001 to 1,500 t.	IV													
Over 1,500 t.	V													
Total											Total			
France														
Up to 250 t.	0	30	5,283	176	12	2,135	178	42	7,418	177	Up to 250 cv			
From 251 to 400 t.	I	110	38,574	351	32	11,529	360	142	50,103	353	From 251 to 400 cv			
From 401 to 650 t.	II	17	8,341	491	55	24,996	454	72	33,337	463	From 401 to 1,000 cv			
From 651 to 1,000 t.	III	12	10,786	899	12	9,624	802	24	20,410	850	Over 1,000 cv			
From 1,001 to 1,500 t.	IV	1	1,029	1,029	-	-	-	1	1,029	1,029				
Over 1,500 t.	V	1	2,500	2,500	2	3,698	1,849	3	6,198	2,066				
Total		171	66,513	389	113	51,982	460	284	118,495	417	Total			
Belgium														
Up to 250 t.	0	4	481	120	-	-	-	4	481	120	Up to 250 cv			
From 251 to 400 t.	I	-	-	-	1	290	290	1	290	290	From 251 to 400 cv			
From 401 to 650 t.	II	3	1,407	469	-	-	-	3	1,407	469	From 401 to 1,000 cv			
From 651 to 1,000 t.	III	2	1,746	873	-	-	-	2	1,746	873	Over 1,000 cv			
From 1,001 to 1,500 t.	IV	-	-	-	-	-	-	-	-	-				
Over 1,500 t.	V	1	1,529	1,529	-	-	-	1	1,529	1,529				
Total		10	5,163	516	1	290	290	11	5,453	496	Total	91	16,300	179
Italy														
Up to 250 t.	0										Up to 250 t.			
From 251 to 400 t.	I										From 251 to 400 t.			
From 401 to 650 t.	II										From 401 to 650 t.			
From 651 to 1,000 t.	III										From 652 to 1,000 t.			
From 1,001 to 1,500 t.	IV										Over 1,001 to 1,500 t.			
Over 1,500 t.	V													
Total											Total			
Netherlands														
Up to 250 t.	0	16	1,600	100	50	6,700	134	66	8,300	126	Up to 250 t.	18	2,253	125
From 251 to 400 t.	I	24	7,800	323	14	4,100	293	38	11,900	313	From 251 to 400 t.	10	3,200	320
From 401 to 650 t.	II	41	21,300	517	16	8,300	519	57	29,600	519	From 401 to 650 t.	14	6,790	485
From 651 to 1,000 t.	III	35	2,900	83	9	7,500	833	44	10,400	236	From 651 to 1,000 t.	-	-	-
From 1,001 to 1,500 t.	IV	9	11,400	1,266	5	6,100	1,220	14	17,500	1,250	From 1,001 to 1,500 t.	10	10,760	1,076
Over 1,500 t.	V	-	-	-	27	73,300	2,641	27	73,300	2,641	Over 1,500 t.			
Total		125	45,000	360	121	106,000	876	246	151,000	614	Total	52	23,003	442
Switzerland														
Up to 250 t.	0	-	-	-	-	-	-	-	-	-	Up to 250 t.	1	170	170
From 251 to 400 t.	I	-	-	-	-	-	-	-	-	-	From 251 to 400 t.			
From 401 to 650 t.	II	-	-	-	-	-	-	-	-	-	From 401 to 650 t.			
From 651 to 1,000 t.	III	2	1,993	997	-	-		2	1,993	997	From 651 to 1,000 t.			
From 1,001 to 1,500 t.	IV	6	6,941	1,157	2	2,590	1,295	8	9,531	1,191	From 1,001 to 1,500 t.			
Over 1,500 t.	V	-	-	-	2	3,206	1,603	2	3,206	1,603	Over 1,500 t.	1	170	170
Total		8	8,934	1,117	4	5,796	1,449	12	14,730	1,228	Total			
Yugoslavia														
Up to 250 t.	0										Up to 250 t.			
From 251 to 400 t.	I										From 251 to 400 t.			
From 401 to 650 t.	II										From 401 to 650 t.			
From 651 to 1,000 t.	III										From 651 to 1,000 t.			
From 1,001 to 1,500 t.	IV										From 1,001 to 1,500 t.			
Over 1,500 t.	V										Over 1,500 t.			
Total											Total			

Table VII. PIPELINES
LENGTH OF PIPELINES IN OPERATION AT END OF YEAR

Country		Kilometres	
	1967	1968	1969
France	2,341	3,003	3,407
Netherlands	228	323	323
Spain	267	267	267
Switzerland	222	222	222
United Kingdom	1,133	1,513	1,577
Germany	1,571	1,571	1,571

Table VIII. TRAFFIC AT MAJOR SEAPORTS

Country	1968 (million tons)	1969 (million tons)	Percentage change
Germany (all seaports combined)	117,400	127,000	+ 8.2
of which : Hamburg	38,100	40,900	+ 7.3
Bremen	19,000	20,600	+ 8.4
Wilhelmshaven	20,800	21,100	+ 1.4
Belgium (all seaports combined)	80,052	91,068	+ 13.8
of which : Antwerp	72,396	73,020	+ 0.9
Spain	114,757	123,522	+ 7.6
France (all seaports combined)	169,667	192,286	+ 13.3
of which : Marseilles and annexes	55,928	62,937	+ 12.5
Le Havre	41,956	49,180	+ 17.2
Dunkirk	18,709	20,776	+ 11.0
Italy	223,547	214,905	- 3.9
Norway	32,662	..	..
Netherlands	198,035	226,654	+ 14.5
of which : Rotterdam	156,882	181,948	+ 16.0
Amsterdam	17,962	19,903	+ 10.8
Portugal (Port of Douro)	---	0,426(1)	---
United Kingdom	328,444	332,519	+ 1.2
of which : London	60,080	55,279	- 8.0
Liverpool	27,384	28,844	+ 5.3
Milford Haven	30,041	39,151	+ 30.3
Sweden (10 largest ports)	50,171	..	..
Yugoslavia	16,794	..	..
Denmark	43,704	49,818	+ 14.0
of which : Copenhagen	11,400	..	..

1) Traffic to or from the hinterland only.

REPORT OF THE COMMITTEE OF DEPUTIES ON PRESENT PROBLEMS CONCERNING COMBINED TRANSPORT WITH SPECIAL REFERENCE TO LARGE CONTAINERS

CM(70)18

Contents

I. FOREWORD

1. At its 29th Session, on 11th June, 1969 in Stockholm, the Council of Ministers approved the report on problems concerning large container transport and roll-on/roll-off services (1) [CM(69)7] and adopted a Resolution on this subject. The Council gave its views on the essential problems at present arising in this field and instructed the Committee of Deputies :

- "to watch the development of containerisation for all modes of transport, with special reference to container transport within Europe and roll-on/roll-off services ;

- to continue to investigate problems relating to transport technology, economics and policy in consultation with the international organisations ;

- to undertake a complete study of the problems concerning the policy to adopt with regard to combined transport with due regard to the Report on the Effects of Containerisation of the Railways ;

- to submit to the Council of Ministers, in June 1970, or not later than December 1970, a report on the main developments concerning container transport and roll-on/roll-off services, in particular with regard to the various modes of transport within Europe itself"

2. The Committee of Deputies instructed the Group of Rapporteurs on Combined Transport to submit the requested report to the Council of Ministers before December 1970.

This Group is made up of experts from the Federal Republic of Germany (Chairman), Belgium, France, Italy, the Netherlands, Sweden, Switzerland and the United Kingdom. Representatives of the Maritime Transport Committee of the O. E. C. D. and of the E. C. E. Secretariat also took part in the Group's proceedings.

As always, the help given by the Maritime Transport Committee of the O. E. C. D. and the E. C. E. Secretariat was extremely useful.

The U. I. C. provided a wealth of material on container terminals already in operation, under construction or planned by railway authorities.

3. At the session of the Council of Ministers held in Florence on 11th June, 1970, the Chairman of the Group of Rapporteurs already made an oral report on progress with this assignment and the lines on which the Group was working. On this occasion, the Council stated its desire that the forthcoming report should if possible contain practical suggestions as to the policy to adopt with regard to combined transport.

4. In accordance with its terms of reference, the Group of Rapporteurs discussed this report with the representatives of the international organisations concerned. The following international organisations, together with the Secretariats of the OECD and ECE, were invited to a hearing on 16th September 1970, in Paris :

International Union of Railways (U. I. C.)

International Road Transport Union (I. R. U.)

International Union for Inland Navigation (U. I. N. F.) (2)

International Chamber of Commerce (I. C. C.)

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1) Under the E. C. E. definition, "roll-on/roll-off" services are those in which vehicles (railway wagons, lorries, trailers, semi-trailers, containers, etc.) can be transferred from one means of transport to another either on their own wheels or with the help of detachable axles or moving platforms.

The term is usually only applied to transfers from a mode of land transport to a ship and vice-versa.

2) Were unable to be present

International Federation of Forwarding Agents' Associations (F. I. A. T. A)

Institute of Transport Aviation (I. T. A.)

European Civil Aviation Conference (ECAC)

International Transport Workers' Federation (I. T. F.)

International Federation of Trade Unions of Transport Workers (W. C. L.)

International Container Bureau (I. C. B.)

International Chamber of Shipping (I. C. S.)

International Cargo Handling Co-ordination Association (I. C. H. C. A.) (1)

Council of European Industrial Federations (C. E. I. F.)

International Standardization Organisation (I. S. O.)

International Union of Combined Rail-Road Transport Companies.

5. The international organisations declared themselves very pleased to have had this opportunity to give their views on an E. C. M. T. Report which was still in draft form.

They expressed agreement as to the need to extend the principles of general transport policy as set out in Part II of the Report to combined transport, and endorsed the conclusions reached on this point.

It may therefore be said that the consultation procedure was found satisfactory.

The international organisations made some significant contributions, either orally or in writing, which have been taken into account in the final draft of the report.

II. BASIC PRINCIPLES OF A PROMOTION POLICY FOR COMBINED TRANSPORT

1. The Council of Ministers adopted in 1963 an Outline Plan concerning General Transport Policy CM(63)15 as a guideline for discussions on general transport policy. It therefore seems logical that the basic principles set out in the Outline Plan should also apply to combined transport, viz :

- equal treatment for transport modes and operators ;

- freedom of choice for users ;

- equal treatment for users ;

- profitability of undertakings and sufficiently independent management.

2. This report accordingly discusses :

- how far the basic principles of the Outline Plan are already implemented in the field of combined transport ; and,

- what further steps might have to be taken in future as regards the means of action listed in the Outline Plan.

The application of basic principles to combined transport is discussed in paragraphs 3 to 6 below.

3. Equality of treatment as between different modes of transport and operators

The Member countries are trying to put this principle into practice by stages. The treatment accorded to different modes and operators still varies in certain respects from one country to another. Various reports show this to be the case, inter alia, as regards :

- allocation of infrastructure costs ;

1) Were unable to be present.

- control of capacity ;

- taxation ; and,

- State responsibility for liabilities that some transport undertakings are obliged to incur but which are not directly related to their operations.

All these considerations, which concern transport generally, are equally applicable to combined transport at the national and international levels alike.

A promotion policy for combined transport which is designed to ensure equal treatment should therefore exploit fully the economic advangtage inherent in each mode.

The operational structure of the railways, for instance, is such that as a general rule they are mainly suited to scheduled long-distance bulk hauls of containers on truk lines, which implies low costs.

The representatives of the U. I. C. also drew attention to the large increase in transport of containers in small numbers, carried between terminals by ordinary fast freight trains.

On the other hand, the field of action open to road transport is wide. Because of its flexibility it is especially suitable for transport of containers in small numbers and for short-distance and terminal hauls.

The representatives of the I. R. U. pointed out that road transport operators also carry large containers on long hauls. They also drew attention to the unfortunate repercussions which the inadequate technical standards in certain countries had for road transport of containers.

By their very nature, inland waterways are as a general rule less amenable to container transport, in which speed is an essential element. In some cases, however, waterway transport operators are justifiably showing increased interest in container transport, especially on the Rhine.

In this connection the U. I. N. F. drew the attention of the Conference to the delays caused to inland waterway transport by the state of the infrastructure, which prevents waterway transport operators from taking part in container traffic, particularly on waterways where loading is limited by bridges or tunnels. In the same context it pointed out the advantages to be derived from promoting the automatic operation of locks, electric lighting on bridges, and the use of radio-telephones to control the orderly passage of craft through lift or swing bridges and locks.

Certain International Organisations, the F. I. A. T. A. in particular, drew attention to the fact that imports have to bear value added tax in certain countries, and to the unequal treatment of transport undertakings which results from this.

Conclusion

The principal aim of any promotion policy for combined transport should be to ensure that the specific advantages of each mode are maximised.

To this end, consideration should above all be given to further progress in the removal of inequalities in taxation, and to more flexible arrangements as regards tariffs and access to the market.

Concerning the last point, it would be desirable to prevent the formation of monopolies in the combined transport field and to promote the free access of all modes to the combined transport market, without this prejudging the particular policy to adopt regarding each mode.

4. Freedom of choice for users

At present, users are largely free to choose any particular mode or operator for the combined transport operations they wish. This is the corollary of the principle of equality as between transport modes and undertakings mentioned under 3 above.

Generally speaking, own-account

carriers are still not making use of piggy-back transport. This is not due to government intervention but to economic considerations peculiar to the modes of transport involved. Even where European railways do allow own account carriers to use piggy-back facilities, they do not always give them the benefit of the rates charged to professional carriers. In actual practice, therefore, such piggy-back facilities as may be made available to own account transport do not turn out to be truly attractive.

As it is in the interests of railway managements and their government trusteeship authorities alike that railway capacity should be used to best purpose, it would be logical gradually to eliminate the unwarranted barriers which hamper own account carriers from making use of piggy-back transport facilities. Action on these lines would also relieve road congestion wherever this may seem desirable.

Conclusion

Governments should endeavour, within their own sphere of jurisdiction, to create comparable conditions for the use of piggy-back facilities by own-account carriers and professional carriers.

5. Equal treatment for users

When the Outline Plan concerning general transport policy was adopted, it was pointed out that users could be given equal treatment only insofar as they were in comparable situations. This basic principle proves somewhat difficult to apply in actual practice as it might conflict with the commercial freedom of transport undertakings. As already pointed out, preferential treatment for a given form of transport may hamper freedom of choice and ultimately imply unequal treatment for users.

Conclusion

The practical application of equal treatment for users in the combined transport field depends largely on the commercial policy decisions of transport operators. However, governments should endeavour to ensure that equal treatment is granted where conditions are comparable.

6. Profitability of undertakings and sufficiently independent management

Transport operators are under an economic obligation to pay their way and seek profitability. It normally lies with the State to remove the barriers which may result from government regulations conflicting with this policy. This goes hand in hand with the need for sufficiently independent management of railway administrations.

The development of combined, transport in Europe plainly shows that governments are generally inclined to take account of this principle and enable the railway undertakings concerned to follow a flexible policy in this respect. At national and international level, new companies able to follow an effective policy in the fields of co-operation and competition have been created. At national level, this applies to companies established by the railways for the promotion of container transport and, where other modes of transport are concerned, companies more particularly concerned with piggy-back operations. At international level, the INTERCONTAINER Company is as independent as possible an instrument of management policy. There has also been some co-operation at international level for piggy-back transport.

Conclusion

The Member countries should, in accordance with their general policy concerning the railways, also endeavour to give them the possibility, both nationally and internationally, of pursuing, where combined transport is concerned, a commercial policy which fits into an independent management framework aiming at profitability.

III. ESSENTIAL DATA ON COMBINED TRANSPORT TRENDS, WITH SPECIAL REFERENCE TO LARGE CONTAINERS

A. 1. Development of maritime transport by large containers

The application of the basic principles mentioned in Chapter II assumes even more importance as the strong drift towards containerisation has continued since the publication of the last report [CM(69)7 Final of 19th August, 1969]. On the North Atlantic (United States/United Kingdom and Continent) and Pacific (United States/Japan) routes, container carryings have risen fast and the share of general cargo transport accounted for by containers in 1969 exceeded 40 per cent. Meanwhile, new routes are being opened up for container transport (e. g. Western Europe/Australia and Japan/Australia). Container services are also planned between Europe and Japan, America and Australia/New Zealand and Europe and New Zealand.

Apart from this deep-sea traffic, due regard must also be paid to links between Great Britain and the Continent and between the Scandinavian countries and the rest of Western Europe. According to the O. E. C. D., the world total of sea-going container ships at the end of 1969 was 205. Their total carrying capacity was 115, 000 containers (in standard 20 ft. units).

Type	Number of vessels	Total tonnage ('000) dwt. (1)	Total carrying capacity in standard 20 ft. units
Full container ships of which :	106	1, 500	83, 000
Specially built	38	700	38, 000
Converted	68	800	45, 000
Part container ships	99	1, 300	32, 000
Total	205	2, 800	115, 000

2. In view of the size of the order book for specialised ships the swift development of large container transport is likely to continue. According to the O. E. C. D. sea-going container vessels on order in October 1969 totalled 147 (112 new buildings and 35 standard 20 ft. containers. Full container ships made up the greatest part of the order book with 107 vessels and a carrying capacity of 125, 000 20 ft. containers

The following table shows the position concerning orders at 1st October, 1969 (2) :

3. On the United States and Canada east coast - Western Europe route, one of the most important for containerised transport, the number of containers carried in both directions in 1968 amounted to 200, 000 standard 20 ft. units (1. 1 million tons gross). The correspon-

1) Deadweight tonnage

2) No more recent information is available.

Delivery	Type	Full container ships	Part container ships	Total
1969	Number of vessels	12	11	23
	Carrying capacity in standard 20 ft. units	13,000	9,000	22,000
1970	Number of vessels	33	13	46
	Carrying capacity in standard 20 ft. units	34,000	5,500	39,500
1971	Number of vessels	22	5	27
	Carrying capacity in standard 20 ft. units	22,000	3,500	25,500
1972 and later or unknown	Number of vessels	40	11	51
	Carrying capacity in standard 20 ft. units	56,000	2,000	58,000
Total	Number of vessels	107	40	147
	Carrying capacity in standard 20 ft. units	125,000	20,000	145,000

ponding figures for the first six months of 1969 were 151,000 units (1.3 million tons), and this notwith-standing the American dock strike lasting several weeks at the beginning of 1969. The figure for the whole of 1969 on this route is likely to exceed 400,000 containers (3 million tons gross). The aggregate capacity of the ocean-going vessels handling this traffic in 1969 amounted, at the latter end of the year, to about 35,000 standard 20 ft. units.

4. Precise figures for large container transport between Europe and Australia are not yet available.

According to the O.E.C.D., estimated vessel capacity on the Western Europe-Australia route at the end of 1969 and the beginning of 1970 was about 12,000 standard 20 ft. containers, which is equivalent to an annual carrying capacity of 70,000 20 ft. containers in each direction. Total vessel capacity at the end of 1970 and the beginning of 1971 is expected to be 18,000 containers, i.e. an annual carrying capacity of about 100,000 in each direction. In 1972, it is intended to put into commission another 7,000 units involving an additional carrying capacity of 36,000 containers. Account must also be taken of large container traffic on the short-sea routes between the United Kingdom, Ireland, Western Continental Europe and Scandinavia which has increased to a considerable degree.

As regards container traffic between the United Kingdom, Ireland and the Continent, the total number of loaded Containers increased from 362,000 in 1967 to 702,000 in 1969 of which 485,000 were large containers.

B. Containers handled at seaports (1)

5. a) Container traffic handled through seaports in the Federal Republic of Germany have increased steadily, as shown in the following table :

	Number of large containers handled		
Port	1967	1968	1969
Hambourg	10,200	26,600	41,942
Bremen/Bremerhaven	35,500	47,000	73,311
Lübeck	2,700	3,800	4,149
Total	48,400	77,400	119,402

b) Large container traffic in Belgian seaports developed as follows :

1) As the methods adopted for compiling these statistics differ, the figures are comparable only within certain limits.

I. Antwerp (1)

Year	Discharged		Loaded		Total	
	Number	Net tonnage	Number	Net tonnage	Number	Net tonnage
1968	32, 191	328, 121	25, 256	276, 561	57, 447	604, 682
1969	51, 369	594, 065	49, 073	601, 511	100, 442	1, 195, 576
Difference					+ 75 %	+ 98 %

1) Empty containers not included

II. Zeebrugge(2)

Year	Total number of containers loaded and discharged
1968	21, 505
1969	64, 858
Difference	+ 200 %

2) Loaded and empty containers

Entry into service of the terminal: 27th March, 1968

c) Container traffic in Spanish ports in 1969 was as follows :

Port	Total tonnage	Number of containers (loaded or empty)	
		20-ft. or over	under 20 ft.
Barcelona	177, 700	9, 000	25, 000
Bilbao	122, 347	11, 518	-
Cadiz	109, 916	13, 459	-
Pasajes	18, 947	1, 359	-
Tenerife	7, 000	-	2, 000
Valencia	4, 717	1, 517	4, 715
Alicante	2, 883	563	-

d) In France, container traffic is expanding considerably particularly at Le Havre, as will be seen from the following table :

I. Port of LE HAVRE

	Discharged		Loaded		Total	
	Number of containers	Gross tonnage	Number of containers	Gross tonnage	Number of containers	Gross tonnage
1967	5,000	42,000	4,900	58,000	9,900 (1)	101,000
1968	8,321	70,687	9,279	105,452	17,600 (1)	176,139
1969	14,206	156,068	16,965	204,901	31,600 (1)	360,969
1970 (1st half)	14,141	165,259	16,118	206,175	30,259 (1)	371,434

1) Expressed in 20-foot units, 12,200 in 1967, 21,000 in 1968, 44,600 in 1969, 47,700 in first half of 1970

II. Port of DUNKERQUE

1969	4,161	43,541	4,256	40,675	9,417	84,216

III. Port of MARSEILLE

Total traffic in 1969 approximately 3,000 containers.

e) In Greece, 264 empty and 284 loaded containers were handled through the Piraeus during the fourth quarter of 1969.

f) The position in Italy may be summarised as follows :

	Number of containers handled	
Port	1968	1969
Genoa	17,101	16,800
Leghorn	9,000	22,625

At Genoa, by far the majority of these containers were filled or emptied within the port area itself ; at Leghorn, on the other hand, an estimated 50 per cent of the total container traffic handled was in transit to or from the hinterland.

Some container traffic on a minor scale was also recorded at Naples and at other smaller ports.

g) In Norway the number of con-

tainers handled (inbound and outbound) in 1969 amounted to 13,500 units of all categories at Oslo, plus another 1,000 units or so for all other Norwegian ports.

h) The following table gives a rough picture of container traffic (broken down by length categories) at Netherlands seaports in 1969.

i) In Sweden the number of large container units (20-foot equivalent) handled in Göteborg was as follows :

	Unloaded	Loaded
1968	22,072	21,862
1969	27,851	25,596

C. Transport of large containers between ports and the hinterland

6. Most of these containers are consigned by rail or road to or from various points in the European hinterland. The inland waterways still account for only a small share of such transport. The railways' share varies from country to country. A few examples are given below :

a) Germany (Federal Republic):

Loaded containers carried 1967-1969 (units of 20 feet or more)

	Rail	
1967	1968	1969
11,000	43,000	102,000
116,000 t	452,000 t	1,326,000 t

b) Austria

Large containers carried by rail in 1969

	Number	Tonnage
Imports	2,708	32,922
Exports	3,416	50,671
Transit	998	19,029
Internal traffic	501	5,829

(Containers carried within Austria at the beginning or end of international hauls).

The Austria Federal Railways also carried 3,587 large containers in 1969.

c) In Belgium, the breakdown of container traffic according to inland modes of transport varies widely according to the port concerned. The percentage for Antwerp are as follows :

	1968	1969
Rail	20 per cent	30 per cent
Road	80 per cent	70 per cent

At Zeebrugge, on the other hand, the breakdown is quite different :

	1968	1969
Rail	74 per cent	92 per cent
Road	26 per cent	8 per cent

d) in France, 80 per cent of the containers passing through the port of Le Havre are transported by rail.

e) In Greece, all container traffic between the Piraeus and the hinterland has so far gone by road.

f) As regards the situation in

CONTAINER TRAFFIC, BROKEN DOWN BY CONTAINER LENGTH CATEGORY, AT NETHERLANDS SEAPORTS IN 1969

	Discharged			Loaded				
	Number of containers	Filled containers		Number of empty containers	Number of containers	Filled containers		Number of empty containers
		Number	Cargo (tons)			Number	Cargo (tons)	
Seaports : total of which (length)	143,235	121,779	1,188,504	21,456	136,125	110,158	1,159,751	25,967
8-19 feet	40,378	31,275	117,004	9,103	44,307	31,908	173,525	12,399
20-39 feet	87,869	76,321	869,245	11,548	79,824	67,762	841,374	12,062
40 feet and over	14,988	14,183	202,255	805	11,994	10,488	144,852	1,566
Rotterdam, total : of which (length)	103,327	89,766	1,053,878	13,561	92,778	80,107	989,253	12,671
8-19 feet	9,590	6,907	62,201	2,683	9,800	9,224	98,475	576
20-39 feet	79,727	69,541	799,796	10,186	71,978	61,201	758,211	10,777
40 feet and over	14,010	13,318	191,881	692	11,000	9,682	132,567	1,318
Amsterdam, total : of which (length)	19,579	17,697	95,816	1,882	21,663	8,813	102,542	12,850
8-19 feet	10,712	10,259	16,636	453	13,256	1,812	7,264	11,444
20-39 feet	7,927	6,594	68,913	1,333	7,430	6,200	83,028	1,230
40 feet and over	940	844	10,267	96	977	801	12,250	176

Statistiek
70-5-37

LOADED AND EMPTY CONTAINERS 20 FEET OR MORE IN EXTERNAL LENGTH
INWARDS AND OUTWARDS, BY PORT : GREAT BRITAIN, 1969

(1) The following table outlines the container traffic handled at seaports in Great Britain in 1969 :

Port/Port group	Number of units									Tonnage of goods (thousand tons)		
	Loaded units			Empty units			All units					
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
THAMES AND NORTH KENT :												
London	27,366	33,835	61,201	10,158	3,067	13,225	37,524	36,902	74,426	303	298	601
Other	87	4	91	-	29	29	87	33	120	1	-	1
Total	27,453	33,839	61,292	10,158	3,096	13,254	37,611	36,935	74,546	304	298	602
ENGLISH CHANNEL AND SOUTH COAST:												
Dover	256	557	813	73	103	176	329	660	989	3	6	9
Southampton	6,756	6,447	13,203	2,556	755	3,311	9,312	7,202	16,514	79	56	135
Other	5,079	727	5,806	29	5,192	5,221	5,108	5,919	11,027	28	10	38
Total	12,091	7,731	19,822	2,658	6,050	8,708	14,749	13,781	28,530	110	72	182
WALES AND SEVERNSIDE :												
Total	12,632	14,567	27,199	3,395	2,009	5,404	16,027	16,576	32,603	117	118	235
NORTH WEST :												
Liverpool	10,662	12,579	23,241	3,016	1,532	4,548	13,678	14,111	27,789	120	146	266
Preston	19,466	20,795	40,261	786	1,208	1,994	20,252	22,003	42,255	157	172	329
Other	27,071	36,748	63,819	8,846	2,931	11,777	35,917	39,679	75,596	297	333	630
Total	57,199	70,122	127,321	12,648	5,671	18,319	69,847	75,793	145,640	574	651	1,225
SCOTLAND :												
Total	17,710	29,076	46,786	7,951	683	8,634	25,661	29,759	55,420	180	341	521
NORTH EAST AND HUMBERSIDE :												
Hull	23,529	22,285	45,814	5,009	2,824	7,833	28,538	25,109	53,647	318	276	594
Other	17,302	13,925	31,227	1,151	6,279	7,430	18,453	20,204	38,657	207	147	354
Total	40,831	36,210	77,041	6,160	9,103	15,263	46,991	45,313	92,304	525	423	948
EAST MIDLANDS AND EAST ANGLIA												
Felixstone	25,132	23,939	49,071	3,126	4,476	7,602	28,258	28,415	56,673	294	249	543
Other	30,322	46,480	76,802	10,213	3,632	13,845	40,535	50,112	90,647	266	526	792
Total	55,454	70,419	125,873	13,339	8,108	21,447	68,793	78,527	147,320	560	775	1,335
ALL PORTS :	223,370	261,964	485,334	56,309	34,720	91,029	279,679	296,684	576,363	2,370	2,678	5,048

Italy, no estimates of rail/road breakdown of inland container traffic are available, but existing regulations concerning weights and dimensions of road vehicles badly hamper road hauliers in getting a share of such traffic as they do not allow the carriage of 40-foot containers by road. While a considerable proportion of 20-foot and 35-foot containers goes by road, the bulk of this traffic is handled by the railways.

Apart from this, 10th July, 1968, the railways are running special container transport services between the north European ports and Italy. One of these services, the "Trans-Europe Container Express" provides a link between the Benelux ports and Milan-Rogoredo, another runs from the United Kingdom to Italy via Zeebrugge and Chiasso or Dunkerque and Modane.

On the routes mentioned, five trips a week have been made to and from Milan.

In addition, freightliner services have been put into service between Milan and Naples and on the Milan-Rogoredo-Genoa-Leghorn route. Similar links are planned between Leghorn and Florence.

The total container traffic carried by the railways in 1969 was as follows :

- internal traffic
  4,600 filled containers (69,000 t.)
  4,500 empty containers
- international traffic
  20,786 filled containers (365,563t.)
  2,270 empty containers

g) The container traffic breakdown for Switzerland in 1969 may be summarised as follows (approximate round figures) :

	Rail	Road
Number of large containers :	23,500	2,600
- of which in transit	20,980(89%)	-
import/export	2,520(11%)	2,600
Tons	375,000	...

It is worthy of note that 89 per cent of all large container rail traffic was in transit. If transit traffic is excluded, rail and road each account for roughly the same share of container traffic.

Freightliner services accounted for the following share of this traffic :

	Number of trains	Tons (gross)
1968	80	59,000
1969	523	362,000

h) Finally, it is interesting to note in the present context how transport by INTERCONTAINER has developed since it began to operate. (For detailed statistics provided by the Intercontainer Company, see Annex.)

D. Roll-on/roll-off services

7. Roll-on/roll-off services went on gaining ground on the transport market in 1969. It seems that this type of traffic has remained unaffected by the development of container transport. Additional services have been introduced, mainly between the United Kingdom and the Continent and between Scandinavia and the Federal Republic of Germany. Roll-on/roll-off services very frequently compete with conventional coastal transport and, on some routes, with inland transport modes.

a) Roll-on/roll-off services based on German Baltic ports

Route	Lorries and trailers carried					
	Lorries only			Lorries and trailers		
	1967	1968	1969	1967	1968	1969
Vogelfluglinie (D. B. /D. S. B.)	20, 885	21, 589	25, 028	33, 937	33, 819	37, 369
Travemünde-Scandinavia-Lübeck	48, 713	58, 880	72, 998	78, 808	96, 044	113, 376
Kiel-Scandinavia	3, 000	4, 640	5, 732	5, 966	9, 674	11, 788
Kiel-Oslo (Jahre-Linie)	2, 091	2, 989	3, 366))			
Kiel-Güteborg (Stena-Linie)	453	1, 294	1, 892))	5, 966	9, 674	11, 788
Kiel-Bagenkop (Kiel-Langeland-Linie)	456	357	474)			

b) Roll-on/roll-off services based on Belgian ports

Antwerp

Tons

Year	Freight discharged	Freight loaded	Total
1968	351,658	198,766	550,424
1969	369,045	216,266	585,311

Ostend

	Number of vehicles		
Year	Outbound	Inbound	Total
1968	727	912	1,639
1969	758	905	1,663

c) In France, roll-on/roll-off traffic is also increasing steadily, as the following tables show :

Le Havre

Tons

Year	Outbound	Inbound	Total
1966	84,800	78,500	163,300
1967	93,300	113,600	206,900
1968	207,300	228,800	436,100
1969	334,000	340,000	674,000

Dunkerque

Tons

(including private cars)

Year	Outbound	Inbound	Total
1969	87,869	65,071	152,940
1970 (1st half)	75,883	65,633	141,516

d) The only figures available for Norway are those for the roll-on/roll-off ferries between Norway and Denmark. They show that the number of lorries carried to and from Norwegian ports rose from 3,958 in 1968 to 4,723 in 1969. Total traffic for all services may be estimated at 7,000 lorries.

e) In the United Kingdom, the growth of roll-on/roll-off traffic is considerable. During the period 1965/69 road hauled roll-on/roll-off traffic more than doubled to over 2.5 million tons. Rail ferry traffic amounted to only about one-third of this amount and varied only slightly during the period under review.

Roll-on/roll-off traffic based on United Kingdom seaports

Unit : thousands

Year	Road vehicles/trailers		Railway wagons	
	Number	Traffic in tons	Number	Traffic in tons
1965	...	950	...	750
1966	...	1,257	...	763
1967	151	1,456	77	767
1968	226	2,059	93	788
1969	229	2,570	83	782

f) Roll-on/roll-off traffic at Netherlands seaports

Discharged	Number of vessels	Carrying capacity (1,000 tons)	of which with cargo		Freight discharged (1,000 tons)
			Number of vessels	Carrying capacity (1,000 tons)	
1968	1,501	5,674	1,498	5,648	553
1969	2,106	8,947	2,096	8,910	755
			of which cargo		
Loaded	Number of vessels	Carrying capacity (1,000 tons)	Number of vessels	Carrying capacity (1,000 tons)	Freight loaded (1,000 tons)
1968	1,511	5,699	1,504	5,685	591
1969	2,118	8,947	2,104	8,935	771

g) Roll-on/roll-off transport in Göteborg, Sweden

	Number of vehicles	
	Unloaded	Loaded
1968	18,315	19,204
1969	22,152	22,081

E. 8 LASH (1) barge carriers

In 1969, the first LASH (Lighter-on-board-ship) carrier entered service. This vessel of 43,500 dwt. (2) can carry about 27,000 tons of cargo in 73 barges which are loaded and discharged with a shipboard gantry crane independent of port handling equipment. The first two vessels of this type will be carrying about 500,000 tons of pulp and paper, flour, grain, chemicals, etc., per year between the United States Gulf Coast and Western Europe, taking general cargo on the return trip. So far, the European ports of call of these vessels are Rotterdam, Sheerness, Bremerhaven and Antwerp.

Consideration is being given to whether these vessels could handle traffic between industrialised and developing countries in cases where the port facilities of the latter are inadequate. This particularly applies to ports where cargo is transhipped offshore or where ships have to wait several weeks for loading or discharge. In some developing countries it may also be possible to send barges into the hinterland along the existing inland waterways. This would be an obvious benefit where road and rail networks are still insufficiently developed.

Seventeen more barge-carrying vessels are under construction or on order, two of them for a European shipping firm which estimates that these two could replace nine vessels of conventional type. Seven vessels in all, complete with lighters, will be serving European ports by the beginning of 1973. The total tonnage of lighters carried would be in the region of 180,000 tons. An inevitable consequence of this new transport technique is an increased share for inland waterway navigation in combined transport operations.

It is already clear that LASH transport will be able to compete with conventional forms of general cargo transport. Lighter transport will be concentrated on a carriage of packaged semi-manufactures and raw materials. In some cases, it will also be possible for lighters to carry general cargo at lower costs.

Barge-carriers may also carry containers, either on lighters, or in spaces specially provided on the carrier itself. In this way, LASH transport could also take over "homogeneous" general cargo and "freight sundries".

F. 9 Forecasts of future trends in large container traffic

Authorities responsible for particular modes of transport, port authorities and individual firms have already commissioned market studies concerning the future development of large container traffic at European level, or are about to do so. For instance, most of the railway administrations that are members of INTERCONTAINER have asked a London consultancy agency (McKinsey's) to carry out an exhaustive survey of the ways and means by which the European railways could more effectively participate in large-container traffic.

In the Autumn of 1969, the German Federal Government instructued

1) Lighter Aboard Ship

2) Deadweight tons.

a market survey institute to study the conditions and possible scope for container traffic within the country in future. The report will be ready in the Autumn of 1970. Long-term trends for freight traffic between Scandinavia, Great Britain and the other Western European countries are also being studied with special reference to combined transport. The results will be available in March 1971.

Conclusion

Though there have been distinct improvements in several countries, and despite the efforts made by the United Nations Economic Commission for Europe, container traffic statistics are not yet sufficiently consistent.

It would be most useful to have comparable statistics compiled on the same basis and broken down to the fullest possible degree, particularly with a view to ascertaining the size and trend of container traffic in relation to total traffic, in order that there may be a more solid foundation for valid forecasts and practicial transport policy measures concerning containerisation.

Governments should therefore take the necessary steps to improve and coordinate container statistics within the framework of the United Nations Economic Commission for Europe, especially port statistics and those concerning the various modes of inland transport.

IV. ESSENTIAL ELEMENTS FOR THE FORMULATION OF A COMBINED TRANSPORT PROMOTION POLICY

A. Transport by large containers

1. Problems of standardization - deviations from standards - safety of large containers

It is, in principle, unanimously agreed that the recommendations of the International Organisation for Standardization (I. S. O.) concerning the standardization of containers should be put into practice to the fullest possible degree. These recommendations cover the maximum external dimensions and weight of containers and the facilities and arrangements for their handling and control, this last procedure being carried out by national organisations (railway administrations, classification societies and technical control services). The I. S. O. has adopted minimum internal dimensions for large containers which will soon be issued as Recommendations.

The I. S. O. is at present working on standards for special containers such as refrigerator containers, bulk liquid containers and air transport containers and for container platforms with or without superstructures, and is also endeavouring to determine dimensional standards for the space between the container floor and loading platform. This body is also keeping close watch on the practical effects of standardization.

Many deviations from adopted standards are encountered in practice, especially at regional level. The main deviations concern external dimensions. According to I. S. O. recommendations, the dimensions of Series I containers should be : width 8 feet, height 8 feet (and, recently, 8 feet 6 inches for containers 40 feet in length) and, length 20 feet, 30 feet and 40 feet. Eight feet is the maximum permitted width for road vehicles in the United States, and the maximum width acceptable for containers on certain European vessels. The large-scale investment made in containers of this width, in the vessels for carrying them and in the handling equipment in ships and ports, is such that a modification of the I. S. O. standard width is out of the question.

In Europe, on the other hand, the maximum authorised width of road vehicles is 2. 50 metres, and it follows that containers built to I. S. O. standards (2. 43 metres) do not make full use of the authorised width. This state of affairs also prevents the optimum loading of I. S. O. large containers with freight loaded on European Pool pallets, size 800 x 1, 200, made to I. S. O.

standards, which are frequently used for intra-European transport.

Where maritime transport is concerned, each link in the transport chain must take into account the conditions prevailing elsewhere. Observance of the I. S. O. Recommendations therefore seems essential if the transport chain is to fulfill its purpose. For instance, the dimensions of containers carried on purpose-built container ships should comply with I. S. O. Recommendations particularly as regards width.

The principle of mutual observance of standards also applies to European inland transport. In some quarters the arguments given most weight are those concerning competition and co-operation between inland modes of transport. It is this approach which underlies the efforts in favour of using containers having exactly the same size as the body of a lorry which can be quickly loaded and discharged with as many European Pool pallets (of I. S. O. standard, size 800 x 1,200) as possible.

Against this, it is sometimes argued that pallets should be adapted to match containers and not vice-versa. It is further argued that as one deviation leads to another, more and more disparities might ultimately result. The basically universal character of containers might then be compromised.

Furthermore, this functional subdivision between inter-Continental and European transport is economically justifiable only if the large containers adopted on both sides can be lifted with the same handling facilities and carried on the same inland transport vehicles. It is also important to make adequate use of container capacity and dispense with empty runs to the fullest possible extent.

The E. C. E. Group of Rapporteurs on container transport discussed the problem of deviations from large container standards at its session on 29th April - 1st May, 1970. The representatives of the U. I. C. and of certain countries expressed the view that strength specifications should not be as stringent for European inland transport containers as for sea transport containers. In this connection it should be noted that the Group of Rapporteurs agreed to ask the governments and international organisations concerned to notify it of what they judged to be the minimum requirements concerning safety and maximum permissible weights and dimensions for large containers.

Conclusion

The E. C. M. T. should closely follow the work of the E. C. E. and I. S. O. in the various fields relating to the standardization of large containers, and should actively support their conclusions. In cases, however, where departures from standard dimensions are justified on economic grounds in certain geographical areas, care should be taken to ensure that the same handling facilities can be used. Even though changes are constantly taking place the principle that I. S. O. recommendations should be applied throughout the world still holds good.

2. Economic problems

a) Shipping and port investments

Container transport has involved considerable investment problems for shipping lines, port authorities and inland modes of transport. The O. E. C. D considers that there might be a right of overcapacity, especially on the North Atlantic routes, this having already occurred on several occasions for vessels of conventional types before container ships came into service. The ports have also made considerable efforts to provide container trans-shipment facilities. It is clear that in order to improve their competitive position, port authorities have invested heavily in this field. Maximum utilisation of equipment being generally desired keen competition between ports seems inevitable in future. Such a trend is bound to have important repercussions on inland transport investment.

Conclusion

Though its jurisdiction is restricted to inland transport the E. C. M. T. should continue, in close co-operation with the Maritime Transport Committee, to keep close watch on the development of containerisation where shipping lines and ports are concerned, in order that, if required, conclusions may be drawn as to inland transport investments with special reference to infrastructures.

b) Container terminals

In the Resolution adopted when it met at Stockholm in June 1969, the Council recalled the need for the harmonization of terminal installations and facilities.

At the Committee of Deputies' request, the U. I. C. has supplied detailed information on rail container terminals. This information will be shown on a map indicating where these terminals (either already in operation, under construction or planned) are located. Though only a first sketch, this way may still be a sound basis for appraising the situation with a view to ensuring co-ordination at international level if required.

The E. C. M. T. Secretariat has conducted a similar enquiry covering seaport and "non-rail" container terminals in the Member countries. The information thus obtained will also be shown on the map mentioned above.

As regards terminal operations, the Combined Transport Group confirms the view already expressed in CM(69)9 of 8th May, 1969, viz : "it is obvious that the supply of road vehicles for terminal haulage must be adequate for the volume of container traffic passing through the terminal. The ownership and management of these vehicles may be diversified, and diversification has advantages. Given the objective of making the containerised service attractive to users, it is desirable that consigners should be able to use the terminal or road haulage, services provided by the railway administration or (where such exists) a specialised, subsidiary entity formed specifically to organise and manage the containerised service. It is a matter of some importance that the organisation which operates the container terminal should operate or have effective control over, at least a proportion of the road vehicles engaged in terminal services, for two reasons : it will wish to be in a position to offer a reliable, door-to-door service to users who may have no road transport conveniently available ; and it must be able to ensure that containers moving through the terminal, inwards or outwards, are promptly cleared".

The I. R. U. stressed that terminals must be administered in such a way as to ensure neutral treatment for all modes concerned.

The U. I. C. pointed out that this was so as a general rule in the case of seaport terminals, these being intermodal, but it was logical that the railways should operate terminals which they had themselves built and financed.

Conclusion

Governments should keep each other informed about container terminal projects and, where necessary, provide for the co-ordination required at international level. They should also ensure that the operation of container terminals does not involve exploitation of dominant positions.

c) Initial financial aid for investment projects

In its Resolution of 11th June, 1969, the Council also judged it essential to bear in mind the problems raised by investment finance for the development of containerisation.

Where the siw Member countries of the Common Market are concerned, the Council of the European Communities, adopted, on 4th June, 1970, a Regulation concerning aids to rail, road and inland waterway transport.

Given that new techniques are

involved, this Regulation provides, under Article 3, 1, (c) :

"... when such aids are intended :

- either to facilitate research on types of transport and transport techniques that are more economic for the community ;

- to facilitate the development of types of transport and transport techniques that are more economic for the community ;

it being understood that such aids must be limited to the experimental stage and not cover the stage at which these types of transport and transport techniques are operated on a commercial basis".

Members of the Group of Rapporteurs whose countries are not members of the Common Market expressed similar views on this subject.

As regards the particular point raised by some countries, which concerns financial assistance for providing containerisation facilities, the Group noted that this issue could be considered as soon as further particulars are supplied.

Conclusion

The granting of government aid for research and development concerning types and means of transport that are a more profitable proposition for the community would be both warranted and timely. Care should however be taken to see that such aid is limited to the experimental stage.

d) Pricing problems

Where maritime transport is concerned, most countries have no means of intervening in the matter of freight rates. Only in the United States can this be done through the Federal Maritime Commission (F. M. C.). It follows that freight rates essentially depend on shipping lines or Conferences in consultation with individual shippers or Shippers Councils. Freight rates for container transport are calculated in much the same ways as for conven - tional transport. There are still scarcely any special tariffs for containers except for slight rebates on full container loads and door-to-door container transport. The growing tendency is towards door-to-door rates covering also the inland leg of the journey. Nor are there special rates for containers carried by road for hire or reward or for those carried on inland waterways. As regards domestic road haulage, rates are in some cases calculated in the type and weight of goods carried, in other cases on haulage costs exclusively. Rates for international road transport are calculated on the basis of haulage costs irrespective of the type and weight of load.

For domestic large container transport, the railways apply both normal rates and special container rates based on space employed and not on the type and weight of goods. For international large container transport by rail, a special European tariff is applied. Neither the type nor weight of goods are taken into account and rates both for the carriage of laden containers and for their return unladen are expressed in gold francs.

When merchandise conveyed by combined transport is damaged, it is not always possible to determine who is responsible. On the occasion of the hearing given to the International Organisations, the F. I. A. T. A. stated that it had prepared a document making the forwarding agent liable in such cases. Under this arrangement the forwarding agent liable up to an amount of 30 gold francs for merchandise lost or damaged while in his charge. Where the forwarding agent is also liable for delays to merchandise and for consequential damage, this liability is limited to 30 gold francs or double the value of the goods at his discretion.

Conclusion

It is desirable that governments leave the initiative for fixing large container rates to the modes of transport concerned and to the organisations created for this purpose, and that they support the efforts made to introduce

through rates for door-to-door transport, while maintaining the principle of profitability of operations.

3. Air transport

On the occasion of the hearing of the International Organisations, the I. T. A. presented a written statement of its position concerning the use of large containers in air transport. The I. T. A. reached, inter alia, the following conclusions :

Large containers have not yet begun to be used in civil air transport. It is however to be expected that with the introduction of the next generation of cargo carrying aircraft, this will be possible. The containers to be used must, however, meet the specific requirements of air transport. They must be capable of resisting higher rates of acceleration and deceleration than those used in surface transport. In addition they must have a flat base to enable them to be moved on the roller conveyors typical of handling systems on board aircraft and in airports. Since the containers used in air transport must in addition be as light as possible, the types usually employed are not suitable for service in this sector. It is also desirable that the containers used should meet I. S. O. standards as far as possible, so that following their transport by air they may be rapidly conveyed to their destination by surface vehicles.

As cargo aircraft capable of transporting large containers will already be in service in 1971, a worldwide Recommendation concerning standards for such containers has become a matter of urgency. For this reason ECAC has asked the I. C. A. O. to give priority to studying the question at its next session at the end of the current year, so as to ensure that containers are interchangeable between various airlines and with the modes of surface transport.

4. Operation of large container transport and forms of co-operation between transport operators

a) In accordance with the basic principles of the "Outline Plan for General Economic Policy" of the E. C. M. T., any means of transport can be used to carry large containers inside a given country.

More co-operation at national and international level seems to be called for if door-to-door transport of large containers is to be performed under the best conditions. The concept of through transport has been gaining ground, and total responsibility for the whole of the journey which the trader wishes to have performed is the essence of through transport. It is noted that acceptance of this responsibility does not mean or require single ownership of the means of transport used to carry containers. Among undertakings already offering through services within and beyond Europe, there is already a wide representation of transport interests, e. g. shipowners, airlines, railways, road haulage undertakings and freight forwarders.

The Representative of the F. I. A. T. A. after drawing attention to the need for impartiality at ports in the matter of choosing the mode of inland transport and the operator, stressed that this would best be ensured by the traditional forwarding agents.

More generally, the Representative of the F. I. A. T. A. pointed out that in the present stage of technical development the forwarding agents appeared to be particularly well qualified, where combined transport was concerned, to facilitate harmonization between the successive modes of transport and to help to establish greater co-operation between different modes of transport or different undertakings in the same mode of transport.

b) Co-operation between several road haulage undertakings is in principle desirable.

Generally speacking, it does not seem feasible for individual road haulage undertakings to team up separately with shipping companies with a view to

handling bulk hauls of containers to and from ports.

Another argument in favour of co-operation is that it would, to some extent, guarantee the independence of the road transport undertakings vis-à-vis the shipping companies.

c) Co-operation between railways and road haulage undertakings is necessary. Rail container traffic is especially profitable if handled between seaport terminals and a limited number of inland trans-shipment terminals. On the other hand, road transport is economically most suitable for fanning out from clearance centres in the hinterland. Several railway administrations are at present having such operations handled by independent transport undertakings and in this way ensure that they keep their existing customers. A small percentage of road-hauled traffic to and from inland terminals is handled in road vehicles owned by the railways themselves. The U. I. C. considers that this arrangement also enables the railways to gauge the true profitability of road haulage.

d) There is on the other hand a growing tendency towards vertical and horizontal mergers. Some of the most recently integrated undertakings handled both road and sea transport in their own ships and vehicles. Horizontal mergers within a given mode of transport are also increasingly frequent.

Concentration of this kind, whether by mergers or by co-operation between undertakings aims to create an integrated and efficient container transport service. This is true at national and international level alike.

The I. C. C., while noting the advantages of co-operation between transport companies, was very anxious to ensure that any steps in this direction would not be likely to lead to monopolies or even dominant positions being achieved by certain undertakings.

e) The creation of a container pool could also help to improve the profitability of large container transport, the utilisation of capacity being maximised at least cost by ensuring the optimum availability of containers, and keeping movements of empty containers to a minimum. A container pool of this kind would have to be self-financing, and its members would be bound to give foreign containers the same treatment as their ownn, on the lines of the procedure adopted in the E. U. R. O. P. Wagon Pool. Furthermore, the customs administrations concerned should ensure that containers belonging to a pool, whether foreign or home-based, should all be subject to the same conditions. On the other hand, it seems doubtful whether the European Pallet Pool can be taken as a model, exchanges of containers on a one-for-one basis not being practicable at present because of the disparity of the units involved.

It seems that the time to create a container pool has not yet come because the terms of competition between the various owners of large containers (shipping companies, container hire companies and inland transport operators) are too widely different. What is more, some uncertainties as to the future trends and possible financial risks still remain and, yet another point, exchanges are difficult because of differences in the price and quality of large containers at the time when they are bought. However, the question of crating a container pool should not be lost sight of pending the time when more units of each type of container come into service.

Conclusion

It is desirable that governments should encourage any initiative designed to improve profitability for all concerned by means of various forms of co-operation. This applies also to the creation of a container pool. It seems however, that such co-operation should primarily be left to private enterprise.

5. Effects on containerisation on the railways

In accordance with the terms of reference given to the Committe of

Deputies by the Council of Ministers, this report must give special consideration to the effects of containerisation on the railways. The following paragraphs cover this particular point.

a) The effects of containerisation on the railways were dealt with in an exhaustive report CM(69)9 , produced by the E. C. M. T., which discussed how far the railways were likely to take an active share in combined transport. In some quarters, it is felt that large container transport might reduce the scale of conventional rail traffic and that this, quite apart from the present situation of the railways, might in certain cases lead to overcapacity for the conventional wagon fleet and to traffic revenue losses resulting from changes in the tariff structure. In any event, many railway administrations have decided to increase their share of large container transport. This applies both to traffic from seaport clearance terminals and to essentially domestic transport. Plans for the acquisition of large containers and for the installation of rail terminals bear witness to the great importance that the railways attached to large container transport.

b) The thriving activity of the Intercontainer Company is another token of the future prospects for door-to-door transport of large containers inside Europe. The railways are generally able to deal with the operational and commercial problems initially raised by this form of transport.

c) Efficiently organised transport of large containers by rail between terminals would enable the railways to provide shippers with a door-to-door service and so win new traffics. According to a U. I. C. report, some European railways consider that containerised transport will not exceed 10 per cent of their total freight traffic.

In the light of the present-day pattern of production, it can be seen that the percentage of containerisable goods at present carried by road is a good deal higher. The railways consider that by using fast container trains and co-operating with short-distance road hauliers, much of this traffic could be carried by rail.

Generally speacking, it may be admitted that careful selection and rationalisation of rail container traffic would help to obtain a satisfactory return on the capital invested and to utilise railway installations to better purpose.

d) International freight traffic is subject to regulations providing for various controls, e. g. veterinary, health and phyto-sanitary controls, and qualitative controls for fruit and vegetables. Involving as they do considerable time losses, such controls reduce the efficiency of the transport chain, especially in the case of rail container traffic as the goods cannot be inspected on the trains itself because of the way containers are designed (with openings only at each end) which means that they must be butt-ended against a platform, thus involving long waits.

Despite the combined efforts of governments and inter-governmental organisations, it has not yet been possible to reduce these controls sufficiently. The problem could perhaps be solved by recognising the health and quality certificates, issued in the consignor country, which are appended to transport documents ; controls at the frontier would then be pointless.

Conclusion

Having regard to the need for better profitability, railway administrations should continue their efforts for effective participation in domestic and international container transport. They should in particular co-operate closely at international level in order to reap

the economic benefits of this type of transport, such benefits being mainly apparent for long-distance transport and bulk hauls.

Governments should also strive, at national and international level alike, to reduce to the utmost the delays resulting from frontier controls by providing for mutual recognition of health and quality certificates.

6. Social effects of containerisation

The social effects of containerisation are manifold. The supply of jobs, especially in the ports, will become scarcer but, on the other hand, container transport calls for highly-skilled workers familiar with present-day handling techniques. In a period of economic prosperity such as that now prevailing in most European countries, it does not generally seem difficult to redeploy redundant dock labour after any necessary retraining.

The I. T. F. representative drew attention to the social implications of the development of containerisation as regards the situation of the labour force in the docks and in the inland transport industries.

In particular, the savings obtainable from containerisation will be potential rather than real as long as the manpower released is not absorbed into productive employment matching its level of skill.

This being so, the social problem is by no means a minor issue in the present context. Indeed, it could rather be said that the solution of this problem is one of the conditions on which the economic viability of this technical innovation (i. e. large containers) depends.

The E. C. M. T. has recently appointed a working party to explore these problems.

The International Labour Organisation is at present looking into this problem. The Unions have expressed the wish to see the E. C. M. T. show more interest in the social implications of transport, with special reference to container transport. Some Member countries are at present investigating these matters at national level. In this connection, the social implications that increasing containerisation in inland transport will have on the modes of transport concerned should be kept more closely under review.

Conclusion

The authorities concerned should see to the re-employment of redundant dock workers. The E. C. M. T. should also keep very close watch on the social implications which may result from containerisation in inland transport, hence the special importance of the work to be done by the new Group appointed for this purpose.

7. Work in progress within the E. C. E.

a) Customs problems

(i) Revision of the Customs Convention on Containers (1956)(1)

The text of the draft revised Customs Convention on Containers is being modified in the light of comments received from governments and international organisations concerned. It is envisaged that the text of the draft will constitute a first draft for the Conference on International Container Traffic.

(ii) Revision of the Customs Convention on the International Transport of Goods under Cover of T. I. R. Carnets (T. I. R. Convention)

It is envisaged to undertake, during 1971, the drafting of a revised text of the T. I. R. Convention, with a

1) Studies are at present proceeding under the auspices of the Customs Co-operation Council (Brussels) with a view to formulating an international Customs transit procedure for door-to-door transport of goods, notably for container transport.

view to bringing the provisions of this Convention up to date on the basis of the relevant provisions, drafted for the revised text of the Customs Convention on Containers and taking into account the resolutions and explanatory notes adopted by the Inland Transport Committee and its subsidiary bodies.

b) Liability of carriers in combined transport operations and combined transport documents

The "round table" meeting, convened at the request of the E. C. E. Inland Transport Committee by the International Institute for Unification of Private Law (UNIDROIT), prepared the text of a draft Convention on the International Combined Transport of Goods (T.C. M. Convention), setting out provisions for the contract of combined international intermodal transport. The text has been circulated for comments to governments and the organisations concerned and will be reviewed at a joint I. M. C. O. / E. C. E. meeting of governmental legal experts. It is envisaged that the text of the draft will constitute a first draft for the Conference on International Container Traffic.

c) Marking and coding of containers

Various aspects of developing a uniform coding system for container markings continue to be studied in co-operation with international organisations, concerned International Organisation for Standardization (I. S. O.), International Union of Railways (U. I. C.), Organisation for Co-operation among Railways (O. S. J. D.) . The question of establishing an internationally agreed system for the official registration of the nationality of containers, taking into account Customs and fiscal requirements, is being examined, as well as the possibility of granting some kind of intergovernmental recognition to the directory of container owners' code marks being established by the International Container Bureau and possibly to other registers.

d) Standardization of containers

This question is being studied with regard to developing standards to promote safety of container operations, on the one hand, and establishing maximum dimensions and weights of containers in view of limitations imposed by infrastructure, as well as to facilitate the conveyance and handling of containers in combined transport, on the other hand. Information is being collected concerning the views of governments and interested international organisations on the necessity or desirability of enforcing internationally agreed standards concerning safety, on the one hand, and weights and dimensions for large containers used in multimodal transport operations, on the other.

It is envisaged that draft safety standards, to be prepared by I. M. C. O. in co-operation with E. C. E. , will constitute a first draft for the Conference on International Container Traffic. The question as to whether a draft agreement or recommendations on standard or maximum dimensions and weights of containers should be required for consideration by the Conference is being studied.

e) Multi-purpose approval of containers

A resolution recommending that governments provide or promote arrangements for providing unified testing, approval and certification procedures based on internationally agreed standards and reciprocally recognised certificates, issued in accordance with such procedures, has been adopted by the Inland Transport Committee. Information obtained concerning the implementation of this resolution will be used, inter alia, as a basis for studying whether international agreements or recommendations concerning the testing and inspection for two or more purposes and the reciprocal recognition of multi-purpose certificates of approval should be elaborated.

f) Statistical questions

i) Agreement was reached on the names and definitions of container

categories.

(ii) With a view to establishing additional statistical series concerning the movement of "large" (*) containers, information has been collected from Governments concerning the availability of various data on the inland movement of "large" containers. As it transpired that few governments could, at the present time provide reasonably complete data in this field, it was agreed to postpone, until a later date, the collection of such data.

g) Future work on problems arising in connection with international intermodal container transport

Following a decision by the General Assembly of the Inter-Governmental Maritime Consultative Organisation (I. M. C. O.) to make provision for an international conference on container 48th session, agreed to convene jointly with I. M. C. O. and as early as possible (preferably in 1972) at Geneva, a world-wide conference on container traffic.

The E. C. E. Inland Transport Committee agreed, prior to the decision of the Economic and Social Council, that, should the Council decide to take up the matter at the world level, it would make every effort to ensure the success of a conference convened to conclude agreements designed to facilitate the harmonious development of intermodal container transport. Accordingly, E. C. E., in co-operation with I. M. C. O., is undertaking the preparation of draft agreements and/or recommendations concerning safety requirements, Customs questions, combined transport contract, standardization of dimensions and weights and, where appropirate other administrative and technical aspects of international combined transport as preparatory documentation for the Conference. It is envisaged to circulate this documentation as "first drafts" by April 1971 to governments and international organisations concerned for their comments.

h) Impact of the development of transport by container on the economics of the various modes of inland transport

A first draft of a report, based on studies undertaken inter alia by the International Union of Railways (U. I. C.) and the International Road Transport Union (I. R. U.), has been circulated.

B. Piggy-back transport

1. Since the publication of the last report, the development of piggy-back transport has been stimulated in many ways CM(68)6 . Several European piggy-back transport companies decided in Vienna in 1969 to lay the foundations for a joint European organisation in this field. An organisation provisionally known as the International Union of Combined Rail/Road Transport Companies was set up in Paris in the Spring of 1970. This is a development of major importance since piggy-back transport is remunerative chiefly on long distances (in Europe, this usually implies international traffic) and on rail trunk lines carrying a large volume of traffic. International piggy-back services are now in operation between France on the one side and Belgium, the Netherlands, the Federal Republic of Germany and Italy on the other. Services of this kind are also in operation between Switzerland and the Federal Republic of Germany.

If this form of transport succeeds in increasing its share of the market by offering a good service at attractive rates, a likely consequence may be the reduction of road congestion and a better use of Railways facilities.

2. International piggy-back transport cannot however grow to its full stature as it is hampered by licensing regulations concerning international freight

(*) Container of 20 feet (6 m.) or more in length and more than 3 cubic metres.

transport. To deal with this state of affairs and encourage piggy-back transport, France has entered into agreements with the Netherlands, Belgium, Italy and the United Kingdom, providing for a special quota of licences valid for international piggy-back transport only. It is thanks to this measure, among others, that international piggy-back transport has developed in France.

3. Generally speaking, piggy-back transport is expanding. The main characteristics in this respect are set out below :

a) In France, piggy-back transport was introduced in 1948 with the U. F. R. method (carriage of semi-trailers, generally of limited capacity) ; it has been steadily developed on a considerable scale since then, and the introduction in 1959 of the Kangourou system (carriage of heavy semi-trailers of 20-23 metric tons carrying capacity) gave a considerable stimulus to this form of transport. The Kangourou sytem requires a specialised tractor and ramp for trans-shipment, with which a semi-trailer can be loaded or unloaded in three minutes.

Piggy-back transport as a whole has reached a relatively high level of activity : over 220,000 semi-trailers were handled in 1969, carrying a total of 2,650,000 tons.

The Kangourou system, which is practically the only one now used in international traffic, accounts for most of the progress made in this field ; it shows an expansion of over 20 per cent per year on average since 1967 : the traffic handled thus rose from 42,000 semi-trailers, carrying 891,000 tons, in 1967 to 63,000 semi-trailers, carrying, 1,300,000 tons in 1969.

A comparison between the first half-years in 1969 and 1970 reveals ans expansion of over 25 per cent : 31,200 Kangourou semi-trailers, carrying 641,000 tons, in 1970, compared with 24,600, carrying 510,000 tons, in 1969.

International traffic between France on the one hand and Benelux and Italy on the other, represents about one-fifth of the total Kangourou traffic : 13,000 semi-trailers, carrying 260,000 tons, in 1969 ; the progress shown is distinctly faster than for the total traffic : about 25 per cent per year from 1967 to 1969, and over 40 per cent between the first half of 1969 (6,200 semi-trailers - 126,000 tons) and the first half of 1970 (8,700 semi-trailers - 179,000 tons).

Services between France and the Federal Republic of Germany will be initiated on 1st October, 1970, on the Paris-Frankfürt and Paris-Stuttgart routes, connecting in Paris with the French Feeder lines running south. The introduction of other services is under consideration.

Alongside the development of the Kangourou process, investigations have been made, as a result of which wagons with fixed receptacles, of the Kangourou type, can load semi-trailers with the gantries used for containers.

Transfer by crane thus tends to become a common factor of the carriage of semi-trailers and that of trans-containers. A uniform technique for the carriage of semi-trailers might accordingly be adopted by all countries, thus removing one of the obstacles to the wider adoption of piggy-back transport in international traffic, i. e. the different methods of trans-shipment.

There are at present in France :

- 20 stations equipped for loading wagons by the Kangourou process ;

- 2 stations equipped for trans-shipment by gantry ; the number is steadily increasing.

b) In Belgium, so-called "Kangourou" traffic with France, sponsored by "S. A. Transport-Route-Wagon", developed as follows :

1966 : 259 semi-trailers
1967 : 934 semi-trailers

1968 : 1,239 semi-trailers
1969 : 1,487 semi-trailers.

c) In the Federal Republic of Germany a new piggy-back transport company ("Konbiverkehr"), comprising road hauliers associations, shippers associations and the Deutsche Bundesbahn, was established in the Spring of 1969.

The Management of the Company is made up of people who had been working in long-distance haulage and forwarding agents associations. In this way carriers were given confidence and persuaded to make use of piggy-back transport. The Company already has over a hundred road hauliers and forwarding agents.

As a consequence, the Deutsche Bundesbahn has recorded an increase in the number of units consigned by piggy-back services, these having amounted to 29,000 in 1969 as compared with 13,000 in 1968 and only 8,000 in 1967. This rising trend still continues.

The Federal Republic of Germany has put into commission since 1st October, 1969 wagons with low loading platforms for the carriage of lorries and trailers. Their wheels being of very small diameter (34 cm), such wagons can take lorries and trailers up to a height of 4 m on the Cologne-Stuttgart test run. In this way, any lorry can be carried without running into difficulties concerning the railway loading gauge. The loading and unlading of the train (which carries a maximum of 16 lorry-trailer units) takes 20 minutes in all. There is a nightly return service between Cologne and Stuttgart. After a few "growing pains" this service has become increasingly popular.

Combined rail/road transport undertakings are increasingly making use of "detachable bodies", which are in fact vehicle and trailer bodies with no running gear. There is a growing tendency to use only detachable bodies 7.15 m long and 2.50 m wide, which can be carried on lorries or trailers alike. Other models, 8.05 m and 6.25 m long, are also in use. At rail terminals, these detachable units are transferred with lifting gear from lorries and trailers to ordinary flats if the consignment is to be made by unit-train. Wagons fitted with shock absorbers are needed in cases where there is a risk of rough shunting. The number of detachable bodies in the Federal Republic of Germany amounted in 1969 to 5,000 units and is estimated to be rising at the rate of 2,000 a year. They account for only a small proportion of combined transport at present, but their use is fast expanding.

d) In Austria, the Hucketrans Company (a piggy-back transport undertaking) was established in November 1969. Its members are the Austrian long-distance forwarding agents association, the Austrian Federal Railways and the Simmering-Graz-Pauker Company. Its object is the utilisation of wagons with low-loading platforms designed and built by the Simmering-Graz-Pauker Company and the organisation of combined transport with such wagons.

The Austrian Federal Railways will be using wagons with low-loading platforms for domestic transport in the near future. Such wagons are particularly suitable for taking lorries and trailers through the Alps, and the loading gauge in tunnels is only a minor handicap. There is only one restriction to cover particularly awkward tunnel alignments : in such cases, lorries can be accepted on the train only if the top corners do not exceed 3.65 m.

e) In the Netherlands, piggy-back transport with France has developed as follows :

		Wagons
October-December	1963	35
January-December	1964	289
" "	1965	517
" "	1966	1,652
" "	1967	4,823
" "	1968	5,153
" "	1969	6,191
January-July	1970	3,980

f) In Switzerland, piggy-back transit amounted to about 50,000 tons in 1969 (the first year of operation for this type of traffic).

Conclusion

Governments should do what they can to encourage any initiative for organising both domestic and international piggy-back transport on the best economic conditions. Having regard to the present situation, and without prejudging the solutions to this problem that may be put forward as part of the work of the E. C. M. T. on access to the market particular attention should be given to the provision of special quotas for this type of transport under bilateral agreements concerning international road transport in cases where complete liberalisation could not be achieved.

V. PALLET TRANSPORT

1. Developments concerning the European flat pallet pool

a) In 1969, the use of flat wooden pallets, size 800 mm x 1,200 mm, on an interchangeable basis made considerable progress. National pallet pools using this type of pallet are found in 12 E. C. M. T. countries. These pools include the railways, Member countries, shippers, and, in some cases, road hauliers, forwarding agents, waterway transport operators and firms operating port handling facilities. Flat pallets circulate unrestrictedly within the pool and are exchanged on a one-for-one basis or within a specified time limit with change of ownership.

b) At present, the railways of 12 E. C. M. T. Member countries (Federal Republic of Germany, Austria, Belgium, Denmark, France, Italy, Luxembourg, Norway, the Netherlands, Sweden, Switzerland and Yugoslavia) have joined the European Pallet Pool founded in 1960 for the international transport of goods on pool pallets. The Greek and Turkish railways propose to join and six railway administrations in the Eastern European countries are also members of this Pool.

c) Since the survey conducted in 1964 CM(67)9 of 17th May, 1967 the number of loaded pool pallets carried by rail on international routes has increased satisfactorily : for traffic between railway members of the Pool it rose from about 1.48 million in 1964 to about 5 million in 1969.

2. Developments concerning the European Box Pallet Pool

The preparatory procedures for the creation of a European railway box pallet pool were completed at the end of October 1966. However, the railway administrations of individual countries will join the Pool only if the development of their traffic is such that this will show a return. Up to 1st April, 1970, the following railway administrations had joined :

Luxembourg railways (C. F. L.)
German Federal railways (D. B.)
Danish State railways (D. S. B.)
Netherlands railways (N. S.)
Austrian Federal railways (O. B. B.)
Belgian railways (S. N. C. B.)
French railways (S. N. C. F.)

3. Other pallets of standardized dimensions

Apart from those for the flat pallets of the European Pallet Pool, the I. S. O. has also recommended standards for flat pallets, size 1,000 x 1,200 mm and 800 x 1,000 mm, which have bee endorsed by most national standardization committees. A survey conducted by the International Chamber of Commerce (Paris) shows that the 1,000 x 1,200 mm pallet is fairly commonly employed besides the pool pallet. It is used for road transport, in the Glass and Chemical Industries and - in some countries - is actually preferred in nearly every branch of industry. The attempts made - especially by the International Road Transport Union - with a view to setting up a second pool for this flat pallet have not yet succeeded. The institution of a pallet pool requires the agreement of would-be

participants on a pallet of the same size, design and quality. It also presupposes a far-ranging organisation to make it work. The railways have refused, for organisational reasons, to bring a second pool within their jurisdiction. No other transport concern has yet shown any readiness to set up exchange centres for the control of pallet movement (including clearing-house operations for unladen pallets).

Flat pallets, size 800 x 1,000 are still being used by depots and, to some extent, by traders. The institution of a pool is not envisaged and the pallet in this case is rather a means of internal rationalisation for the undertakings concerned.

4. Problems of mutual adjustment between containers, pallets and packaging

a) It has not yet been possible to give full effect, at European level, to the concept of door-to-door combined transport involving containers and different modes of transport, in other words, to achieve an integrated transport system. Before being carried by container, goods must often be sent to a groupage centre (inland or at a seaport) or else consigned as "parcels" to the consignee after the container haul. For such purposes, and sometimes also in the case of door-to-door container transport properly so-called, it is useful to combine goods in unit loads on pallets.

b) The main problem of adjustment between two systems of unitised loads concerns the dimensions of containers and pallets, and the dimensions of packagings based on pallet dimensions in accordance with the modular system of the European Packaging Federation (E. P. F.). The recommendations of this body are very widely used as a basis for packaging standards for cans, drums, crates, etc., at national level. However, these dimensional packaging standards are not in conformity with the unit load measurements planned for containers nor with internal dimensions. The problem of inter-relationships between these various standards is at present being studied by the I. S. O.

VI. GENERAL CONCLUSIONS

In the light of the comments made by the International Organisations, the Combined Transport Group drew the following conclusions for submission to the Council of Ministers :

A. Conclusions concerning the basic principles of a promotion policy for combined transport

First, it seems essential that the basic principles of the general transport policy formulated by the E. C. M. T. Doc. CM(63)15 should also apply to the combined transport sector. In this connection, the following points should be taken into consideration :

1. The principal aim of any promotion policy for combined transport should be to ensure that the specific advantages of each mode of transport are maximised.

To this end, consideration should above all be given to making further progress in the removal of inequalities in taxation, and to more flexible arrangements as regards tariffs and access to the market.

Concerning this last point, in particular, it is desirable gradually to promote the harmonious and balanced development of the various modes of transport concerned in container traffic.

2. Governments should endeavour, within their own sphere of jurisdiction to create comparable conditions for the use of piggy-back facilities by own-account carriers and professional carriers.

3. The practical application of equal treatment for users in the combined transport field depends largely on the commercial policy decisions of transport operators. Governments should, however, endeavour to ensure that equal treatment is granted where conditions are comparable.

4. The Member countries should, in

accordance with their general policy concerning the railways, also endeavour to give them the possibility, both nationally and internationally, of pursuing, where combined transport is concerned, a commercial policy which fits into an independent management framework aiming at profitability.

B. Detailed conclusions

Problems of standardization and deviations from large container standards

Althought the International Organisation for Standardization (I. S. O.) has recommended certain standards for large containers, many deviations from these standards are met with in practice.

The E. C. M. T. should closely follow the work of the E. C. E. and I. S. O. in the various fields relating to the standardization of large containers, and should actively support their conclusions. However, in cases where departures from standard dimensions are justified on economic grounds in certain geographical areas, care should nevertheless be taken to ensure that the same handling facilities can be used. Even though changes are constantly taking place, the principle that I. S. O. recommendations should be applied throughout the world still holds good.

Economic problems of containerisation

The expansion of large container transport raises a number of economic problems. In this connection, investment decisions assume special importance :

1. The E. C. M. T. should continue, in close collaboration with the O. E. C. D. Maritime Transport Committee, to keep close watch on the development of containerisation where shipping lines and ports are concerned, in order that, if required, conclusions may be drawn as to inland transport investments, with special reference to infrastructure.

2. Governments should deep each other informed about container terminal projects and arrange, where necessary for the required co-ordination at international level. They should also ensure that the operation of container terminals does not involve exploitation of dominant positions.

3. It would be justifiable and timely for government aid to be granted to facilitate the invention and development of types and means of transport designed to secure more profitable operation for the community. Steps should, however, be taken to see that such aid is confined to the experimental phase.

Co-operation between transport operators

It is desirable for governments to encourage any initiative designed to improve profitability for all concerned by means of various forms of co-operation. This applies also to the creation of a container pool. It seems, however, that such co-operation should primarily be left to private enterprise.

Effects of containerisation on the railways

Having regard to the need for higher profitability, railway administrations should continue their efforts for effective participation in domestic and international large container transport. They should in particular co-operate closely at international level to reap the economic benefits of this type of transport, which are mainly apparent for long-distance transport and bulk hauls. Governments should also strive, at national and international level, to reduce to the utmost the delays resulting from frontier controls, by providing for mutual recognition of health and quality certificates.

Social effects of containerisation

The wider adoption of containerisation will result in a radical change in certain occupations, especially in ports.

The authorities concerned should arrange for the re-employment of redundant dock workers. Furthermore, the E. C. M. T. should keep very close watch

on the possible social implications of containerisation for inland transport, through the Group recently set up to deal with social problems.

Essential data on combined transport trends, with special reference to large containers

Combined transport has made great progress over the last few years, and improved statistics are essential for a clearer idea to be forme of its present scale.

Despite the distinct improvements in several countries, and the efforts made by the E. C. E., container traffic statistics are still not sufficiently consistent. It would be most useful to have comparable statistics compiled on the same basis and broken down to the fullest possible degree, particularly with a view to ascertaining the volume and trend of container traffic in relation to total traffic, to provide a more reliable basis for forecasts and practical transport policy measures concerning containerisation. Governments should therefore take the necessary steps to improve and co-ordinate container statistics within the E. C. E. framework, especially port statistics and those concerning the various modes of inland transport.

Piggy-back transport

Governments should do what they can to encourage any initiative for organising both domestic and international piggy-back transport on the best economic conditions. Having regard to the present situation, and without prejudging the solutions to this problem that may be put forward as part of the work of the E. C. M. T. on access to the market particular attention should be given to the provision of special quotas for this type of transport under bilateral agreements concerning international road transport.

VII. TERMS OF REFERENCE

The Council of Ministers instructs the Committee of Deputies :

- in co-operation with the International Organisations, to watch the development of combined transport especially large container transport, in relation to the different modes of transport concerned ;

- to ascertain the technical, economic or administrative obstacles which may perhaps impede the wider extension of combined transport, and submit various proposed solutions, especially as regards intra-European traffic ;

- to consider the problems raised by the financing of investments required for the development of containerisation ;

- to investigate the impact of "LASH" transport on inland water transport ;

- to report to the Council of Ministers for their June 1972 session.

ANNEX. INTERCONTAINER TRAFFIC AS FROM THE BEGINNING OF ITS OPERATIONS

1968

Month	Number of transcontainers												Total number in feet		Total feet loaded + empty
	20'		30'		40'			35'			Total ton				
	Loaded	Empty	L	E	L	E	L	E	L		E		L	E	
May 68	86	-	28	-	7	-	9	-	130		-		3,155	0	3,155
June 68	201	-	28	-	102	25	21	-	352		25		9,675	1,000	10,675
July 68	359	1	54	10	70	21	46	-	529		32		13,210	1,160	14,370
Aug. 68	456	25	42	-	140	24	32	-	670		49		17,100	1,460	18,560
Sep. 68	717	4	78	3	121	31	17	-	933		38		22,115	1,410	23,525
Oct. 68	921	74	144	11	213	40	24	1	1302		126		32,100	3,445	35,545
Nov. 68	1410	377	215	-	442	134	31	-	2098		511		53,415	12,900	66,315
Dec. 68 (*)	1490	191	242	12	519	41	35	1	2286		245		59,045	5,855	64,900

(*) Dockers' strike in American ports from the middle of December 1968 to the middle of February 1969

ANNEX. INTERCONTAINER TRAFFIC AS FROM THE BEGINNING OF ITS OPERATIONS

1969

Month	Number of transcontainers												Total feet loaded + empty
	20'		30'		40'		35'		Total ton		Total number in feet		
	Loaded	Empty	L	E	L	E	L	E	L	E	L	E	
Jan. (*) 69	1251	340	273	10	136	17	159	6	1819	373	44,215	7,990	52,205
Feb. (*) 69	1210	288	272	17	205	15	130	-	1817	320	45,110	6,870	51,980
Mar. 69	2059	352	454	65	495	74	177	26	3185	517	80,795	12,860	93,655
Apr. 69	2649	565	654	102	770	94	36	19	4109	780	104,660	18,765	123,445
May 69	2882	372	895	59	813	67	63	93	4653	591	119,215	15,145	134,360
June 69	2709	631	986	65	595	127	66	9	4356	832	109,870	19,965	129,835
July 69	2682	658	898	117	705	210	50	44	4335	1029	110,530	26,610	137,140
Aug. 69	2575	544	712	75	817	194	96	19	4200	832	108,900	21,555	130,455
Sep. 69	3217	1003	1023	50	968	412	148	27	5356	1492	138,930	38,985	177,915
Oct. 69	4192	1090	1326	168	1079	502	232	36	6829	1796	174,900	48,180	223,080
Nov. 69	4146	1212	1270	124	1008	455	214	41	6636	1832	168,830	47,595	216,425
Dec. 69	4701	1398	1354	218	1012	546	190	7	7257	2169	181,770	56,585	238,355
Total	39.913	9125	10948	1106	10217	3029	1776	329	62852	13589	1597,540	248,355	1,945,895

(*) Dockers' strike in American ports from the middle of December 1968 to the middle of February 1969

ANNEX. INTERCONTAINER TRAFFIC IN 1970

Month	Number of transcontainers												Total feet loaded + empty
	20'		30'		40'		35'		Total		Total number in feet		
	Loaded	Empty	L	E	L	E	L	E	L	E	L	E	
Janv. 70	4,832	2,138	1,414	175	1,147	366	134	24	7,527	2,703	189,630	63,490	253,120
Feb. 70	5,327	2,428	1,569	205	1,704	839	115	9	8,715	3,481	225,795	88,585	314,380
Mar. 70	5,603	2,038	1,550	211	1,388	641	164	83	8,705	2,973	219,820	75,635	295,455
Apr. 70	5,990	2,164	1,766	278	1,320	765	166	20	9,242	3,227	231,390	82,920	314,310
May 70	5,714	1,677	1,558	234	1,379	603	140	13	8,791	2,527	221,080	65,135	286,215
June 70	6,094	2,623	1,676	248	1,359	914	394	17	9,525	3,802	240,310	97,055	337,365
July 70	6,527	2,395	1,989	231	1,662	997	77	24	10,255	3,647	259,385	95,550	354,935

MEASURES TO IMPROVE TRAFFIC IN TOWNS

Second Seminar
20th-22nd April 1970

The Council of Ministers approved the following document and drew the attention of governments to the usefulness of closer investigation to the following points :

Measures not requiring substantial investment

- Staggering of daily working hours and arrangements for complementary weekly work shifts ;

- congestion taxes on the ownership and use of vehicles used in urban areas (garage and parking charges - road pricing) ;

- co-ordination at the operating, administrative and technical levels of all public transport undertakings within a given city.

Measures requiring substantial investments

- how to make use of existing facilities with special reference to railway networks ;

- conversion of existing facilities (tramways, "pre-metro" systems, etc.).

Urban planning

- harmonization of urban planning and transport planning with a view to :

a) well-designed location of work places and housing ;

b) suitable balance between public and private transport

SUMMARY OUTLINE OF PROBLEMS INVOLVED

o

GENERAL REMARKS

As part of the programme of work of the E. C. M. T. more specifically the work on transport economics, a second seminar was held with a view to drawing practical lessons from the theoretical research on urban transport.

When the international organisations concerned (1) had been asked to give their views, participants from the following countries : Germany, Belgium, France, Ireland, Italy, the Netherlands, Portugal, the United Kingdom, Switzerland and Turkey met under the Chairmanship of Mr. NEUVILLE, Director-General of Transport Administration Ministry of Communications (Belgium).

The discussions at the Seminar were based on a paper produced by Mr. de WAELE, E. C. M. T. Consultant, in the light of documents originating from symposia and Round Tables, and of the resolutions and reports approved by the Council of Ministers in connection with work done by the Urban Transport Committee.

Two main points emerged from these discussions : the importance of public transport for solving the problems of existing towns and the close relationship to be maintained between urban and environmental planning and transport planning.

A final point which must be noted in the great importance attached by the Seminar to the continuation, intensification and improvement of research as well as to the provision of objective information to all concerned with urban transport.

FOREWORD

Two factors must be borne in mind for the study of urban Transport. An unduly general approach which omits these factors loses all significance. They are :

(i) the specific character of each town ; and

(ii) differences in national attitudes

The environment under consideration differs in each case and what is politically feasible likewise often differs from country to country or even from one town to another.

Another aspect to be borne in mind is how road transport is conditioned by the layout of existing towns.

The prime characteristic of urban traffic today is congestion. "Improvement" in these circumstances often means nothing more than a return to a more normal flow of traffic.

In a broader sense, one could even point to the congestion of the whole of urban life in its every aspect. This immediately raises the question of how far development can go without

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1) International Union of Railways (U. I. C.).
International Road Transport Union (I. R. U.)
International Road Federation (I. R. F.)
International Chamber of Commerce (I. C. C.)
World Touring and Automobile Organisation (O. T. A.)
International Public Transport Union (I. I. T. T.)
International Transport Workers Federation (I. T. F.)

aggravating congestion.

This being so, by combining two procedures the effects of congestion may be reduced :

(i) greater transport capacity could be provided by investing heavily in infrastructure generally, and more particularly in public transport facilities ;

(ii) certain forms of demand considered to require excessive capacity could be restricted.

Part I

MEASURES NOT REQUIRING SUBSTANTIAL INVESTMENT

SECTION A : USE OF INFRASTRUCTURE

1. USE OVER TIME (Spreading of peak loads)

Urban traffic difficulties are characterised by a particularly dense concentration at certain hours or periods. This concentration is the result of standardisation of work and leisure times.

The question of adjusting peak hours has to be considered in relation to changes in ways of living. The working week is tending to become shorter and leisure hours longer. This means that the facilities that serve the working environment are being used over ever diminishing periods ; yet these same facilities are becoming increasingly complex and costly.

Leaving any insuperable psychological obstacles aside, useful measures could be taken here and now to spread peak loads on a short-term basis. Information (influencing people's attitudes with objective arguments) would play a prominent part in this regard.

The attention of government authorities must be drawn to the effects that any reduction of working hours can have on traffic congestion if this is done without any phasing of arrivals and departures for work places in each sector.

In the light of experience in various countries, the staggering of opening and closing hours for shops and other "service" activities has had most useful effects on traffic congestion in medium-sized conurbations (population ranging from 500,000 to 1,000,000). Instead of staggering hours of work, a more rational location of the workplace in relation to the dwelling site has been tried in some countries. This too was found most effective for easing traffic congestion.

For large conurbations, the advantage lies in the creation of reserve capacity for public transport. In some cases, the capacity of underground railway lines and carriages is used to the maximum at present peak hours. Any measure designed to increase capacity without reducing demand will require very heavy investment. Yet the longer the present situation continues, the more passengers will be deterred from using public transport.

It follows that one of the most urgently needed measures is to lighten the excessive load on urban roads and public transport.

It follows that one of the most urgently needed measures is to lighten the excessive load on urban roads and public transport at peak hours. To this end, the adoption of the following measures is proposed :

- short term : staggered working hours for different categories of workers and services ;

- long-term : work shifts with complementary working hours.

2. USE OF AVAILABLE INFRASTRUCTURE

NOTE : It is essential to maintain a balance between the capacity of infrastructure for moving traffic and the capacity of parking infrastructure. Any improvement measure must allow for this balance, since it is no use providing increased access to places which cannot meet the extra demand for parking space. The reverse is even more serious since the provision of parking facilities is often a private initiative. At the exit of each new car park the infrastructure for moving traffic is also needed.

2.1 Administrative measures

2.1.1 Improved application of traffic regulations in force

Certain road users fail to observe traffic regulations, prevent optimum utilisation of existing capacities and often cause difficulties that have nothing to do with intensity of the traffic flow. The following are cases in point :

a) a car enters an intersection with no possibility of being able to clear it and thus creates an obstruction to the cross flows ;

b) a driver cuts across a line of traffic coming from the left in order to make a turn, without being able to join the cross stream that has the right of way at that point ; (this applies to countries where driving is on the right) ;

c) double parking ;

d) pedestrians who cross an intersection in front of oncoming traffic when the green light is showing, thus often compelling drivers to stop in the intersection.

While behaviour of this kind may be partly attributable to inappropriate signs and signals it is far more often due to lack of discipline. It is proposed that the authorities concerned should put existing rules into practice more strictly in order to ensure that a single road user does not hold up several dozen others.

This implies a more effective code of criminal procedure for the prosecution of offenders.

It must however be acknowledged that chronic congestion ultimately disrupts all traffic rules and that stricter enforcement is effective only as long as some reserve capacity remains.

2.1.2 Measures to improve traffic flow

Traffic flow can be considerably improved if the authorities concerned take appropriate co-ordinated measures to control, restrict or channel moving traffic by signs, road markings and traffic lights, as by :

a) Widespread adoption of the one-way system (preferably with previous planning by computer), so as to eliminate crossing of traffic streams.

b) Adjusting the number of traffic lanes according to the traffic flow occurring in one particular direction.

c) More frequently prohibiting left turns (and obliging drivers instead to make three right turns in order to enter the cross stream at the intersection.

d) Allowing vehicles to "filter" when the lights are red at certain intersections.

e) Streaming traffic directionally at the approach to intersections ; clearly visible advance signs are necessary for this purpose.

f) Expanding and synchronising the system of traffic lights ; the linked-light system should also allow for public transport vehicles so that they do not systematically miss the green light at scheduled stops (possible relocation of certain stops).

g) Introducing reserved lanes for buses and other priority vehicles, on roads where this is feasible.

h) Prescribing plainly visible signposts for car parks and of available capacity. Car parks could also usefully be shown on city maps.

2.1.3 Parking restrictions

Generally speacking, these restrictions are ineffectual in either of two cases :

(i) Where the means of enforcement and the penalties for infringement are inadequate.

(ii) Where the "authorised" demand exceeds the supply of parking space.

Apart from parking charges, which will be discussed separately, two kinds of restriction may be applied :

a) Limitation of parking time, which is effective only if users who want long-term parking are offered a suitable substitute : either satisfactory public transport services or alternative parking facilities.

b) Local prohibition of all parking; this measure can hardly be generally applied but is very useful in thoroughfares, where traffic flow capacity is inadequate.

c) Systematic reservation of certain points for vital parking needs (essential services for road-side residents and taxi ranks).

Double parking is becoming one of the main impediments to moving traffic. Adequate parking space should be provided for road-side services and taxis.

2. 1. 4 Prohibition of vehicular traffic

a) Prohibition of certain categories vehicles :

This refers to the prohibition of deliveries at certain hours and to bans on cumbersome vehicles.

b) Total prohibition of traffic in certain streets or areas :

This is a measure which applies to shopping streets or districts. Though unpopular when first introduced, it is generally regarded, on balance, as a very satisfactory arrangement after the initial period of adjustment, but it does call for nearby parking facilities and satisfactory public transport services.

2. 2 Measures with financial implications

2. 2. 1 Pricing the use of public transport

Government financial aid (commonly called "subsidies") may be classified under two heads :

a) Free transport

Unless the service offered is really attrative this practice is not likely to produce any very considerable effect. What is more, the transport undertaking concerned having no resources of its own and public resources being scarce, this might well lead to rapid obsolescence and to deterioration of the services supplied.

Free transport can be introduced only if adequate resources are guaranteed, and this to all intents and purposes means the allocation of funds from an outside source.

b) Subsidised fares

The above considerations also apply in this case, albeit to a lesser degree, but the possibility that the optimum allocation of resources may necessitate subsidies cannot be ruled out. As the real problem still lies in providing for an adequate transport supply, it is essential to ensure adequate resources for maintaining this supply, e. g. by allocating to transport which relieves road congestion the revenue from taxes levied on the causes of it.

A much more complex problem arises, however, in cases where public transport is itself congested, i. e. when demand for it exceeds the maximum supply. In such cases, a congestion tax would also have to be applied to services affected in this way.

A related problem is that of taxis. They can be regarded as a form of public transport because of the service they offer and because their mobility saves urban road space.

In actual practice, however, the financial treatment meted out to taxis runs counter to this view. In

many cases, taxis are the only vehicles on which a charge is levied for parking and the only form of public transport subject to a tax on receipts.

It would be advisable to consider how far this type of taxation conflicts with a more rational use of taxis from a social and economic standpoint.

2.2.2 Princing the use of infrastructure

This heading covers charges relating to the ownership or use of a vehicle in a congested urban area.

a) Charges for permanent (overnight) parking

This section refers to the parking (i.e. garage) space which the owner of a vehicle habitually uses so as not to leave it permanently on the street where traffic needs do not permit. There is a patent element of discrimination between those who use road space and those who pay for garage space.

A coherent policy for the use of infrastructure should logically begin by prohibiting permanent parking on such infrastructure required for traffic. Permanent parking of this kind does indeed follow from the fact that many buildings are not adapted to car-ownership, but a remedy could be found by putting a tax on vehicles whose owners have no garage. Such a tax should be an inducement to build garages (and not car parks to start with).

As the aim is gradually to get rid of a situation which has been tolerated for too long and has now got out of hand, it would be reasonable to introduce this tax by instalments ; in this way, it would rise yearly until it reached what was judged to be an acceptable proportion of the cost of a garage in the district concerned.

b) Charges for entry to a given area

This charge would be levied on all vehicles entering a congested area. Although relatively simple to apply it allows neither for the degree of congestion in the different areas to which users are travelling nor (unless much more complex control systems are introduced) for the length of time for which they stay in those areas. It might thus turn out to be an advantage for those who make frequent or prolonged use of congested thoroughfares.

c) Charges for temporary parking

This measure can be more directly related to actual use of the infrastructure as it can be scaled to match the place where the car is parked, for how long, the hour of the day and the day of the week.

It does however call for fairly elaborate supervision and does not affect the use of the infrastructure by moving traffic. In some cases, more traffic may be generated as a consequence of road users seeking another fee-charging car park for a limited time.

d) Overall pricing
(Congestion tax or road pricing)

This charge would be made for any use of the infrastructure (moving or parked vehicles) and graded according to the degree of congestion. The basic principle is to set the tax at such a level that demand covers capacity as nearly as possible.

It would be interesting to put this system to the test in a number of towns in several different countries so as better to ascertain results and reactions.

Furthermore, if the economic theory is to remain consistent, the tax should also be applied to public transport, subject to the authority's policy with regard to such transport.

3. INFLUENCING MODAL CHOICE BY OTHER MEANS
(Non-administrative or non-price-related)

This refers to a number of measures which the authorities can take or promote without this involving heavy investment commitments. Broadly

speaking, the aim in this case is to make better use of existing capacities. It follows that there can hardly be any question of influencing the user's choice if there no longer is any true choice because of the general congestion of all facilities.

3.1 Fiscal measures

Here, the point at issue is not transport pricing, but a more indirect line of approach, namely, the impact of taxation on the use of different modes of transport. In some countries, such provisions are a driect inducement to use private transport for journey-to-work trips.

3.2 Adjustment of public transport supply

It need hardly be said that this may cost money ; hence the need to find ways of improving supply under the best possible financial conditions.

3.2.1 Convenient access and interchanges

In some cases, a good deal more could be done to make access to public transport more attractive, for instance :

- facilities promoting ease and speed of interchange while reducing waits between different or within identical modes of transport ;

- installation of escalators and travelators in underground railway stations ;

- construction of shelters at bus stops ;

- good signposting to enable newcomers to find their way easily ;

- publication of timetables to save waiting ;

- observance of these timetables insofar as general traffic conditions permit (reliability in this respect can be regarded as part of "convenient access").

3.2.2 Frequent services

Optimum frequency has to be determined on its merits in each case. It is inevitably a compromise between what users would like to have and what it would cost.

It most be borne in mind that frequency has to be considered in conjunction with speed and regularity as it is on these three factors combined that the duration of the journey depends.

In practice there is a tendency to provide many variants on a given route in order that the inhabitants of new residential areas might have something like a "door-to-door" service. This intention is understandable enough but it clashes with two of the requirements of an efficient public transport service. First, the frequency of the service is reduced over each variant of the route ; paradoxically, passengers are thus made to spend a long time waiting in order that they may be provided with a service nearer home. Secondly, one-track facilities (at least a reserved lane for buses) are increasingly necessary on present-day networks if transport services are to be as regular as they should be. Frequency without regularity is rather pointless. As specially equipped public transport of this kind has to be sufficiently patronised, the future would seem to lie in a concentrated network with a high degree of frequency.

It would be advisable not to give any short-term encouragement to town-planning and travel habits which might ultimately fail to match the public transport facilities of the future. More generally speaking, it may be wondered whether certain types of urban development ("sprawl") do not conflict with the future requirements of public transport services (linear or stage by stage development).

In any event, this problem is also bound up with that of "park and ride" which is discussed at a later point in this analysis.

In short - to a much greater degree than would appear at first sight - the optimum frequency of a service conditions the configuration of a trans-

port network, and this configuration in turn conditions the location of park and ride facilities.

3. 2. 3 Speed

Average speed (a very important point for operators) is perceived by users in conjunction with waiting time. Given a constant speed, the user's perception of time varies according to the length of the journey. On short journeys, easy access frequency are very important. On longer ones, speed becomes a primary consideration and too many stops create a bad impression.

Motivation surveys should establish the optimum radius of access to a stopping place and the optimum distance between two stopping places over a given stretch of route. The old transport networks were designed with frequent stops, but as the lines extend to new suburbs over-frequent stops become a handicap. This is especially true of certain underground railway networks which can no longer be extended to outer areas because this would prolong passengers' journeys unduly.

It is nevertheless possible to enlarge the area served by an underground stop by providing entrances and exits at either end of the station, or even by building a travelator to a nearby traffic junction. This would make it possible to do away with other very nearby stations. Reduction of the number of stops brings increased speed and a more than comparative lessening of the passenger's impression of slowness; from the operator's standpoint, it may permit a more rapid turnround.

3. 2. 4 Comfort

Here we have a factor which has doubtless had much to do with the unpopularity of public transport.

If the aim is to influence the user's choice in favour of public transport, it is fairly likely that this will have long-term repercussions. Quite possibly it will be necessary among other things, to revise the criteria of maximum passenger throughout per hour by providing a minimum amount of space per passenger. The question is whether the standards of comfort provided will be consonant with those of a society with a rising standard of living.

Naturally, this aspect goes far beyond the short term. If the available capacity does not offer a minimum level of comfort, it will be necessary to provide additional capacity and this means investment.

3. 2. 5 Overall supply of services

The different aspects of transport supply together make up a general image. The user sees the whole scheme of things in this light and makes his decisions accordingly. Hence the vital importance of ascertaining what the transport image actually is and the interdependance of its components.

SECTION B : MANAGEMENT OF PUBLIC TRANSPORT UNDERTAKINGS

This section does not deal with certain aspects of transport supply which are closely connected with utilisation of infrastructure and as such have been dealt with under 3. 2 of the previous section.

THE PROBLEM

Present urban services are largely inherited from the past, being determined by franchises (routes or areas) and the construction of tramways and underground railways.

Since the services were originally established the towns have developed rapidly, and this development has not always been followed by changes in the services or their structure.

Towns have greatly increased in size, and now often exceed the area originally planned for urban transport. At the same time lines or networks originally planned for suburban services have gradually been surrounded by new built-up areas and so become urban services themselves.

The result of this has been that services in an urban area are now shared by several transport undertakings (urban, suburban and inter-urban).

The problem is to find arrangements for co-existence which will ensure :

a) minimal cost for an optimum service throughout the conurbation concerned ; this requirement is all the more essential as most present services are no longer paying their way ;

b) services that are simple and convenient for the user ; competition makes it necessary to provide integrated services and to remove all restrictions and practices complicating the use of public transport

1. CO-ORDINATING MEASURES

1. 1 Co-ordinating authority

Public authorities should be made aware of the need to create a co-ordinating body for transport in conurbations wherever such bodies do not yet exist.

1. 2 Administrative co-ordination

Administrative measures deserve priority where co-ordination is concerned.

Without affecting the existing system of franchises, it is possible to obtain in this way :

a) joint fare arrangements, extending from tickets available on vehicles of more than one undertaking to a unified fare structure for all urban services ;

b) improved organisation of services, such as the joint operation of a route by two undertakings.

1. 3 Geographical co-ordination

The purpose of this is to fix areas in which the services of one operator have priority ; this arrangement avoids conflict where new services have to be provided.

It does, however, preserve a de facto situation which is often not in the interests of rational and economic service. In the long run it gradually becomes untenable as the urban network acquires a special infrastructure. It is difficult to justify the duplication of an underground railway through the central sector by intensive suburban or regional bus services. Optimum use of the infrastructure requires the termini of such town sections of the bus routes are accordingly cut out. The remaining sections have to face heavy competition as they are not usually in such densely populated areas and users will largely abandon them in order to "park and ride" in conjunction with the underground railway.

It is therefore clear that, in the medium term, separately controlled urban, suburban and country services will gradually cease to be viable.

1. 4 Technical co-ordination (standardisation)

The substantial savings obtainable by standardising urban transport equipment give public authorities an opportunity of improving the supply and

operation of transport services.

It would be advisable at international level to promote the standardisation of urban transport equipment.

2. REDISTRIBUTION OF FUNCTIONS

In contrast to co-ordination without any change in franchise arrangements, a redistribution of functions does involve changes in these arrangements.

2.1 Transfer of services

One undertaking may transfer to another one or more routes which it seems more rational for the second undertaking to operate. This practice is comparatively easy when both undertakings have a similar legal and financial status.

2.2 Exchange of services

The purpose of such arrangements is partly or entirely to remove geographical interpenetration and to arrange for each undertaking to serve a distinct area. Such exchanges can clearly be advantageous for users and operators alike.

Exchanges may take place on two different scales :

a) By sectors

A comparatively simple process leaving the undertakings operating side by side, which is not necessarily undesirable.

The redistribution of functions will usually be between a town transport system and a suburban of regional system.

As has already been pointed out, redistributions will inevitably be required in the long run when a special infrastructure is created. At that time, there may be a problem of sharing functions with national railway services.

b) By whole towns

In countries where there are undertakings operating some of the services in a number of towns (national or regional undertakings) homogeneous systems may be formed by complete exchanges.

2.3 Pooling of services

Pooling is especially suited to the large conurbations and towns where the number and variety of undertakings involved are too great for division into sectors, or merger, to be practicable.

Two main type of pooling, applicable separately or jointly are conceivable :

a) Uniform presentation of services

Whichever is the operator, all the services are offered to users on the same terms, and they thus have the feeling of being served by a single unit.

b) Unified management

A number of rationalisation measures may be taken by agreement between operators in the following fields : administration, operation of a coherent network, conditions of employment of staff, fares, joint maintenance and purchase of equipment, joint planning of future services.

This arrangement has the further advantage, particularly in connection with employment questions and town-planning policy, that there can be one spokesman for all the services.

Clearly, future problems (development of conurbations, town planning, and the provision of suitable infrastructures) increasingly demand a concerted approach to the shaping of policy and to planning and actual performance, both for the operation of services and the corresponding investments.

In general, it is also desirable to incorporate the services which penetrate to town centres (rail and other) in such projects, as they often offer interesting possibilities from the standpoint of capacity and alignment of the infrastructure (see below).

3. REDUCTION IN THE NUMBER OF UNDERTAKINGS

Each case being judged on its merits, it may be wise to reduce the number of undertakings by takeovers or mergers. Such a policy cannot be applied systematically, and can usually be applied only when an opportunity arises.

It is important to foresee such opportunities to avoid perpetuating too large a number of undertakings. In particular, provision can be made to ensure that any services given up must be taken over by a neighbouring operator; in this way, they cannot be ceded to a new operator.

4. OPTIMUM STRUCTURES

The range of possibilities described above suggests that ther is certainly no standard formula for finding an optimum structure for urban transport undertakings.

It is therefore wise to consider the question on the basis of concrete facts and figures ; the solution most suited to local circumstances will be the one found from such a concrete analysis.

Part II

MEASURES REQUIRING SUBSTANTIAL INVESTMENT

SECTION A : DESCRIPTION OF THE PROBLEM

1. THE LONG TERM

This part deals with long-term investments which may improve urban transport. Beyond this term, however, the length of which is dictated by construction needs, is a still longer term for the exploitation of the infrastructure thus created.

It is consequently of the greatest importance to have some insight into the future framework in which the transport facilities which we are planning today will be operating.

To some extent, future planning can and must be a response to past difficulties, that is, an attempt to put right what has gone wrong, but as such attempts may well go astray because the facts of the case have changed, the response must be fitted into a long-range forecasting framework to put it on the right course.

What do we know about the future ?

a) The standard of living will rise and will notably lead to widespread car ownership.

b) Leisure time will increase and will ultimately change ways of living in general, and travelling habits in particular.

c) It is highly probable that congestion will become heavier and more extensive insofar as resources fall short of needs.

d) It is also most likely that individuals will try to use cars whenever congestion does not prevent this.

e) As urban traffic expands, public transport will play an increasing role in relieving congestion.

f) Consideration for environmental standards will bring about important changes in the location of housing, industry and trade. This calls for long-range urban planning.

g) So-called "social" policy will also encompass transport policy.

2. SPECIFIC CASES

Each town is a specific case determined by a series of factors having to do with its site and development. In

consequence the demand for transport will have certain features peculiar to each town or conurbation. The satisfaction of this demand is in turn connected with certain physical and psychological factors, since all towns offer various possibilities for the development of public transport systems.

Initially, then, it is important to avoid any approach that does not take sufficient account of the town concerned and its possibilities.

Secondly, there is a realistic order in which to approach the various aspects of the problem if one is to reach valid conclusions and proposals. This order may be outlined by the following series of questions :

a) What is the demand, and why ?

b) How will the demand develop ?

c) What is the existing transport equipment ?

d) To what extent can this equipment be used, modernised and supplemented ?

e) What entirely new equipment is to be provided ?

2.1 Demand

Before providing any public or private transport facility it is necessary to know how far it will meet demand. In practice the reaction to the provision of a service may be quite different from what was expected.

In concrete terms this means that before laying down an infrastructure the operator must know if customers will really make use of it. There is a series of questions which tend to be answered by reference to norms, whereas the only key to a satisfactory reply is to know the motivation of the actions of individuals. Among these questions the following are important :

a) Will the relief of congestion brought about by the public transport service mainly affect traffic into and out of the town centre or also traffic within the town centre ?

b) At what point moust "park and ride" installations be provided to ensure that customers will use them (i. e. at what distance from their destination) ?

c) With what standard of convenience do users wish to be transported ?

d) What price will users be prepared to pay to be transported at their desired standard of convenience ?

e) How far will leisure habits affect travelling habits and the siting of social centres and housing ?

f) How far will high speeds affect the siting of new towns (at increasing distances) ?

g) What are the reciprocal influences between investment in transport on the one hand, and the location of housing, work, services and leisure facilities on the other hand, including the role of new towns ?

. The way in which the first question is answered will already considerably affect the pattern of the transport infrastructure. This pattern in turn leads to the second question, and so on.

2.2 Rational use of existing facilities (better use of railways)

Some towns have a suburban railway system with a large number of branches. This system does not however, always meet demand for the following reasons :

a) The terminus is too far from the main destinations in the centre.

b) The service offered is not frequent enough.

c) Stations and halts are not well sited and/or do not have sufficient car parking space.

For such a system to make an effective contribution to mass transport.

a) There must be a large movement of passengers in and out of the centre.

b) This movement must be in the same direction as the routes concerned.

c) The lines must have sufficient reserve capacity to provide additional frequent train services to outer suburbs.

d) The terminus handicap mentioned above must be removed by the construction of cross-town lines with a few stops at principal destinations and focal points of the urban public transport system. The main purpose is not to create an urban line but to provide rapid access avoiding changes of vehicle as far as possible.

e) The lines on this cross-town system must provide a first link with the urban system at the terminus of the latter ; more generally speaking, the two systems should be perfectly complementary, a situation which is almost non-existent in many towns.

In particular, transfers must be facilitated between one system and another. This also involves adjusting time-tables on the two systems.

The main advantage of this arrangement is that the network is already largely in existence, and usually requires only a few kilometres of additional infrastructure to enable it to play a useful part in relieving congestion.

The construction of urban networks, on the other hand, usually involves routes of much greater length. The cost of these is such that their construction has to be spread over a period of time and progress towards optimum use of the network is accordingly slower.

The railway should not be considered as an alternative to the urban network, as it is feasible in only a few well-defined cases. The creation of a suburban railway system will, however, certainly influence the structure of the urban system.

It therefore seems that where railways can make an effective contribution to relieving town congestion they should be regarded as having priority.

One possible variation on this arrangement is to provide for the joint use of certain existing railway lines by trains and the vehicles of the town transport system, the whole question being one of the site of the lines actually available.

The results of research confirm the priority we have recommended, since:

a) trains are felt to provide the most regular, rapid and comfortable public transport service ;

b) the capacity of a railway is very high ;

c) the average length of journey (8 to 10 km or more) offers the greatest incentive to "park and ride" ;

d) road traffic into the town centre requires long access routes and long-term parking facilities.

Special case : Links between airports and town centres

These must provide :

a) a rapid and convenient journey ;

b) sufficient capacity in vehicles ;

c) stopping-places carefully chosen with regard to town destinations and the town public transport system.

2. 3 Conversion of existing facilities

The solution here lies in gradually building sections of an independent infrastructure for tramways along existing routes in the town street system ; logically, the beginning of this process is to segregate traffic in the central arteries which suffer most from congestion.

In many cases a special infrastructure created in successive stages in this way has features which enable it to be used later as part of an underground railway system.

This method undoubtedly has important financial advantages. The investment can be better spread over a period and yields more immediate results. For the operator, there is improved rotation of rolling-stock and the provisional retention of a technique in which investment has often been heavy (rolling-stock and fixed installations).

In the longer term, the effectiveness of the "pre-metro" or "semi-metro" system (depending on whether the final aim is an underground railway or a modified tramway system) raises a series of problems :

a) Scale of work needed

b) Efficiency of the service provided whilst new projects are in progress

c) Choice of routes in the light of future needs and financial possibilities

2.4 New modes of transport

The choice of a new means of transport (often imposed by town structures) usually excludes the use of the streets.

Such means of transport must usually meet the requirements enumerated above. The only difference is one of level in the strict sense of the term.

The only streets which can be envisaged logically are those in the suburbs which have been reserved a long time in advance by far-sighted town-planning. This is a key factor (though often neglected) for the future of public transport.

It must be recognised, however, that new developments in cybernetics are offering new hope for the various kinds of surface transport. Experiments have been announced, for example, in electronically controlled road vehicles.

2.5 Choice of technique

The choice of the technique to be used is a secondary problem, the main options being to define firstly the needs and secondly the scale dictated by the resources available. The choice of a technique does, however, have an indirect effect at this basic level insofar as it influences the needs of resources.

Generally speaking, the choice of the resources to be employed is the result of a calculation of costs and benefits.

In principle, choice must be guided by the need to provide optimum satisfaction of a foreseeable demand. As for the various technical formulae by which the service may be varied urban congestion imposes a fairly absolute limit. It is usually no longer a question of occupying part of the surface infrastructure but of being obliged to provide a special infrastructure below or above ground. As the construction of a permanent way above the surface is not permissible in the centres of old towns and even on many approach routes (for reasons of lack of space and amenity), underground routes will have to be constructed in all these cases.

SECTION B : THE URBAN TRANSPORT CONTEXT

1. BALANCES TO BE MAINTAINED

Throughout this description it has gradually become clear to what extent demand is shaped by a set of future material and psychological structures.

An investment plan for urban transport is valid only provided that a whole series of balances is observed. These balances may be dictated by material considerations or by policy decisions. Some decisions do, however, depend in the last resort on their material consequences.

Among the main balances, the following should be mentioned in logical order :

1.1 Investment and planning

Without planning, any long-term project is far too dependent on chance. While the choice of a balance is pre-eminently a matter of policy, it must also be guided by certain financial and psychological factors.

1.2 Town planning and regional planning

A town plan which did not take account of the interaction of the town and the surrounding region would not be viable in the long term. It is accor-

dingly suggested that an overall master plan be drawn up which would cover both the town and the region and would necessarily include a general plan for transport.

1.3 Location of activities and journeys

In practice a choice has to be made of certain likely trends, and a ra range of future possibilities kept open on the basis of an existing situation which largely determines what is feasible. A transport development is briefly the translation into material terms of intellectual and financial resources within a given space. This fixed structure sets limits within which may be found the three following balances.

1.4 Private and public transport

The limitations resulting from urban congestion can be influenced by overall improvements. The balance is then a matter of attitudes and preferences which encounter a set of material limitations (voluntary or involuntary but always imperative). This implies that a decision to give priority to one or two means of transport is not appropriate in the long run unless it is the result of a development policy ; otherwise it will constitute a temporary restriction, but is then likely to provoke reactions from the town planning side.

As has been said on many occasions, each town presents a particular problem, and it is for this reason that a separate study is proposed for each town.

1.5 Functional balance between public transport authorities

This balance must be found in the short term by means of co-ordination between the various public transport undertakings. In the long term it seems desirable for a single authority to manage public transport.

1.6 Moving and parked vehicles

This balance has also been mentioned in earlier passages. Particular attention must be paid to it since there is no co-ordination of efforts to improve the infrastructure in this matter. It is not sufficient to require the private sector to provide a certain parking capacity. In fact this capacity can create a demand for moving traffic capacity and thus increase congestion. Consequently, the construction of parking spaces must form part of a general policy for all parking, and this in relation to total moving traffic. We may then arrive at the disconcerting conclusion that the most urgently needed measure is precisely to provide no more additional parking space in town centres.

2. FORESIGHT IN TOWN PLANNING

It is useful to have a good definition of the function of town planning. Its main purpose is to think out the future and to set aside material facilities in a given urban space for future use ; in negative terms, the task of town planning is to avoid incompatible occupation of urban space. It must also provide adequate remedies for the nuisances of air pollution and traffic noise.

This task of looking ahead incidentally involves examining all the possibilities according to strictly objective standards. A town plan is to some extent a prospectus of practical possibilities for those who have to take the final decisions.

Town planning is therefore in no sense a rigid building plan or an investment programme. This confusion is very frequently found. Keeping open possibilities for the future is in no way comparable to actually carrying out all the work thus made possible. Preservation costs little in the immediate future and may make possible enormous savings in the long run. It is always better to have several routes available in 20 years time (some of which will perhaps never be used for traffic) than to have to deal with costly expropriations and demolition due to lack of foresight.

2.1 Optimum size for a conurbation

One of the first tasks of farsighted improvement is to provide for

a set of urban activities without these giving rise to congestion. Inversely, to town planning should exclude congestion (insofar as this cannot be reduced by other more direct measures) and consequently must in turn be based on policy guidance.

Studies will be needed to indicate the optimum limits for urban development and the various selective possibilities governing these limits (choice of space and functions).

To a certain extent optimum size is also influenced by investment in infrastructure, which planning makes it possible to envisage for various assumptions as to growth and for a number of degrees of saturation.

The problem then arises of extension which is irregular over the area considered, i. e. in the form of new urban areas with a specific function and with some connections with the older town.

In any event, unless one has the possibility of stopping the excessive growth of a conurbation at will, one must at least have the courage to foresee and calculate the effects.

2. 2 New towns

This development formula is designed to provide a more balanced kind of prevention of excessive extensions of existing towns.

It is important to base the conception of new towns on future ideas and not reactions based on the past. As far as transport is concerned, two major aspects must not be over-looked :

a) The siting of the towns will be mainly influenced by the use of high-speed surface transport, a technique which upsets existing ideas of scale. Greater distances covered (in the same time) open up prospects for the balanced development of an area. The cost of the journey at the same time guarantees that an entity will be created with specific activities ; in other terms, the fare is high enough to prevent the new town being used only as a dormitory.

b) While providing a harmonious environment (which involves preventing a general invasion by motor vehicles) the new town must offer adequate facilities for individual transport, without which one of the main attractions of modern town life would disappear. This requirement is in no way incompatible with excluding cars from certain places.

2. 3 Relief of congestion

The use of all short and long-term resources may prove inadequate unless congestion is attacked with considerable investment. One of the tasks of town development is precisely to foresee what are the most favourable circumstances in which to make such investment.

The problem initially is not to know whether amenities exist but whether there is congestion despite their existence and whether the congestion can be dealt with otherwise than by further investment in amenities (on the assumption that other measures are taken to reduce the effects of congestion and its repercussions for the future).

No relief of congestion can rationally be envisaged merely by improving the infrastructure for private vehicles ; the requirements for these have become so numerous and contradictory that it is out of the question to satisfy them more than partially. This view in no way prejudges the satisfaction of transport needs for passengers and goods for which private road vehicles are either essential or preferable (depending on the degree of congestion).

A primary solution is then to provide a public transport service sufficiently attractive for congestion to be effectively reduced.

One of the most urgent measures is to survey lines to be constructed in the light of possibilities and of demand, It will be found, however, that proposals are often not made on this basis, but on the basis of routes fixed at the outset. Now any improvement scheme must offer a choice, in the absence of which its

future viability is endangered by its lack of flexibility (a single solution with no alternatives).

Another not unimportant aspect of the relief of congestion is the enforcement of certain standards designed to improve the transport of goods within towns, notably by seeking a balance between the size and capacity of vehicles, on one hand, and the location of distribution facilities on the other.

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COUNCIL OF MINISTERS

REPORT ON NOISE ABATEMENT PROBLEMS

The Chairman of the Noise Abatement Committee is instructed, in accordance with the decision of the Council of Ministers of Transport of 12th December, 1967, to follow the progress of studies undertaken on this subject in the various international organisations and to make a report at appropriate intervals. A preliminary report document CM(69)14 was submitted to the Council of Ministers at its 29th Session on 11th June 1969. Since then, further information of interest to the E. C. M. T. has come hand.

I. European Economic Community

On 6th February, 1970, the Council of the European Communities laid down a Directive concerning the harmonization of the legislation of Member States on the acceptable sound level and exhaust system of motor vehicles (70/157/CEE) which was notified in the Journal Officiel des Communautés Européennes N° L 42 of 23rd February, 1970.

The Member States to whom this Directive is addressed must bring into force the required national regulations within 18 months of the date of notification.

The Directive applies to any road motor vehicle, with or without a body, having at least four wheels and designed for a maximum speed of over 25 km/h, excluding vehicles on rails, agricultural tractors and machinery and construction and civil engineering equipment.

It contains requirements in respect of the measuring apparatus, conditions and methods of measurement and the exhaust system (silencer). The acceptable sound levels are laid down as follows :

Passenger vehicles with seating capacity for not more than nine persons, including the driver.	82 dBA
Passenger vehicles with seating capacity for more than nine persons including the driver and a maximum permissible weight not exceeding 3. 5 tons.	84 dBA
Goods vehicles with a maximum permissible weight not exceeding 3. 5 tons.	84 dBA
Passenger vehicles with seating capacity for more than nine persons, including the driver, and a maximum permissible weight of over 3. 5 tons.	89 dBA
Goods vehicles with a maximum permissible weight of over 3. 5 tons	89 dBA
Passenger vehicles with seating capacity for more than nine persons including the driver and powered by an engine of 200 HP DIN or over.	91 dBA
Goods vehicles powered by an engine of 200 HP DIN or over and having a maximum permissible weight of over 12 tons.	91 dBA

To allow for inconsistencies in the measuring apparatus the result of each measurement is considered as the reading shown less one dBA.

II. United Nations Economic Commission for Europe

As mentioned in Report CM(69)14, Regulation N° 9, "Uniform provisions

concerning the approval of vehicles with regard to noise " document E/ECE/324 (Add. 8) - E/ECE/TRANS/505(Add. 8) annexed to the Agreement concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts, concluded in 1958, came into force on 1st March, 1969.

The European Conference of Ministers of Transport had thought it advisable that Regulation N° 9 should be applied by as many Member countries as possible. The replies received so far to a letter requesting the Member countries to state their intentions in the matter are as follows :

Belgium does not apply Regulation N° 9, but the corresponding domestic provisions at present in force are much the same and the figures for permissible sound levels practically identical.

Italy and Yugoslavia have adopted Regulation N° 9 and Norway hopes to be able to implement it from 1st January 1971.

No decision has yet been taken by Sweden, but Denmark states that its regulations for vehicles of approved types are in accordance with international regulations.

Austria will adhere to the basic Agreement concluded in 1958. Since the provisions on motor vehicle noise at present in force in Austria are more stringent than those of Regulation N° 9, the question of the latter's adoption is still under consideration.

The Netherlands has not so far given any consideration to the application of Regulation N° 9. because the maximum limits laid down by domestic legislation for the most common types of vehicles (private cars and lorries) are between 1 and 2 dB(1) lower than those specified in that Regulation.

The United Kingdom does not at present propose to apply Regulation N° 9, on the following grounds :

(i) The test methods specified in the Regulation are considerably different from those already applied in the United Kingdom.

(ii) The measurement tolerances allowed by Regulation N° 9 are wider than those acceptable in the United Kingdom.

(iii) The sound level of 92 dB(A) specified for vehicles powered by an engine exceeding 200 CV DIN cannot be accepted because the maximum limit prescribed by existing legislation is 89 dB(A).

Switzerland does not intend to apply the E. C. E. Regulation because it considers that the measurement method prescribed (for the vehicle in motion) is unsuitable and that the sound level limits are too high.

The Member States of the European Economic Community are in a special position as they have to apply the provisions of the Directive referred to in I.

The Directive and Regulation N° 9 agree as regards the measurement apparatus and conditions and methods of measurement, although the Directive allows a tolerance of one dBA in the measurement which is not allowed in the E. C. E. provisions.

On the other hand, the following acceptable sound level limits laid down in the Directive are stricter :

Private vehicles. 82 dBA (E. C. E. 84 dBA)

Buses, coaches and goods vehicles with a tonnage limit not exceeding 3. 5 tons.

84 dBA (E. C. E. 85 dBA)

Buses and coaches powered by an engine of 200 HP DIN or over, and goods vehicles powered by an engine of 200 HP DIN or over with a maximum permissible weight exceeding 12 tons.

91 dBA (E. C. E. 92 dBA)

As implied during the negotiations in Brussels, Italy, which has adopted Regulation N° 9, may propose to the United

Nations Economic Commission for Europe that the Regulation should be brought into line with the provisions of the Directive of the Council of the European Communities.

Germany and France in their reply to the E. C. M. T. letter said that they would probably be able to adopt the Regulation thus amended.

The E. C. M. T. 's objective has always been the application of uniform international regulations on acceptable sound levels by as many Member countries as possible. The revision of Regulation N° 9 would bring this objective nearer and might help to reduce sound levels. Moreover, the application of a Revised E. E. E. Regulation would have the advantage of also prescribing limits for noise emitted by two and three-wheel vehicles, categories which are not covered by the Directive of the Council of the European Communities.

The E. C. M. T. should therefore follow the development of this problem closely and give appropriate support to efforts to adapt Regulation N° 9.

III. Organisation for Economic Co-operation and Development

In the O. E. C. D., the Consultative Group on Transportation Research has prepared a draft report entitled "Urban Traffic Noise : Strategy for an Improved Environment", based on the O. E. C. D. 's previous work on this subject, mentioned in report CM(69)14 submitted to the Council of Ministers.

The present draft report was drawn up as part of a co-operative programme designed to provide Member governments of O. E. C. D. countries with proposals for solving certain problems arising from the urban environment.

It shows the importance of the problem of urban traffic noise, reveals the technical possibilities of noise abatement and recommends practical measures for controlling and reducing sound levels.

The final version of the report is to be published after submission to the Council of the O. E. C. D. and is intended for use by Member governments as a basis in drwing up effective policies for the abatement of urban traffic noise.

The report states that governments have important work to do in connection with noise abatement. In order that this may be done adequately, a central body should be set up in each national administration to co-ordinate all government activities on noise abatement. The aims of government policy should be to :

a) prevent the further deterioration of traffic noise conditions in the urban environment ;

b) work towards a reduction of traffic noise from its present levels as much and as rapidly as technology will allow, seeking a reasonable balance between the needs of the public and the available resources ;

c) offer ultimately a range of improved noise environments that will meet the reasonable needs and expectations of the community and the individual.

It is recommended as a first priority that the noisiest vehicles should be eliminated. To this end the Authorities should strictly enforce existing legislation on silencers and the general maintenance and operation of motor vehicles and, in the absence of such legislation, should enact new regulations.

Even with silencers in a good state of repair, motor vehicles are too noisy, and it is therefore recommended that industry should be encouraged to develop vehicles with reduced noise emission. Governments should approve standards for maximum permissible noise levels which should be set in terms of the best technological solutions available at the time and should become progressively more stringent to allow for technical progress. The noisiest categories of vehicles should be subject to the most rapid reduction in permissible sound level. In this connection it is recommended that governments should undertake detailed technical studies in

co-operation with industry, with a view to preparing an official policy and discovering what would be the impact of more stringent standards from an economic, social and environmental standpoint.

Governments and local authorities can make an important contribution by stimulating the manufacture of less noisy motor vehicles. They are therefore recommended to apply stringent sound criteria for motor vehicles at the time of purchase. Governments should use research and development contracts to encourage awareness of the "noise" factor.

The development of quieter motor vehicles is a long-term objective and central and local authorities should introduce other short-term measures to try to reduce urban traffic noise. Particular attention should be paid to the following possibilities : adoption of a fiscal policy which would discourage the purchase and use of very noisy motor vehicles ; application of up-to-date methods of traffic flow control ; restrictions on noisy commercial vehicle traffic.

Finally, the draft report contains a number of recommendations for ensuring that the "noise" criterion is taken into account in town planning and urban transport schemes, for intensifying research efforts and for developing future international co-operation on noise abatement.

Most of the principles of noise abatement laid down by the O. E. C. D. were discussed in detail in the E. C. M. T. and recommendations regarding them were sent to the Member countries. The Council of Ministers of Transport in November 1963 had already recommended in Resolution N° 14 on urban traffic noise abatement that Member countries should :

1) adopt a uniform method of measuring the noise made by motor vehicles ;

2) define the maximum permissible levels in accordance with the standardization recommended by the E. C. M. T., where this had not already been done

3) conduct any studies needed in connection with the reduction of urban traffic noise.

The E. C. M. T. can therefore fully support the efforts of the O. E. C. D. and, in the framework of co-operation between the two Organisations, it will certainly be possible to study in depth the problems raised in the O. E. C. D. report.

IV. Consultative Assembly of the Council of Europe

The Consultative Assembly of the Council of Europe has recently taken up the problem of noise as part of its studies on urban traffic.

In its Resolution 431 (1970) of 26th January, 1970, on the problem of urban traffic it expressed the opinion that energetic solutions to the noise problem should be sought both by central and local authorities. Remedies might be sought through regulations and legislation. research into new technical solutions and their application and, lastly, systematic and unremitting action on public opinion. In this respect the Consultative Assembly is convinced that the introduction of electrically-powered vehicles might solve the noise problem.

In conclusion, the Consultative Assembly invites its members to make representations in their national parliaments with a view to promoting all budgetary and legislative measures capable of making advanced technical solutions in the field of urban traffic move forward from the experimental stage to the stage of application.

A feature of the close co-ordination between the E. C. M. T. and the Council of Europe is the Annual Report on activities presented by the Chairman of the Council of Ministers of Transport, which provides an opportunity for discussing the various transport policy problems.

The suggestions of the Council of

the Council of Europe on traffic noise abatement are broadly in line with the measures recommended on several occasions by the E. C. M. T. The Ministers of Transport of the E. C. M. T. Member countries can therefore within the framework of their mandate give their full support to the Council of Europe suggestions.

ANNEX

1. LIST OF OFFICERS OF THE ECMT

OFFICERS OF THE COUNCIL OF MINISTERS

In accordance with the provisions of article 1 a) of the Rules of Procedure, the Council of Ministers, at its sessions of 17th December, 1970, elected the following Officers :

Chairmanship (Spain) :

Mr. G. FERNANDEZ DE LA MORA - Minister of Public Works

First Vice-Chairmanship (United Kingdom) :

Mr. J. PEYTON - Minister for Transport Industries

Second Vice-Chairmanship (Netherlands)

Mr. J. KEYZER - Secretary of State for Transport and Public Works

OFFICERS OF THE COMMITTEE OF DEPUTIES

In application of article 3 of the Rules of Procedure, the Officers of the Committee are the following :

Chairmanship (Spain) :

Mr. J. SANTOS-REIN - General Director of Land Transport, Ministry of Public Works

First Vice-Chairmanship (United Kingdom) :

Mr. B. P. H. DICKINSON - Under Secretary, Ministry for Transport Industries

Second Vice-Chairmanship (Netherlands)

Mr. A. VAN DER NOORDT, Director of International Transport, Ministry of Transport and Waterstaat

2. LIST OF DELEGATES AT THE STOCKHOLM AND PARIS CONFERENCES

AUSTRIA

Mr. E. FRÜHBAUER, Federal Minister of Transport and Nationalised Industries.
Mr. FISCHER, (1) Director-General (Deputy to the Minister of Transport and Nationalised Industries).
Mr. KNAPPL, Ministerial Counsellor Ministry of Transport and Nationalised Industries)
Mr. HABEL, (1) Director-General (Deputy to the Minister of Trade and Industry).
Mr. FENZ, Ministerial Director, Ministry of Trade and Industry.

BELGIUM

Mr. BERTRAND, Minister of Communications.
Mr. VREBOS, Secretary-General (Deputy to the Minister)
Mr. GORDTS, (1) Principal Private Secretary to the Minister
Mr. NEUVILLE, (1) Director-General, Ministry of Communications.
Mr. POPPE, Administrative Director, Ministry of Communications
Mr. DE HAECK, (2) Attaché, Private Office of the Minister of Communications.

DENMARK

Mr. GULDBERG, Minister of Public Works.
Mr. CHRISTENSEN, (1) Secretary-General (Deputy to the Minister).
Mr. JENSTRUP, Director Danish Railways
Mr. FOLDBERG, Head of Section, Ministry of Public Works
Mr. KLOKKER (1), Secretary to the Minister

FRANCE

Mr. R. GALLEY (1), Minister of P. T. T.
Mr. DEBAYLES, Chief Highways Engineer, Head of International Relations Office, Ministry of Transport (Deputy to the Minister).
Mr. P. LACARRIERE, (1) Director of Land Transport
Mr. CARON, Private Office of the Minister of Transport
Miss F. PARMIN, (1) Administrator, International Relations Office, Ministry of Transport
Mr. MER, (1) Co-ordination and General Affairs Department
Mr. J. GABARRA, Counsellor, Ministry of Foreign Affairs

1) Florence session

2) Paris session

GERMANY

Mr. K. WITTROCK, Secretary of State
Mr. NEUPERT, Ministerial Director (Deputy to the Minister).
Mr. LINDER, (1) Ministerial Director
Mr. WOELKER, Ministerial Director
Mr. HOFMANN, Administrative Director
Mr. HERRMANN, (2) Ministerial Counsellor
Mr. NAEFE, Ministerial Counsellor
Mr. STRUVE, (2) Counsellor, German Delegation to O. E. C. D.

GREECE

Mr. CHRISTIDIS, (2) Ambassador, Head of the Greek Delegation to O. E. C. D.
Mr. A. LIONTAS, Counsellor, Greek Delegation to O. E. C. D. (Deputy to the Minister).
Mr. B. KOLIOPOULOS, Technical Adviser, Ministry of Communications

IRELAND

Mr. O'RIORDAN, Secretary-General, Department of Transport and Power (Deputy to the Minister).
Mr. D. TURPIN, Assistant Secretary, Department of Local Government.

ITALY

Mr. I. VIGLIANESI, Minister of Transport.
Mr. SANTORO, Director-General of Coordination and General Affairs (Deputy to the Minister)
Mr. F. FENELLI, Counsellor, Ministry of Transport
Mr. G. TURI, Counsellor, Italian Representative to European Communities
Mr. V. AGOSTINONE, Counsellor, Private Office of the Minister of Transport
Mr. M. NOLA, (2) Counsellor, Private Office of the Minister of Transport
Mr. PRIZZOFIOVELLI, (1), General Inspector, Ministry of Transport
Mr. G. ROSSINI, Prinipal Inspector, Ministry of Transport

LUXEMBOURG

Mr. MART, Minister of Transport and National Economy.
Mr. LOGELIN, Government Counsellor (Deputy to the Minister)

NETHERLANDS

Mr. KEYZER, Secretary of State for Transport and Public Works
Mr. VAN DER NOORDT, (2), Director of International Transport, (Deputy to to the Secretary of State)
Mr. J. VRIJ, Director General of Transport
Mr. C. VAN DE WETERING, (1) Deputy Director of International Transport

1) Florence session

2) Paris session

Mr. VAN DEN TOORN, (2), Deputy-Head of International Railways Division, Ministry of Transport and Waterstaat
Mr. H. W. VAN REES, General International Affairs Division
Mr. R. M. VAN KOOY, (2) Deputy-Adviser on International Transport, Ministry of Foreign Affairs

NORWAY

Mr KYLLINGMARK, (2) Minister of Transport
Mr. LORENTZEN, (1) Secretary-General, Ministry of Transport (Deputy to the Minister).
Mr. HAUKVIK, Director-General, Ministry of Transport

PORTUGAL

Mr. J. M. de OLIVEIRA MARTINS, Secretary of State for Communications and Transport
Mr. L. de GUIMARAES LOBATO, Chairman of the G. E. P. T. (Deputy to to the Minister of Communications)
Mr. A. MAGALHAES, Head of the Private Office of the Secretary of State for Communications and Transport
Mr. A. AIRES, Director, Land Transport Department
Mr. M. SEQUEIRA BRAGA, Member of the Portuguese Railways Administrative Council

SPAIN

Mr. G. FERNANDEZ DE LA MORA, Minister of Public Works
Mr. J. SANTOS REIN, General Director of Land Transport (Deputy to the Minister)
Mr. M. MARTINEZ-CATENA, Deputy General Director of Land Transport.
Mr. A. DEL CAMPO, (2) Secretary-General, High Council for Land Transport
Mr. L. IMEDIO, Economist, High Council for Land Transport
Mr. J. VELO de ANTELO, (1) Principal Private Secretary to the Minister

SWEDEN

Mr. B. NORLING, (2) Minister of Communications
Mr. HASSLEV, Under-Secretary of State (Deputy to the Minister)
Mr. VOSS, Head of Division, Ministry of Communications
Mr. AHLBERG, (1) Head of Section, Ministry of Communications.
Mr. ORRSTEN, (2) Head of Section, Ministry of Communications

1) Florence session

2) Paris session

SWITZERLAND

Mr. R. BONVIN, Federal Counsellor, Head of the Federal Department of Transport, Communications and Power
Mr. A. MARTIN, (1) Director, Federal Transport Department (Deputy to the Minister).
Mr. P. R. JORDANIS, Head of the International Organisations Office, Federal Transport Department (Deputy to the Minister)
Mr. P. TRACHSEL, (2) Director Federal Transport Department
Mr. R. MESSERLI, (2) Head of the Road Traffic Subdivision, Federal Police Division

TURKEY

Mr. ÖZDEDE, (2) Counsellor, Ministry of Communications (Deputy to the Minister)
Mr. MENGILIBÖRU, (1) Director Road Traffic, Division General Directorate for Roads.

UNITED KINGDOM

Mr. J. PEYTON, (2) Minister for Transport Industries
Mr. B. P. H. DICKINSON, under-Secretary, (Deputy to the Minister of transport)
Mr. G. G. D. HILL, Head of International Transport Division
Mr. J. COATES, (2) Private Secretary to the Minister

YUGOSLAVIA

Mr. ORLANDIĆ, (1) Member of the Federal Executive Council
Mr. FRANGES, (2), Plenipotentiary Minister, Head of the Yugoslav Delegation to O. E. C. D.
Mr. JANKOVIC, Counsellor, Federal Executive Council (Deputy to the Minister).

UNITED STATES (Observer)

Mr. GREENWALD (1), Ambassador, Permanent Representative, United States Mission to O. E. C. D.
Mr. HEMILY, (1) Science Adviser, United States Mission to O. E. C. D.
Mr. LEROY F. PERCIVAL Jr. (2) Counsellor, United States Mission to O. E. C. D.

JAPAN (Associate Member)

Mr. M. HASHIMOTO, (1) Minister of Transport
Mr. S. SUZUKI, (1) Vice-Minister of Transport
Mr. T. KOMURA, (2) Director General, Research and Statistics Department, Ministry of Transport
Mr. Y. TANAHASHI, (2) Director of Passenger Transport Division, Road Transport Bureau
Mr. K. INUI, First Secretary, Japanese Delegation to O. E. C. D.

Secretary : Mr. E. CORBIN

1) Florence session

2) Paris session

ECMT/28.949