

# 5

## ENVIRONMENTAL-ECONOMIC INTERFACE\*

### Features

- Sustainable development: progress on decoupling
- Sustainable development: strategy, institutions
- Sustainable development: green tax shift
- Environment-energy integration
- Environment-transport integration
- Environmental expenditure

\* The present chapter reviews progress in the last ten years, and particularly since the previous OECD Environmental Performance Review of 1996. It also reviews progress with respect to the objective “decoupling environmental pressures from economic growth” of the 2001 OECD Environmental Strategy. It takes into account the latest OECD Economic Surveys of Sweden.

## Recommendations

The following recommendations are part of the overall conclusions and recommendations of the environmental performance review of Sweden:

- in deciding on any *further green tax reform*, give more consideration to using the lowest-cost opportunities to abate GHGs, while also taking into account long-term perspectives;
- reinforce efforts to remove remaining *environmentally harmful subsidies*;
- review and revise transport prices to reflect all externalities, including damage associated with particulates, ozone and noise; implement *road congestion charges* in Stockholm and extend them to other major urban areas;
- pursue efforts towards enhanced *energy efficiency* (in a range of sectors, including energy-intensive industry and the existing building stock); review in particular flexible mechanisms to maximise off-site life cycle energy saving opportunities;
- strengthen institution-based *integration among ministries and agencies*, with particular attention to the integration of environmental concerns in industry, energy, transport, forestry and agriculture policies;
- introduce cost-effective *demand management measures* to decouple growth in municipal waste generation and road traffic from economic growth, in line with Objective 2 of the OECD Environmental Strategy.

## Conclusions

Sweden gives high priority to sustainable development nationally, in Europe and globally. It adopted a *national sustainable development* strategy in 2002, with a secretariat in the prime minister's office. The environmental component of sustainable development is well developed in the EQOs and practical interim targets, which help all levels of government move from aspiration to implementation. Sweden's overall progress in *decoupling* environmental pressures from economic growth was remarkable over the review period, with significant improvements in emission intensity, energy intensity and material intensity. This progress reflects, in part, institution-based and market-based integration efforts. Sweden makes impressive use of *market-based instruments* in a wide range of areas, including the integration of environmental concerns in energy, transport and agriculture. The ongoing *green tax reform* is a logical extension of earlier use of economic instruments. Real efforts are being made to promote sustainable consumption and production, not only through economic instruments but also through policies favouring integrated product policy and green procurement. Overall pollution

abatement and control expenditure has remained around 1.1% of GDP and broader environmental expenditure around 1.5%.

Sweden's decoupling progress has been less than satisfactory when it comes to municipal waste generation (whose growth was higher than that of GDP) and traffic volumes. While the decision to try a road congestion charge in Stockholm is significant and positive, growth in *transport* may still have a bigger future environmental impact than any other sector. Incomplete internalisation of externalities translates into transport subsidies. Moreover, road users are not subject to charges that fully reflect the (long-term marginal social) cost of the capital they use. Regarding the target of reducing greenhouse gas (GHG) emissions by 4% by 2008-12 from 1990 levels, no allowance is made for the *use of flexible mechanisms*, though it is clear that this omission will not rule out working with other EU countries in the EU emission trading programme or in clean development mechanism and joint implementation projects; the government is considering establishing an objective that includes flexible mechanisms. While a shift to renewable energy sources is highly desirable, all energy production involves external costs (which should be internalised), so promotion of *energy conservation* should be prioritised over subsidisation of even the most environment-friendly types of energy use. In seeking to promote renewables, analysis of policies' *comparative cost-effectiveness* and distributive impacts needs to be better assured.



## 1. Decoupling of Environmental Pressures from Economic Growth

Within the context of a growing and open economy (Box 5.1), Sweden has achieved *major successes in decoupling* environmental pressures from economic growth. *Future prospects for decoupling*, however, are unclear. Unless active measures are taken, environmentally harmful emissions, energy use and resource use will probably increase considerably in coming decades, since efficiency gains are unlikely to overcome the volume effects of increased consumption and production.

### 1.1 Emission intensity

Reduction of *air emissions from major point sources* has been the most successful aspect of Sweden's decoupling effort. Large declines in *emissions* of key pollutants such as SO<sub>2</sub> have been recorded over the last three decades, including the 1990s. Today, less than 10% of sulphur deposited on Swedish soil is from

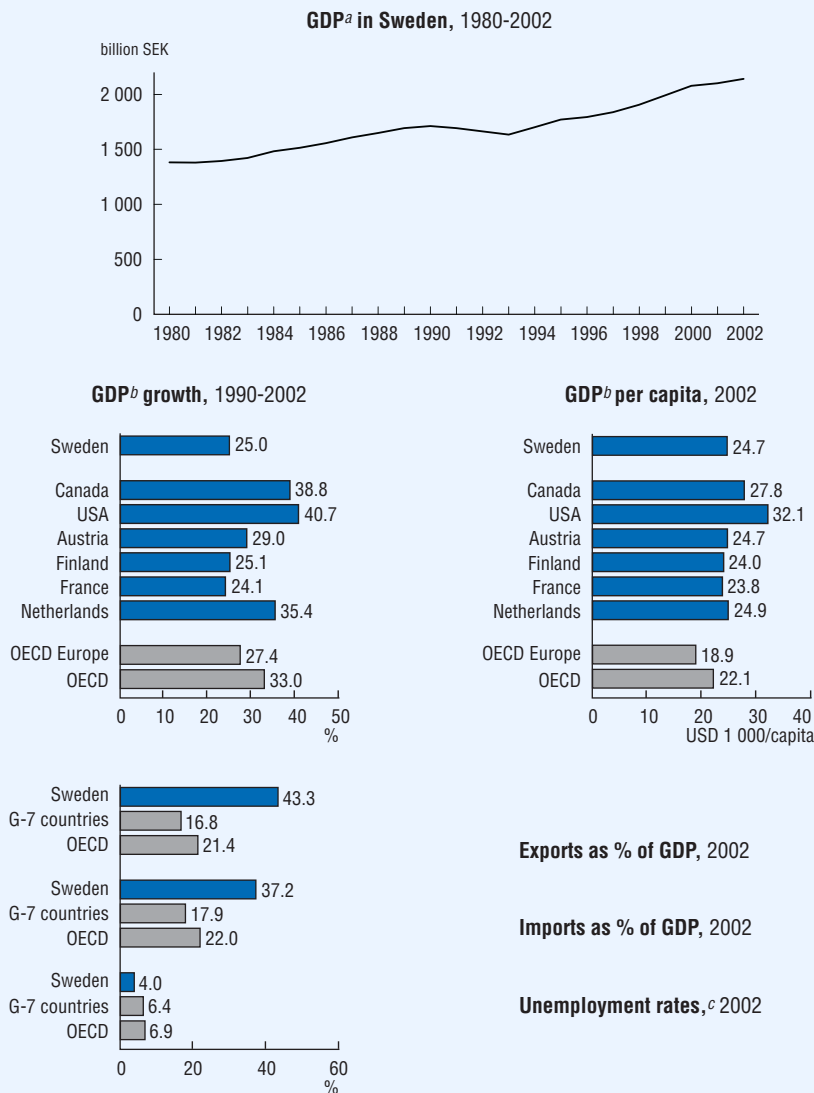
### Box 5.1 Economic context

Sweden is a prosperous country with a *high standard of living*. Measured using current prices and current purchasing power parities, GDP per capita is slightly above the OECD average. After a deep recession in the early 1990s (GDP declined almost 5% in real terms between 1989 and 1993), the country experienced exceptionally strong growth in the second half of the decade. Over 1990-2002, however, the economy grew more slowly than those of other EU and OECD countries, on average (Figure 5.1). The levels of inflation (2%) and unemployment (5%) have remained moderate. Sweden joined the European Union on 1 January 1995 but decided to remain outside the European Monetary Union, a decision confirmed by referendum in September 2003.

Sweden has a highly *open economy* (exports represent 43% of GDP). The composition of employment has dramatically shifted, in sharp contrast to the OECD as a whole. The business sector employs around 6% fewer workers today than in 1960, while employment in the general government sector is 2.5 times larger than it was 40 years ago, reflecting the build-up of the *welfare state*. In 2000, public consumption represented 26.2% of GDP and *general government current disbursements* 52.4% of GDP, the highest shares among OECD countries. At 32% of GDP, net cash public social expenditure was also an OECD high. An impressive consolidation of public finances took place over the mid-1990s, with central government finances moving from a deficit of 13% in 1993 to a surplus of 0.5% in 1998. Recently the fiscal position has worsened, but a general government surplus was expected for 2003.

*Traditional industry* based on the country's most important raw material resources, iron ore and wood, still plays an important role, but since the government began ending subsidies to inefficient industries some branches, such as shipyards and textiles, have virtually ceased to exist while others have sharply downsized and concentrated on narrow market segments. Services, engineering and various high-tech branches have grown in significance, reducing the export sector's vulnerability to international fluctuations. Industry employs some 18% of the workforce, agriculture 2% and services 80%. Nearly half of Sweden's industrial output is based on mechanical engineering; other important branches include medical products, information and communication technology, and environmental technology. Because Sweden's tax, social security and labour market regulations do not favour smaller firms, the industrial structure tends to be centred on *large, capital-intensive companies*. Industrial branches such as telecommunications and energy were opened to competition in the 1990s and the Swedish product market is now one of the least regulated in the EU. International economic competitiveness is high, although competition is still weak domestically in some sectors (e.g. construction and food).

Figure 5.1 Economic structure and trends



a) GDP at 1995 prices.  
 b) GDP at 1995 prices and purchasing power parities.  
 c) % of total labour force.  
 Source: OECD.

Swedish sources. A further success is the absolute decoupling of NO<sub>x</sub> emissions (–25%), from GDP growth (+25%) since 1990 (Figure 8.2).

CO<sub>2</sub> emission reductions of recent decades mainly took place in the 1980s with the expansion of nuclear power and energy efficiency improvements. Since introduction of the CO<sub>2</sub> tax in 1991 the reduction has been only moderate, albeit absolute (Figure 8.2). In industry, changes in the energy tax when the CO<sub>2</sub> tax was introduced led to lower energy end-user prices. Although energy sector CO<sub>2</sub> emissions fell by 7% from 1990 to 2001, transport sector emissions rose 8% with an increase in road traffic.

For effluent discharges creating biological oxygen demand (BOD) in *water bodies*, a declining trend occurred as early as around 1960 when a major programme to improve sewage treatment began. Absolute or relative decoupling has also been observed for some

Table 5.1 **Decoupling: economic trends and environmental pressures**

(% change)

	1980-90	1990-2002
Selected economic trends		
GDP <sup>a</sup>	24	25
Population	3	4
Agricultural production	7	–10
Industrial production <sup>b</sup>	28	36
Total primary energy supply	17	9 <sup>c</sup>
Energy intensity (per unit of GDP)	–6	–11 <sup>c</sup>
Road freight traffic <sup>d</sup>	24	13 <sup>c</sup>
Selected environmental pressures		
CO <sub>2</sub> emissions from energy use <sup>e</sup>	–30	0 <sup>c</sup>
SO <sub>x</sub> emissions	..	–43 <sup>c</sup>
NO <sub>x</sub> emissions	..	–25 <sup>c</sup>
Water abstraction	–28	–9 <sup>f</sup>
Nitrogenous fertiliser use	–13	–6 <sup>c</sup>
Pesticide use	–47	–27
Municipal waste	27	30

a) At 1995 prices and purchasing power parities.

b) Includes mining, quarrying and manufacturing.

c) To 2001.

d) Based on values expressed in tonne-kilometres.

e) Excludes marine and aviation bunkers.

f) To 2000.

Source: EMEP; FAO; IEA; OECD.

heavy metals. The trend for nuclear waste, however, has been increasing. Commercial *nitrogenous fertiliser* and pesticide use has decreased (Table 5.1).

Because a significant proportion of air pollution in Sweden is imported, *emission* reductions may not result in substantial declines in *concentrations* of pollutants. Thus, decoupling of emissions from economic growth does not necessarily imply decoupling of concentrations. An air quality index prepared by Swedish government agencies, summarising the trends in concentrations of sulphur, nitrogen and other major pollutants since the late 1980s, suggests that concentrations are levelling out but notes a risk of worsening in respect of soot (particulate matter). Ground-level ozone, largely imported, is also not declining.

### 1.2 Energy intensity

The *energy supply* increased by 9% from 1990 to 2002 while GDP rose by 25%. Sweden's economic structure, low population density and climate affect energy use levels. While energy intensity has dropped since 1980, the drop since 1990 is limited. Sweden remains *more energy-intensive than most of the rest of OECD Europe* (Figure 8.1). Reductions in energy intensity have been achieved in industry and the residential sector; gains have been modest in the services sector and very slight in the transport sector. Cross-border electricity trade has increased since deregulation in 1996. Although electricity prices were stable until 2001, they have recently been less so.

### 1.3 Material intensity

Since the mid-1950s, decoupling has occurred for a number of major material flows. The amount of *raw materials* used per unit produced was approximately halved even as the volume of production more than tripled. A major factor in this progress was a shift towards knowledge-intensive production.

Resource efficiency trends in terms of *waste* are of concern. Industrial waste intensity (kg/GDP) is relatively high by OECD standards. There is *no decoupling concerning municipal waste generation*: it grew by 30% while GDP rose by 25% (Table 5.1). Household waste volumes are increasing, though the proportion sent to landfill or incinerated is falling, and material recovery and composting are rising.

Natural *gravel extraction*, which is environmentally damaging, has declined substantially since 1990, replaced in part by use of crushed rock. A tax on natural gravel may have contributed somewhat to the decline.

A key issue of concern with materials is *dissipative use* or losses (e.g. copper emissions from brake linings) rather than overall usage rates or stock quantities. The

toxicity of materials is also very important. Thus, while reducing material throughput increases eco-efficiency generally, crude material flow indicator trends should be interpreted with caution.

The government-appointed Resource Efficiency Commission, reporting in 2001, expressed concern that levels of *certain toxic and environmentally harmful materials are rising* in Sweden. While the use of mercury has declined, the aim of phasing it out by 2003 was not achieved. Major knowledge gaps remain. An increase in the number of chemical products registered annually is not necessarily a problem if more toxic chemicals are replaced by less toxic ones, but knowing the properties of these substances is critical. Addressing toxicity and dissipation into the environment requires attention to product and process design rather than a general focus on decoupling.

## 2. Towards Sustainable Development

### 2.1 Sweden's sustainable development strategy

The government has committed itself to making Sweden “one of the countries leading the way in the transition to development that is sustainable in all its dimensions, economic, social and ecological.” The *national strategy for sustainable development* (March 2002) sets out a vision of the future and lists eight strategic core areas. The vision “should remain valid for a generation” while the core areas “may need to be reassessed at more frequent intervals”. The strategy includes both international and local activities. To co-ordinate the government's work on sustainable development, a Secretariat for Sustainable Development was established *within the prime minister's office* in December 2003.

The *strategic core areas*, chosen to emphasise the *importance of integrating* the social, economic and environmental aspects of development, are: 1) the future environment; 2) limitation of climate change; 3) population and public health; 4) social cohesion, welfare and security; 5) employment and learning in a knowledge society; 6) economic growth and competitiveness; 7) regional development and cohesion; and 8) community development. *Sustainable consumption and production* is also given some recognition, as part of Sweden's international activities on sustainable development and as an issue under core area 6.

*Implementation* of the strategy is seen as a long-term, continuing process. The strategy is intended to be a living document, continuously monitored and evaluated. A first set of sustainable development *indicators*, developed in 2001, will be revised and adapted to the sustainable development strategy.



## 2.2 *Institution-based integration*

### *Integration of environmental concerns in other policy areas*

Since 1 January 2003 the *Constitution* has stated that “public activity shall promote sustainable development leading to a good environment for present and future generations”. The framework of environmental quality objectives serves as guidance for all policy work with potential environmental implications. For example, the Swedish Energy Agency is obliged to “analyse developments in energy markets and the energy system in terms of the environment”.

Evidence of integration of environmental concerns can be seen at central government level in the activities of many *ministries and sectoral planning* agencies. For example, the Ministry of Finance’s annual examination of product and capital markets builds in environmental considerations, and the Ministry of Industry, Employment and Communications takes environmental concerns into account when developing energy policy. Nevertheless, there may be something in the perceptions of some stakeholders that certain ministries are not always sufficiently attuned to what other ministries are trying to achieve, that there are inter-agency disparities in approach and that environmental considerations are sometimes given short shrift in planning processes in some sectors (e.g. fisheries). Some evidence (e.g. a recent study by the National Institute of Economic Research analysing the cost-effectiveness of nitrogen pollution abatement policies concerning the Baltic Sea) suggests there may be more scope to lower costs through better policy co-ordination. Integration is examined further below for the transport, energy and agriculture sectors (Section 3).

The 1996 OECD Environmental Performance Review of Sweden recommended the integration of environmental issues into all central government preparatory and decision-making processes. The government has since introduced *environmental management systems* for government agencies and ministries. Over 230 public agencies, and all ministries, have been required to adopt such systems, which cover not only direct environmental impact (e.g. of procurement) but also *indirect impact* (e.g. resulting from decisions, funding and training). This development has been particularly important for the 30 to 50 or so central agencies with a significant environmental impact. Examples include the National Road Administration, the Swedish Energy Agency and the Board of Agriculture. While the use of EMS is advancing well overall, implementation gaps remain.

Clear instances of high-quality institution-based integration also exist at the *regional and local* levels. Examples include the *Agenda 21 programmes* of Göteborg and Stockholm and these cities’ work on integrated planning and development. Local involvement in Agenda 21 is widespread: over 70% of the country’s 289 municipal

councils have adopted Agenda 21 plans or programmes. Many of these are highly developed, providing for environmental action and monitoring along with careful consideration of the environmental aspects of matters such as waste management, chemicals, housing, transport and energy use. Municipalities often form associations to reduce monitoring costs (e.g. for air quality).

The government has supported local efforts since 1997 with sustainable development grants under the *local investment programmes*, and the *climate investment programmes* that succeeded them in 2002 (with SEK 900 million allocated for 2002-04). The former programmes, with both *employment and environmental objectives*, made an impact in both areas. For example, they appear to have helped reduce carbon, SO<sub>x</sub> and NO<sub>x</sub> emissions. Their cost-effectiveness in terms of employment impact alone was low, however.

#### *Environmental and sustainability assessments*

The National Rail Administration, the National Road Administration and the county administrative boards undertake long-term planning (currently for 2004-15). Their proposals must include *strategic environmental assessments*, in accordance with the EU Directive on the Assessment of the Effects of Certain Plans and Programmes on the Environment (2001/42/EC). Similar assessments are required in other transport policy planning.

*Environmental impact assessments*, as required by the 1999 Environmental Code (Chapter 2), cover environmental, economic and health impacts. *All government bills and communications* include economic and environmental assessments. *Health impact assessments* are also used to analyse and clarify the public health effects of current policies well as proposals for new policies in areas related to public health.

A variety of processes exists for appraising proposals in a range of policy areas against the government's sustainable development objectives, but so far no systematic assessment of options through cost-benefit analysis, cost-effectiveness analysis or multicriteria analysis is required. In short, *sustainability assessments* are *not yet required* for policy proposals. Such an approach is being developed, however, and is expected to have a significant impact on an international scale, as well as the national, regional and local levels.

#### *Integration of economic objectives into environmental policy*

In any country, there may be tension between sustainable development aspirations, which tend to be generally defined, and more specific environmental aspirations. Sweden's Environmental Code states, for example, that *environmental quality standards* shall specify levels of pollution or other disturbance to which

humans or the environment can be subjected without any risk of significant or substantial detriment. This is a highly ambitious aspiration, which in practice the standards probably do not meet. Indeed, some actors in society may see environmental objectives as being balanced against other dimensions of sustainable development (i.e. economic growth and social objectives), which leads to environmental quality standards being set more as pragmatic “bottom lines”.

### 2.3 Market-based integration

In its spring 2003 budget statement, the government declared: “One key task for environmental policy is to establish a system in which the party responsible for environmental impact is also made to bear the cost to the general economy”. Sweden has used economic instruments to integrate environmental concerns into policy in a way that materially influences development and thus advances sustainability. It was among the first countries to introduce a significant CO<sub>2</sub> tax (1991), and it now has a wide variety of economic instruments. In 2002, environment-related taxes generated SEK 68 billion, or 5.8% of total tax revenue (Table 5.2). The tax reform known as the “green tax shift” is another component of this policy (Box 5.2).

Table 5.2 Revenue from selected environment-related taxes, and energy and vehicle taxes

(SEK billion in current prices)

	2000	2002
Energy tax	38.3	37.2
Petrol	19.3	17.2
Electricity	11.3	14.0
Other	7.7	6.0
Carbon dioxide tax	12.0	19.9
on petrol	4.6	7.9
other	7.4	12.0
Sulphur tax	0.1	0.2
Special tax on electricity	1.7	1.8
Motor vehicle tax	7.0	7.5
Tax on natural gravel	0.1	0.1
Tax on fertiliser and pesticides	0.4	0.4
Tax on waste	1.1	0.9
Total revenue	60.7	67.9

Source: Ministry of Finance.

### Box 5.2 Green tax shift

The 2000 spring finance bill introduced an environmental tax reform called the *green tax shift*: a reallocation of taxes from labour to environmentally harmful activities, notably energy production and use. It is estimated that the green tax shift in the 2001, 2002 and 2003 budget bills amounted to EUR 0.8 billion. Several taxes, including those on CO<sub>2</sub>, energy, electricity, landfill and gravel, were increased while others were decreased, especially the basic income tax threshold and employers' social contributions. In a further EUR 0.2 billion shift proposed for 2004, the CO<sub>2</sub> tax is to be raised again, by 18%, to around EUR 90 per tonne of CO<sub>2</sub>. Energy and CO<sub>2</sub> taxes, in particular, influence the *energy and transport* sectors (Section 3). The overall goal is a green tax shift of EUR 3 billion for 2001-10.

Some *evaluations* of the effectiveness of tax instruments in achieving environmental objectives have been made in Sweden, but more are needed. Taxes often take time to have an impact, as long-term elasticity may be higher than short-term responses. One evaluation suggests that the mix of instruments in use in 2001 to address GHG emissions (including the CO<sub>2</sub> tax) will reduce emissions by 15-20% by 2010 from what they would otherwise have been. A study of the green tax shift's distributional effects indicates that its average net impact has amounted to less than 1% of disposable income in all social groups (Chapter 6).

As well as advancing environmental objectives, the green tax shift aims to increase *employment*. Lowering tax rates on labour and increasing the income tax threshold can be expected to have medium-term benefits for employment, though the short-term effects may well be small.

### *Climate change*

"*Limitation of climate change*" is a core area of the sustainable development strategy, and "Reduced Climate Impact" is the first of Sweden's 15 environmental quality objectives (EQOs). Although the country's share of global greenhouse gas (GHG) emissions is small, Sweden's commitment to contribute to the global effort to reduce emissions is strong because of the potential future impact of climate change worldwide. Emission reduction policies affect many other policy areas, such as transport, energy and forestry; hence, climate change presents some difficult sustainable development and integration challenges for Sweden (Chapter 8).

The introduction of the *CO<sub>2</sub> tax* in 1991 was an important example internationally of attempting to price the externalities (including risks) associated with CO<sub>2</sub> emissions. The price was set too low to achieve Sweden's emission reduction goals, however (particularly when rebates were taken into account), so the

government appointed a Green Tax Commission to review the tax structure. As a result of the commission's report in 1997, a reallocation of the tax burden, the "green tax shift", was begun. This reform has carried internalisation further and demonstrated the potential for *revenue recycling* through reduction of employer tax contributions and an increase in personal tax thresholds.

To address international environmental problems cost-effectively, low-cost options should be taken up before high-cost policies are adopted. This principle is the basis for the emerging EU emission trading programme, for instance. Arrangements for *integrating Swedish climate change policy with the flexible mechanism available in this EU programme* remain to be finalised. Given the desirability of limiting costs through the flexibility to exploit low-cost opportunities first, the case for raising the CO<sub>2</sub> tax rate as planned (from around EUR 76 per tonne to around EUR 90) is not clear. Rather than stemming from a need to meet CO<sub>2</sub> objectives per se, this plan may have more to do with a desire to expand use of renewables to fill the gap if nuclear power is phased out. If the tax rate substantially exceeds the traded price of CO<sub>2</sub> over the next decade or so, premature costs may be incurred.

Under the "Reduced Climate Impact" EQO, the interim target (reducing GHG emissions by 4% from 1990 levels by 2008-12) *makes no allowance* for the use of flexible mechanisms such as the clean development mechanism. Full participation in flexible mechanisms is in fact envisaged, however, allowing cost-effective emission reductions to be achieved and the goals of the UN Framework Convention on Climate Change advanced through, for example, assistance to developing countries. In practice, development aid to Baltic and eastern European countries since the early 1990s has been a cost-effective way for Sweden to "buy" emission reductions. Any concern that Sweden will not achieve its 4% GHG reduction target should be seen in the light of i) the success the country has already achieved in cutting its own GHG emissions to relatively low levels, and ii) the desirability of extending the search for cost-effective reductions beyond Sweden's borders via flexible mechanisms.

In the longer term, a higher price on CO<sub>2</sub> may be necessary if Sweden is to make adequate progress towards meeting its goals of reducing annual per capita GHG emissions to 4.5 tonnes of CO<sub>2</sub> equivalent by 2050 and phasing out nuclear power. The longer-term position should perhaps also take into account data on carbon embodied in Sweden's net imports: one estimate is that the CO<sub>2</sub> content of Swedish imports exceeds that of exports by around 7 million tonnes annually (by comparison, Swedish production generates 53 million tonnes of CO<sub>2</sub> per year). In the meantime, Sweden's work to develop a *positive role for trading within the EU* is important and so could be strengthened, as could its *support for wider use of flexible mechanisms*, so as to make emission reductions cost-effectively.

Table 5.3 Selected environment-related taxes on energy and transport

Instrument (year introduced)	Rate	Remarks
<b>ENERGY</b>	SEK 0.76/kg CO <sub>2</sub>	The rate was last raised by SEK 0.1/kg in the 2003 green tax shift. A further increase of 18% is proposed for 2004.
CO <sub>2</sub> tax on fuel (1991, revised 2002)		
Combined energy and CO <sub>2</sub> tax on fuel (1991, revised 2002)	SEK 3.12-3.66/litre (diesel)	The rates, differentiated according to the fuel's environmental properties, were raised by 15% on 1 January 2002.
	SEK 4.6-5.30/litre (petrol)	Industry, agriculture, forestry and fishing are exempt from the energy tax and pay only 30% of the CO <sub>2</sub> tax. For energy-intensive industry, if the CO <sub>2</sub> tax incurred by a company exceeds 0.8% of turnover, the company is entitled to a reduction so that only 24% of the tax burden on the excess is paid.
	SEK 3.12/litre (alkylate petrol)	Around 50 companies are entitled to a reduction of the CO <sub>2</sub> tax. If the CO <sub>2</sub> tax incurred exceeds 1.2% of turnover, no tax is paid for the excess. In practice, this applies only to a handful of companies.
		A lower rate applies to ethanol and rapeseed methyl ester used in pilot projects.
	SEK 1.07/m <sup>3</sup> (natural gas and methane for transport)	The following are exempt:
	SEK 1.30/litre (LPG for transport)	<ul style="list-style-type: none"> <li>– all fuel used for commercial air navigation</li> <li>– aviation spirit and jet fuel used for private air navigation</li> <li>– petrol used in aircraft</li> <li>– fuel delivered to another EU member state for use by diplomats and the like, as well as such use in Sweden</li> </ul>
	SEK 1575/1000m <sup>3</sup> (natural gas and methane for stationary use)	<ul style="list-style-type: none"> <li>– fuel used in ships and boats, except for private use</li> <li>– fuel used for other purposes than in motors and for heating</li> <li>– fuel used in a process where the fuel to a major extent is used for other purposes than in motors and for heating</li> </ul>
	SEK 2028/1000m <sup>3</sup> (LPG for stationary purposes)	<ul style="list-style-type: none"> <li>– methane produced through biological processes</li> <li>– fuel sold in one-litre packages</li> <li>– losses in connection with fuel production, storage and transport</li> </ul>
	SEK 1865/tonne (coal and coke)	<ul style="list-style-type: none"> <li>– fuel used in trains or other rail transport</li> </ul>
	SEK 2505/m <sup>3</sup> (crude pine tree oil for heating)	<ul style="list-style-type: none"> <li>– fuel used in the production of petroleum, carbon fuel and petroleum coke</li> <li>– fuel used in electricity generation</li> <li>– fuel used in heat production in a combined heat and power plant for the proportion related to the heat generation (only half of the energy tax and no CO<sub>2</sub> tax is exempted)</li> <li>– petrol used as solvent</li> <li>– electricity produced and consumed on a ship or other means of transport</li> <li>– electricity produced in an emergency generator</li> </ul>

Table 5.3 Selected environment-related taxes on energy and transport (cont.)

Instrument (year introduced)	Rate	Remarks
Electricity tax	SEK 0.223/kWh (households in southern Sweden) SEK 0.161/kWh (households in northern Sweden) SEK 0.195/kWh (gas heat or water supply)	<p>A new tax on alternative motor fuel came into effect in 2003: such fuel was exempted from the CO<sub>2</sub> tax if its net contribution to GHG emissions is limited, and pilot projects involving such fuel were made eligible for exemption from the energy and CO<sub>2</sub> taxes. In the 2004 budget bill the strategy was changed: renewables will be exempt from excise tax.</p> <p>Information on the changes introduced in 2003 green tax shift remain to be confirmed. The 2004 budget bill recommends that electricity used in industry no longer be exempt from electricity tax but that a tax level of SEK 0.005/kWh be introduced, corresponding to the minimum suggested in the new EU energy tax directive.</p> <p>Exempted is electricity:</p> <ul style="list-style-type: none"> <li>– produced and consumed on a ship or other means of transport</li> <li>– produced in an emergency generator</li> <li>– used for other purposes than in motors and for heating</li> <li>– generated by wind power</li> <li>– produced for own use in a plant with capacity of &lt;100 kW</li> <li>– produced in a power plant with capacity of &lt; 50kW and delivered without payment to a consumer with no common interest with the producer</li> <li>– consumed in electricity production and distribution</li> <li>– used in manufacturing and agriculture, including commercial greenhouses</li> <li>– used in trains or other rail transport</li> <li>– used in producing petroleum, carbon fuel and petroleum coke</li> <li>– produced in a combined heat and power plant and used internally in production of electricity, gas, heat and water</li> <li>– used in transmission on the electrical grid</li> </ul>
Electricity certificate trading system (2003)		Electricity suppliers and users must buy a certain number of electricity certificates per year. Producers of electricity from renewables receive from the government a certificate for each MWh of electricity produced. Certificates can be sold on the market to provide extra revenue.
Tax on nuclear power (1983, revised 2000)	SEK 5514/MW and month	The tax is now based on the highest thermal production capacity in the nuclear plant. Before 1 July 2000 it was related to the quantity of electricity produced. The rate was then SEK 0.027/kWh.

Table 5.3 Selected environment-related taxes on energy and transport (cont.)

Instrument (year introduced)	Rate	Remarks
Sulphur content tax (1991)	SEK 27/m <sup>3</sup> per 0.1% of sulphur content by weight (light and heavy fuel oil, diesel) SEK 30/m <sup>3</sup> per kg of sulphur content (coke, coal, petroleum coke, peat)	Exemptions: <ul style="list-style-type: none"> <li>– all fuel, except petrol, used for commercial air navigation, in ships and boats (except for private use) and in trains or other rail transport</li> <li>– fuel whose sulphur is not emitted to the atmosphere through binding in the process or in the ashes</li> <li>– oil with &lt; 0.05% sulphur content</li> <li>– fuel used for purposes other than motors or heating</li> <li>– fuel used in metallurgy, in the production of goods from mineral compounds other than metal and in soda recovery boilers</li> <li>– fuel used in the production of petroleum, carbon fuel and petroleum coke</li> <li>– The tax is refunded at the same rate for each kilogram of sulphur removed from emissions.</li> </ul>
<b>TRANSPORT</b> Annual vehicle tax	SEK 110 (motorcycles <75kg) SEK 585 (petrol-driven cars <900kg) SEK 734 + SEK 149 per 100kg above 900kg (petrol-driven cars >900kg) SEK 390-984 (petrol-driven buses; depends on weight) SEK 720-1545 (diesel-driven buses; depends on weight) SEK 390-984 (petrol-driven lorries; depends on weight) SEK 370 (on-road tractors) SEK 150 or higher (trailers; depends on weight and type)	Exemptions: <ul style="list-style-type: none"> <li>– vehicles registered in the Military Vehicle Register</li> <li>– electric and hybrid vehicles (first five years)</li> <li>– diesel-driven semi-trailers with a total weight &gt;3000kg</li> <li>– diesel-driven passenger cars</li> <li>– motorcycles, passenger cars, lorries and buses 30 years old or more</li> <li>– agricultural tractors</li> </ul> <p>Company cars pay 60% of the tax for a comparable diesel or petrol vehicle, up to a maximum of SEK 16 000 (electric and hybrid-electric vehicles) of 80% with a maximum of SEK 8000 (alcohol and gas cars).</p>



Table 5.3 Selected environment-related taxes on energy and transport (*cont.*)

Instrument (year introduced)	Rate	Remarks
<b>TRANSPORT</b> ( <i>cont.</i> ) Annual vehicle tax	SEK 137-15 097 + SEK 217 per 100kg above 23 000kg (diesel-driven lorries; depends on weight, number of axles and presence of towing mechanism) SEK 9443 + SEK 172 per 100kg above 18 000kg (airplanes) SEK 25 932 + SEK 185 per 100kg above 23 000kg (airplane motors classification 1 according to LTO cycle	
Petroleum transport duty (1998)	SEK 3.40-5.30/unit of gross tonnage (vessels that do not transport oil in bulk)	Rates vary according to emissions of NO <sub>x</sub> and SO <sub>2</sub> per unit of gross tonnage. Exempted: cruise liners, and vessels used in oil rigs and for coast guard services or other local services with a gross weight < 400 tonnes.
	SEK 3.7-5.3/unit of gross tonnage (vessels that transport oil in bulk)	Rates vary according to emissions of NO <sub>x</sub> and SO <sub>2</sub> per unit of gross tonnage.
Road user tax (1998, revised 2001)	SEK 7247-15 086/ year (lorries with a total weight of >12 000 tonnes)	Rates vary according to the number of axles and, since April 2001, the performance level as measured by the EURO standards and criteria. Exempted: vehicles belonging to the military, police, civil defence, fire brigade or other rescue service, and those used only for road maintenance.

Source: OECD.

### *Other market-based instruments*

Although Swedish environmental policies favour extensive use of economic instruments, the potential for further progress remains. Sweden could make even more use of such instruments; moreover, of the many it now uses, some are too low and others are weakened by exemptions, and overall their effectiveness has not been analysed sufficiently.

Sweden has a range of energy and transport taxes relating to the environment (Table 5.3). Current discussions about a possible tax on *incinerated waste* include consideration of a link with the energy tax. Changes to the *energy tax* are planned: the exemption on electricity for industry will be removed, and in July 2004 the rate on electricity will be raised to the minimum specified in the EU energy tax directive, in conjunction with a new Swedish law on voluntary energy efficiency improvements. *Taxes and charges on products* such as batteries could be adjusted to increase policy effectiveness, and “bads” such as noise could be charged for more comprehensively.

*Inefficient exemptions* in charging regimes include the waiver of fairway dues for ships operated by public agencies or used within one county and the sulphur tax exemptions for water transport and for fuel used in fuel production (e.g. at refineries) and industrial processes. The *rate of some taxes may be too low* to provide sufficient incentive to change behaviour. Since the marginal cost of abatement in certain cases (e.g. nitrates and acid precursors) is much higher in Sweden than elsewhere in the region, cost-effectiveness in a national context may not always be the best criterion; *cost-effectiveness at regional level* should be considered in such cases.

### *Environmentally harmful subsidies*

In a recent evaluation of *environmentally harmful subsidies*, the principal finding was that potentially harmful direct subsidies to the primary sector (agriculture, forestry, fishing and hunting) in the late 1990s exceeded the environmental taxes paid by the sector. Large subsidies also went to the housing and construction industry in the form of interest reductions.

*Reforms to the EU Common Agricultural Policy* can have important environmental results in Sweden, as elsewhere. Agri-environmental subsidies and cross-compliance mechanisms are steps in the right direction. More market-based price signals at EU level for farm production would reduce production-related agricultural support and might prove beneficial for the environment.

Minor subsidies with environmentally harmful effects include *tax relief for commuting to work* when annual expenses exceed SEK 7 000. Aimed at improving labour market flexibility, the subsidy also increases road travel and CO<sub>2</sub> emissions.

Another example is a *product transport subsidy* paid largely for mining, quarrying and manufacturing operations in sparsely populated areas. It is intended to encourage rural area processing but is also likely to increase transport and emissions.

### 3. Sectoral Integration

#### 3.1 *Integration of environmental concerns into energy policy*

##### *Energy efficiency and demand*

Sweden's *energy intensity* is significantly higher than the OECD and OECD Europe averages (Figure 8.1). This is partly due to the size of energy intensive industry and partly reflects lower electricity prices than in most other OECD countries. As a result, energy efficiency is an important policy goal and one of the main aims of the green tax shift.

Several recent *programmes have allocated funds for energy efficiency*. A 1998-2002 programme totalling SEK 3.5 billion included SEK 450 million for energy efficiency, and a 1998-2005 programme of SEK 5.3 billion for research, development and demonstration includes commercially viable technologies to enhance energy efficiency. A 2003-07 programme allocates SEK 135 million for information, education and testing, SEK 540 million for local and regional initiatives such as municipal energy advisers and regional energy offices, and SEK 325 million for co-ordination of technological procurement and market introduction. In addition, an information project on energy efficiency and greenhouse gas reduction in industry, commerce and households was run in southern Sweden in 1999-2002. The cost-effectiveness of these and other such programmes is uncertain. One significant *demand-side* development is that Svenska Kraftnat, the national grid operator, has been given explicit responsibility for assuring sufficient electricity reserves by making load reduction agreements with major electricity consumers.

*Further scope for promoting efficiency and demand-side management* exists in the building and construction sector and in energy-intensive production (mining, pulp and paper, iron and steel, chemicals), among other areas. Current plans call for companies to retain their electricity tax exemptions when the new energy tax goes into effect on 1 July 2004 if they promise to take measures to increase energy efficiency. However, they will only have to make electricity-saving investments, and in particular those yielding a payback in three years or less. Appropriate calculation of the payback period should be used. Moreover, this agreement could include flexible mechanisms to maximise off-site life-cycle energy saving opportunities.

*Industry and agriculture pay no energy tax* and receive substantial rebates on the CO<sub>2</sub> tax. The energy tax concessions create distortions in that energy subsidies are effectively provided to these users, with the most intensive energy users benefiting most. Related boundary or definitional issues, as a recent review of business energy taxation noted, are likely to conflict with EU state aid rules. It would be preferable to end the concessions and compensate industry for the resulting costs, for example through a tax credit.

### *Electricity*

Sweden's *intensity of electricity use is among the world's highest*. The reasons include the country's climate and economic structure, as well as measures to reduce the share of oil in the energy supply.

*Electricity prices for industry* are exceptionally low (the lowest in the OECD until recently). Nevertheless, *industrial electricity use has stabilised* in the last decade. *Electricity prices for households* have been around the middle of the OECD range because of a significant tax component. The electricity market was deregulated in 1996. Very dry conditions in 2002-03 contributed to significant price increases in those two years. *Growth in residential electricity use has slowed* since 1995, partly because grants have been provided for conversion from electric heating to more environment-friendly systems. Electricity generation from renewable sources has also increased. Wind power and biofuel-based combined heat and power (CHP) production is subsidised.

### *Renewable energy sources*

The government has invested heavily in research and development to *promote renewables*. It set up a research, development and demonstration programme on biofuels, wind power and solar energy in 1998, with funding of EUR 560 million over seven years. Since 1 May 2003 energy suppliers have been obliged to hold *renewable electricity certificates*. In 2003, 7% of all electricity consumed in Sweden was to come from renewables that meet the requirements for such certificates, and the aim is to increase the proportion to 17% in 2010.

In important segments of industry the *goals for renewables are considered unachievable* except in the long term, and there are fears of measures' distorting the electricity market. Some uncertainty exists concerning the optimal policy mix to achieve the 2010 target and whether renewables in general or wind energy in particular should be promoted. A recent independent review of the energy research, development and demonstration programme concluded that "new renewables" are often not yet competitive and/or not available on the scale required.

The CO<sub>2</sub> tax created a price differential in favour of renewables. A further “environmental bonus” for wind power was introduced in 1997. In 2002 it was decided to phase out this bonus over a seven year transition period and launch the renewable electricity certificate programme. At the same time, *other measures* to promote wind power *were introduced*. A wind power “planning objective” of adding 10 TWh by 2015 was set, and support for expansion of wind power in coastal or mountain areas was decided. It is not clear what the basis for this support is, whether there is a reason to favour wind power over other renewable energy generation that might have less environmental impact, especially with respect to the EQOs on “Flourishing Coastal Areas” and “A Magnificent Mountain Landscape”.

### *Objective setting and pricing*

Environmental considerations clearly affect energy supply and use decisions in Sweden but their overall impact in this area is not entirely certain. The Environmental Code states that “preference shall be given to renewable energy sources” and that “energy supplies are to be based increasingly on renewable energy sources, and the use of fossil fuels is to be kept at a low level”. There are, however, *tensions with other aims*, e.g. maintaining an “efficient electricity market to generate a secure supply of electricity at internationally competitive prices”. Similarly, the preference for renewables conflicts with the promotion of gas-fired CHP through energy and CO<sub>2</sub> tax rebates from 2004. *Reducing reliance on nuclear power while cutting GHG emissions* (especially to the extent required to meet the target for 2050) without any new hydroelectricity development will be especially challenging.

Overall, Sweden’s treatment of energy provides some basis for the concern that resource users have yet to face the *full resource and externality costs* of resource use and that more effective ways to integrate environmental costs into economic and social decision-making models are needed.

## **3.2 Integration of environmental concerns into transport policy**

*Road freight traffic* grew more slowly than GDP over 1990-2001 but nevertheless rose by 13%. The proportion of freight carried by road continues to grow (it is projected to reach 46% by 2010, from 40% in 1997). Car traffic has been increasing rapidly for several decades, and car passenger-kilometres are expected to grow by 29% over 1997-2010. In the wider domestic transport sector (including rail and air travel) a 24% increase in total passenger-kilometres is projected, but with bus use growing by only 8% and foot/bicycle travel dropping by 6%. Concerning Sweden’s road fuel prices, the levels for diesel fuel are comparable to those in other European countries and petrol prices are somewhat lower (Figure 5.2).

## *Objectives*

An underlying *tension exists in Swedish transport policy* between the desire to provide for growing mobility and economic growth (e.g. in the preamble to the 2001 infrastructure bill) and the aim of limiting growth in transport consumption to sustainable levels, for example by ensuring that consumers pay the full marginal social (including environmental) costs of transport (stated elsewhere in the bill). People in rural areas can take tax deductions on expenses above SEK 7 000 a year for commuting to work, for instance, which is likely to increase long-distance commuting and is inconsistent with the goal of having consumers pay the full marginal social cost of transport. Similarly, the “Good Built Environment” EQO refers to “reduce[d] car use”, but no such aim is found in the national transport policy. A third instance is the energy and CO<sub>2</sub> tax exemption for water transport, which is a high consumer of heavy fuel oil (and in 1995 accounted for 10% of CO<sub>2</sub> emissions). The new EU energy tax directive rules out tax exemptions for fuel used in ships.

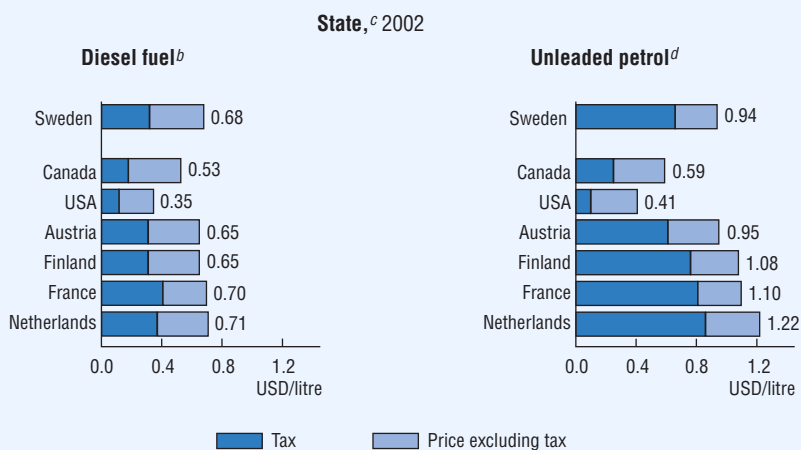
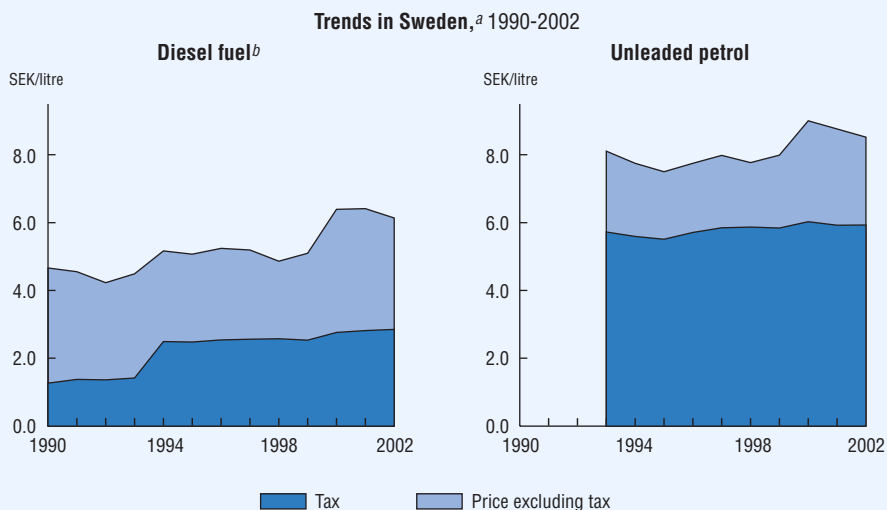
Swedish transport policy does, however, recognise *important links between the transport system and environmental issues*, including public health issues. The 1998 transport policy objective, reaffirmed in 2001, is to assure economically efficient and sustainable transport for citizens and industry nationwide in a system whose design and function meet requirements for a good, healthy living environment.

## *Fiscal instruments*

The transport policy objective is reflected in *fiscal instruments*, among other measures. These include the energy, CO<sub>2</sub> and annual motor vehicle taxes, road charges, and tax reductions for alternative fuels and alternative-technology vehicles, which all affect *land transport*; landing charges for aircraft, which influence *air transport*; and port and fairway dues, affecting *sea transport*. While the energy tax was originally levied to raise revenue, tax code design now appears to be influenced more by a desire to change behaviour that affects the environment.

Sweden uses several fiscal instruments aimed at altering behaviour of transport users. The *tax on diesel fuel* is higher for propellant use than for heating. *Natural gas and LPG* (which have CO<sub>2</sub> benefits compared with gasoline and diesel) are exempt from energy tax when used as propellant. *Alkylate-based petrol* (free of certain hazardous substances, such as benzene) is taxed at a lower rate. The *vehicle tax is environmentally differentiated*, with the top class in terms of environmental performance (e.g. electric vehicles) exempt for the first five years. Since 2001, the VAT rate for *local public transport* has been 6% instead of the standard 25%. *Aircraft landing charges* and *ship port and fairway dues* are environmentally differentiated,

Figure 5.2 Road fuel prices and taxes



a) At constant 1995 prices.  
 b) Automotive diesel for commercial use.  
 c) In USD at current prices and purchasing power parities.  
 d) Unleaded premium (RON 95); Canada: unleaded regular.  
 Source: IEA-OECD.

the former on factors including hydrocarbons and NO<sub>x</sub>, the latter on NO<sub>x</sub> and SO<sub>x</sub> emissions. The *CO<sub>2</sub> tax*, from its inception in 1991, had reducing vehicle fossil fuel use among its aims.

The 2002 budget bill includes an exemption from the CO<sub>2</sub> tax for *carbon-neutral motor fuel*, and a proposal in the 2004 budget bill would exempt such fuel from the energy tax as well, though in light of the variety of externalities from transport it is not clear why the exemption should be thus extended. *Environment-friendly alternative fuel technologies* are favoured by a 40% reduction in the taxable benefit value of electric and hybrid cars that companies provide for employees (a 20% reduction applies to cars fuelled with natural gas, biogas or alcohol). This provision could lead to such cars being *too lightly taxed*, but the number of vehicles involved is likely to be small. Future fiscal measures being discussed include a *kilometre charge for heavy vehicles* and a *CO<sub>2</sub>-related vehicle tax* for cars. A Road Tax Commission investigating these options was due to report in 2004.

#### *Other policy instruments: congestion pricing and land use planning*

Following a 1998 study of road *congestion* in urban areas, the 2001 infrastructure bill instructed the Stockholm Transport Commission to consider *congestion pricing* options. In a recent poll, Stockholm residents identified a reduction in city-centre traffic as their top priority. Current plans are to test a cordon toll system from March 2005 to September 2006. It will include a SEK 20 charge to pass the cordon and a SEK 10 charge to cross a line between north and south within central Stockholm. Modelling of congestion reduction in Stockholm suggests the CO<sub>2</sub> emission reduction and air quality benefits, with associated health gains, are likely to be significant.

Important *links between transport planning and land use* exist, e.g. regarding provision for walking, cycling and public transport. In Sweden, as in other countries, the risk is that open space and “green infrastructure” will be lost to road building or come under pressure from other infrastructure development and urban expansion. Swedish road traffic projections may not be fully consistent with the interim target under the “Good Built Environment” EQO for spatial and community planning based by 2010 on programmes and strategies ensuring among other goals that “the percentage of hardened surfaces does not increase”.

#### *Outlook on air emissions*

Despite notable successes in reducing air pollution, some areas are proving difficult, including *CO<sub>2</sub> emissions from transport*. Results to date suggest that



transport may impede Sweden's achievement of its overall CO<sub>2</sub> target. This issue is challenging in many OECD countries, and Sweden is performing comparatively well. Nevertheless, as Swedish transport emissions have grown about 8% since 1990, it is possible that Sweden will not meet its 4% interim target for CO<sub>2</sub> reduction, given this sector's emission growth.

The Environmental Objectives Council, set up in 2002, reports that *ozone, particulate and carcinogen levels* in urban air are still too high, and that PM<sub>10</sub> and carcinogen targets for 2020 are not likely to be reached in ambient air in city streets, which is important in terms of health. Sweden needs to address this domestically but also in conjunction with neighbouring countries, since ozone, ozone precursors and fine particles are transported long distances.

### 3.3 *Integration of environmental concerns into agriculture policy*

The Swedish Board of Agriculture, Swedish Environmental Protection Agency and National Heritage Board jointly evaluate the environmental effects of the Common Agricultural Policy every year. Measures to integrate economic and environmental goals in agriculture and rural development policy are found mainly in the 2000-06 *Environmental and Rural Development Programme* (Sweden's agri-environmental programme). Based on EU rural development regulations, it includes support for environmentally sounder production, conservation of natural and cultural assets and enhanced competitiveness in rural areas. Its annual budget exceeds SEK 3 billion, including EU funds. The programme is founded on a multisectoral strategy that emphasises the many roles of agriculture, including preservation of natural and cultural heritage. It has two priorities: environmentally sustainable agriculture, and economically and socially sustainable development in rural areas. The first involves compensation for collective goods, such as preservation of biodiversity, the cultural heritage and open, varied landscapes. The second involves activities to promote the adaptation and development of rural areas.

#### *Nutrients*

The "Zero Eutrophication" EQO requires that, within a generation, "nutrient inputs...are not detrimental to biological diversity" and "the nutrient status of lakes and streams in agricultural areas does not exceed natural concentrations, which means that the water may at most be nutrient-rich or moderately nutrient-rich" (Chapter 3). This EQO is also related to Swedish commitments concerning nitrogen discharges to the Baltic Sea (Chapter 8). The *goals* involved *are ambitious*; the 2000 Government Bill on the EQOs noted that the interim targets "will require vigorous measures, in particular in agriculture and on the part of municipalities". Nitrogen management in

agriculture is also important because of *nitrogen's health impacts*. The risk of nitrogen seepage from farms to water bodies and coastal areas varies (e.g. with commercial fertilisers and manure quantities, crop and soil type, precipitation, irrigation and harvesting). Use of nitrogenous commercial fertiliser grew after the Second World War but later stabilised and recently has begun to decline (Figure 3.3).

### *Fiscal instruments*

The main economic instruments used in relation to agricultural emission goals are *taxes on commercial fertiliser, pesticides and cadmium*, introduced in 1984 and revised in 1995. Their respective annual revenues are around SEK 360 million, SEK 40 million and SEK 10 million. An evaluation of the fertiliser tax suggests that the use of part of the tax revenue to finance information efforts and advisory services has helped reduce nitrogen use. The tax has also raised awareness of the damage that intensive application of commercial fertiliser can entail. The cadmium tax has a large incentive effect, since farmers using low-cadmium fertiliser can avoid paying the tax.

### *Other instruments*

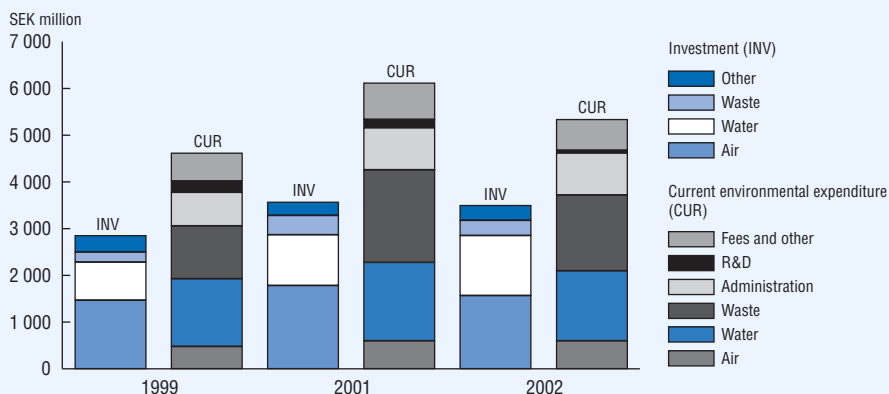
Greater sustainability in agriculture is also promoted through measures such as *information, counselling, education and training*. Focus on Nutrients, a joint initiative of farmers, the county administrative boards and the Board of Agriculture, aims to educate and motivate agricultural stakeholders in regards to nutrient leaching.

A significant issue in agriculture, and as concerns the “Non-Toxic Environment” EQO, is the *impact of pharmaceuticals* on human and ecosystem health. Sweden is working within the EU to follow up a survey of regulations and directives on human and *veterinary pharmaceuticals* with preparation of new legislation, expected to be completed in 2004.

## **4. Environmental Expenditure and Financing**

### **4.1 Overall environmental expenditure**

Swedish data on environmental expenditure remain patchy, particularly for public expenditure. Data from various years and sources indicate that Sweden's *pollution abatement and control (PAC)* expenditure has continued to represent about *1.1% of GDP* in recent years while *environmental protection* expenditure amounts to about *1.5% of GDP*. In other words, growth in GDP has been accompanied by similar growth in environmental expenditure. This means Sweden's remarkable progress in decoupling environmental pressures from GDP has been achieved at relatively lower cost than in more populated and more densely industrialised countries such as Austria, the Netherlands and Germany.

Figure 5.3 Private sector<sup>a</sup> investment and current environmental expenditure, 1999-2002

a) Enterprises.

Source: Statistics Sweden.

Private (business) *PAC expenditure* is best known; it amounted to SEK 8.9 billion in 2002 (60% for operations and 40% for investment). Environmental investment represented about 5% of total investment by industry (Figure 5.3). Public PAC expenditure has totalled around SEK 16 billion in recent years (about 20% national and 80% local; almost 66% water-related). It is not clear how much the local investment programmes mobilised new and additional resources for PAC, nor how much of agri-environmental subsidies went to water pollution abatement (e.g. nitrate pollution).

Concerning *environmental expenditure* (i.e. PAC expenditure plus water supply and nature protection expenditure), almost half is related to water supply and water pollution (Chapter 3), while nature protection accounts for less than 10%, though it has increased very significantly since the mid-1990s (Chapter 4).

## 4.2 Financing environmental research and technology

Sweden's *investment in research and development*, in relation to GDP, is among the world's highest. Increased investment by business, which accounts for 80% of the total, lifted the level to 4.3% of GDP in 2001. Environmental research should be seen in this context.

*Funding* for research in environmentally sustainable development from research councils, private foundations and government agencies totals around SEK 1 billion per year. This figure excludes large demonstration projects, such as development of new energy systems and combustion research. The three largest funding bodies are FORMAS (SEK 300-450 million per year), MISTRA (SEK 200-250 million) and the EU (SEK 150-200 million). In addition, universities and institutes have their own budgets in this area, totalling around SEK 500 million per year.

### 4.3 Local investment programmes

In the *local investment programmes*, the government gave municipalities some SEK 6.2 billion over 1998-2004 to speed the transition to sustainability and provide employment (Table 5.4). The grants were intended to have a strong catalytic effect by attracting about twice that much in co-funding. Over the period, 211 programmes in 163 municipalities were approved and total environment-related investment reached almost SEK 21 billion. About 20-25% of the grant funds were unused, however, and were returned to the national budget. It is estimated that the programmes created 2 000 permanent jobs. Estimated environmental effects included a reduction in energy use of 2.1 billion kWh (with a concomitant decline in CO<sub>2</sub> emissions) and a significant reduction of waste sent to landfill. The climate investment programmes that have replaced the local investment programmes have a clearer focus on measures aimed at reducing GHG emissions; their grant allocation totals SEK 840 million for 2003-04.

Table 5.4 Local investment programmes, 1998-2004

	Number of programmes	Total investment (SEK million)	Environment-related investment (SEK million)	Grants (SEK million)	Number of permanent jobs created
1998-2000	42	12 835	7 776	2 320	474
1999-2001	47	4 902	4 562	1 432	664
2000-2002	57	5 836	5 056	1 487	567
2001-2003	40	2 705	2 415	733	214
2002-2004	25	980	928	236	82
Total	211	27 259	20 738	6 210	2 000

Source: Ministry of the Environment.

#### 4.4 Environmentally motivated subsidies

Swedish national accounts indicate the trend in total *environmental subsidies* rose during the early 1990s, peaked in 1998 and dropped back to around 0.1% of GDP by 2000 (Table 5.5). That percentage represents *less than 10% of environmental expenditure*; agri-environmental subsidies account for more than 85% of total environmental subsidies.

Table 5.5 **Environmentally motivated subsidies, 1993-2000**

(SEK million in current prices)

	1993	1994	1995	1996	1997	1998	1999	2000
Resource-related subsidies	248	296	1 110	947	1 638	2 694	2 423	2 028
Nature in agricultural sector	226	250	245	–	–	–	–	–
Other measures in agricultural sector	–	–	825	890	1 410	2 446	2 188	1 786
Landscape conservation	17	30	4	0	0	0	0	0
Environment in agricultural sector	5	1	1	1	8	15	5	13
Subsidy for fish cultivation	0	2	0	3	1	4	0	0
Research	0	2	6	7	4	5	4	2
Council on For. & Agricult. Research	0	11	26	38	204	209	226	223
Subsidy for environmental work	0	0	3	8	11	15	0	4
Energy-related subsidies	121	71	152	141	165	178	191	154
Energy efficiency	23	..	3	5	1	13	12	6
Energy technology	–	–	–	–	–	–	51	27
New energy technology	–	–	–	–	–	0	67	32
Energy research	86	64	134	122	164	165	43	66
Bio-energy research	12	11	15	14	0	0	0	0
Heat and power in southern Sweden	–	–	–	–	–	0	15	23
Energy efficiency in eastern Europe	0	0	0	0	0	0	3	0
Transport-related subsidies	0	0	14	2	3	3	14	0
Electric and hybrid vehicles	0	0	14	2	3	3	14	0
Total environmentally motivated subsidies	369	367	1 276	1 090	1 806	2 875	2 628	2 182
(% of GDP)	0.02	0.02	0.07	0.06	0.10	0.15	0.13	0.10
(% of total subsidies)	0.62	0.63	2.08	1.98	3.74	6.77	6.54	6.44

Source: Statistics Sweden.

*Subsidies* can be environmentally motivated or designed for other purposes, such as regional development, with environmental effects being incidental. Large transport subsidies (e.g. for public transport) are not included in the above trend description,

since their main justification is regional, not environmental. National support to local governments through the local investment programmes is also excluded.

Overall, the *polluter pays principle* (in the OECD sense) is followed in Sweden, though it is necessary to watch out for departures from rigorous application of it. Less than 10% of the total of environmental subsidies (1% of PAC expenditure) is *energy-related*, and it mostly aims to increase energy efficiency and improve energy technology. As noted earlier, several energy-intensive *industrial branches* receive significant tax exemptions. Sectors receiving no payments or environmentally motivated subsidies include mining and quarrying, manufacturing, construction, wholesale and retail trade and financial intermediation. Close to 90% of the environmental subsidy total (representing about 10% of PAC expenditure) is resource-related, mostly aimed at *agriculture* and including both nature protection and pollution abatement. In the local investment programmes, support to *municipalities* came to less than 5% of PAC expenditure.

## **REFERENCES**

- I.A Selected environmental data
- I.B Selected economic data
- I.C Selected social data
- II.A Selected multilateral agreements (worldwide)
- II.B Selected multilateral agreements (regional)
- III. Abbreviations
- IV. Physical context
- V. Selected environmental events (1996-2003)
- VI. Selected environmental Web sites

**I.A: SELECTED ENVIRONMENTAL DATA (1)**

	CAN	MEX	USA	JPN	KOR	AUS	NZL	AUT	BEL	CZE	DNK	FIN	
<b>LAND</b>													
Total area (1000 km <sup>2</sup> )		9971	1958	9629	378	99	7713	270	84	31	79	43	338
Major protected areas (% of total area)	2	9.9	9.2	24.9	17.2	7.1	9.9	29.6	36.4	3.4	15.9	37.2	9.1
Nitrogenous fertiliser use (t/km <sup>2</sup> of arable land)		3.7	5.0	6.1	11.3	19.5	1.9	65.6	8.5	17.6	9.3	8.7	6.7
Pesticide use (t/km <sup>2</sup> of arable land)		0.10	0.14	0.18	1.52	1.44	0.06	0.82	0.21	1.10	0.14	0.12	0.07
<b>FOREST</b>													
Forest area (% of land area)		45.3	33.4	32.6	66.8	65.2	19.4	29.5	47.6	22.2	34.1	10.5	75.5
Use of forest resources (harvest/growth)		0.4	0.2	0.6	0.3	0.1	0.6	0.6	0.7	0.9	0.7	0.6	0.8
Tropical wood imports (USD/cap.)	3	1.6	0.2	2.2	10.7	6.1	4.0	3.4	0.4	24.2	0.3	3.8	1.4
<b>THREATENED SPECIES</b>													
Mammals (% of species known)		32.6	33.2	10.5	24.0	17.0	23.2	15.2	26.2	31.6	33.3	22.0	11.9
Birds (% of species known)		13.1	16.9	7.2	12.9	14.1	12.1	25.3	26.0	27.5	55.9	13.2	13.3
Fish (% of species known)		7.5	5.7	2.4	24.0	1.3	0.7	0.8	41.7	54.3	29.2	15.8	11.8
<b>WATER</b>													
Water withdrawal (% of gross annual availability)		1.5	15.5	19.0	20.3	33.9	6.2	..	4.2	45.1	11.9	4.4	2.1
Public waste water treatment (% of population served)		72	25	71	64	70	..	80	86	38	70	89	81
Fish catches (% of world catches)		1.0	1.4	5.0	5.3	1.9	0.2	0.6	-	-	-	1.6	0.2
<b>AIR</b>													
Emissions of sulphur oxides (kg/cap.)		80.0	12.2	62.7	6.9	24.8	95.7	11.5	5.0	20.1	25.8	5.2	14.6
(kg/1000 USD GDP)	4	2.9	1.6	2.0	0.3	2.1	4.1	0.7	0.2	0.9	2.0	0.2	0.6
% change (1990-late 1990s)		-22	..	-20	-3	-29	-4	20	-55	-37	-86	-85	-71
Emissions of nitrogen oxides (kg/cap.)		89.7	12.0	84.4	13.1	23.4	135.1	53.1	22.6	35.7	38.6	38.9	45.6
(kg/1000 USD GDP)	4	3.3	1.6	2.7	0.5	2.0	5.7	3.1	0.9	1.5	2.9	1.5	1.9
% change (1990-late 1990s)		-6	18	5	-	17	17	18	-9	16	-47	-25	-21
Emissions of carbon dioxide (t/cap.)	5	16.5	3.7	19.9	9.3	9.4	18.0	8.7	8.4	11.8	12.0	9.6	11.5
(t./1000 USD GDP)	4	0.61	0.45	0.63	0.37	0.66	0.74	0.46	0.34	0.47	0.88	0.37	0.49
% change (1990-2001)		22	24	17	13	88	34	45	17	14	-18	4	12
<b>WASTE GENERATED</b>													
Industrial waste (kg/1000 USD GDP)	4, 6	..	50	..	40	60	110	30	80	60	70	20	150
Municipal waste (kg/cap.)	7	350	310	760	410	360	690	380	560	550	330	660	460
Nuclear waste (t./Mtoe of TPES)	8	5.0	0.3	0.9	1.9	3.2	-	-	-	2.3	0.9	-	2.1

.. not available. - nil or negligible. x data included under Belgium.

1) Data refer to the latest available year. They include provisional figures and Secretariat estimates.

Partial totals are underlined. Varying definitions can limit comparability across countries.

2) IUCN management categories I-VI and protected areas without IUCN category assignment; national classifications may differ.

3) Total imports of cork and wood from non-OECD tropical countries.

4) GDP at 1995 prices and purchasing power parities.

Source: OECD Environmental Data Compendium.



## OECD EPR / SECOND CYCLE

FRA	DEU	GRC	HUN	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SLO	ESP	SWE	CHE	TUR	UKD*	OECD*
549	357	132	93	103	70	301	3	42	324	313	92	49	506	<b>450</b>	41	779	245	35042
13.3	35.7	5.2	8.9	9.5	2.4	12.1	17.1	25.3	6.5	23.6	7.3	22.4	9.6	<b>8.0</b>	28.7	4.1	10.9	14.6
12.8	14.9	6.6	4.2	9.8	38.6	7.6	x	29.5	11.2	6.0	4.0	5.1	5.8	<b>7.1</b>	10.4	4.2	19.1	6.3
0.44	0.24	0.30	0.15	-	0.24	0.70	0.63	0.89	0.09	0.07	0.53	0.25	0.21	<b>0.06</b>	0.33	0.09	<i>0.52</i>	<i>0.20</i>
31.4	30.1	22.8	18.9	1.3	8.8	23.3	34.4	9.2	39.2	29.7	37.9	42.2	32.3	<b>73.5</b>	31.7	26.9	10.5	33.9
0.7	0.4	0.6	0.6	-	0.6	0.3	0.5	0.6	0.5	0.6	0.8	0.5	0.5	<b>0.7</b>	0.5	0.4	0.7	<u>0.5</u>
6.8	1.8	2.8	0.1	2.8	11.2	7.1	-	15.6	3.6	0.3	17.6	0.1	6.2	<b>2.2</b>	0.6	0.5	2.7	4.0
19.7	36.7	37.9	71.1	-	6.5	40.7	51.6	15.6	3.4	14.6	17.3	22.2	21.2	<b>22.4</b>	34.2	22.2	<i>21.9</i>	..
14.3	29.2	13.0	18.8	34.7	21.8	18.4	50.0	27.1	7.7	14.7	13.7	14.4	14.1	<b>19.1</b>	42.6	6.7	<i>6.4</i>	..
7.5	68.2	24.3	32.1	-	33.3	31.8	27.9	82.1	-	9.6	18.6	23.8	29.4	<b>16.4</b>	44.7	9.9	<i>11.1</i>	..
16.2	20.2	14.7	4.7	0.1	..	32.1	3.7	9.9	0.7	18.6	15.1	1.4	34.7	<b>1.5</b>	4.8	17.0	<i>20.8</i>	<i>11.4</i>
77	93	56	32	33	73	63	95	98	73	55	42	53	55	<b>86</b>	96	17	<i>95</i>	<u>64</u>
0.6	0.2	0.1	-	2.1	0.3	0.3	-	0.5	2.9	0.2	0.2	-	1.0	<b>0.4</b>	-	0.5	0.8	27.4
14.3	10.1	51.4	57.6	33.4	42.2	16.0	7.1	5.7	6.4	39.1	37.0	33.2	35.4	<b>6.8</b>	3.9	33.0	19.9	32.6
0.7	0.4	3.7	5.7	1.3	1.7	0.8	0.2	0.2	0.2	4.3	2.4	3.2	1.9	<b>0.3</b>	0.1	5.3	1.0	1.5
-34	-84	7	-41	14	-14	-46	-79	-55	-46	-53	4	-67	-35	<b>-43</b>	-35	..	-68	-34
28.3	19.9	36.3	21.6	91.7	32.2	25.8	38.8	26.6	53.7	21.7	36.5	24.1	34.5	<b>28.2</b>	14.8	14.1	26.9	41.0
1.3	0.9	2.6	2.1	3.5	1.4	1.2	0.9	1.1	2.0	2.4	2.4	2.3	1.9	<b>1.2</b>	0.6	2.3	1.3	1.9
-12	-40	17	-7	-2	3	-24	-27	-27	6	-35	17	-43	11	<b>-25</b>	-32	48	-42	-4
6.3	10.5	8.2	5.5	7.4	11.0	7.3	19.0	11.0	7.8	7.7	5.7	7.5	7.1	<b>5.4</b>	6.3	2.8	9.3	11.1
0.27	0.45	0.53	0.48	0.27	0.38	0.33	0.44	0.44	0.28	0.85	0.35	0.67	0.39	<b>0.22</b>	0.23	0.49	0.43	0.51
2	-11	27	-17	5	31	7	-19	13	24	-16	48	-28	35	-	6	38	-2	13
80	30	50	20	1	60	20	130	30	30	160	80	80	40	<b>100</b>	10	30	40	70
510	540	430	450	700	560	500	640	610	620	290	440	320	650	<b>450</b>	650	390	560	540
4.3	1.2	-	1.5	-	-	-	-	0.2	-	-	-	3.1	1.1	<b>4.4</b>	2.2	-	3.5	1.5

UKD: pesticides and threatened species: Great Britain; water withdrawal and public waste water treatment plants: England and Wales.

5) CO<sub>2</sub> from energy use only; international marine and aviation bunkers are excluded.

6) Waste from manufacturing industries.

7) CAN, NZL: household waste only.

8) Waste from spent fuel arising in nuclear power plants, in tonnes of heavy metal, per million tonnes of oil equivalent of total primary energy supply.

**I.B: SELECTED ECONOMIC DATA (1)**

	CAN	MEX	USA	JPN	KOR	AUS	NZL	AUT	BEL	CZE	DNK
<b>GROSS DOMESTIC PRODUCT</b>											
GDP, 2002 (billion USD at 1995 prices and PPPs)	845	808	9039	3159	675	475	73	199	256	140	139
% change (1990-2002)	38.8	41.3	40.7	16.3	99.2	49.3	40.9	29.0	25.6	6.4	29.7
per capita, 2002 (1000 USD/cap.)	27.8	8.0	32.1	24.9	15.1	25.0	19.5	24.7	25.1	14.0	26.3
Exports, 2002 (% of GDP)	41.2	27.2	9.7	11.1	40.0	20.6	34.0	52.1	81.5	65.2	44.2
<b>INDUSTRY</b> 2											
Value added in industry (% of GDP)	32	27	23	31	43	26	25	32	27	40	27
Industrial production: % change (1990-2002)	37.3	42.5	42.6	-7.7	152.4	30.3	24.4	46.6	14.1	-11.1	35.8
<b>AGRICULTURE</b>											
Value added in agriculture (% of GDP)	3	3	4	2	1	4	4	7	2	1	4
Agricultural production: % change (1990-2002)	9.7	34.7	18.5	-9.8	32.7	10.7	35.2	6.5	20.2	..	2.2
Livestock population, 2002 (million head of sheep eq.)	109	279	790	54	27	283	99	17	30	14	25
<b>ENERGY</b>											
Total supply, 2001 (Mtoe)	248	152	2281	521	195	116	18	31	59	41	20
% change (1990-2001)	18.7	22.8	18.4	19.3	110.4	32.1	30.5	22.7	21.2	-12.7	12.3
Energy intensity, 2001 (toe/1000 USD GDP)	0.29	0.19	0.25	0.16	0.29	0.24	0.25	0.15	0.23	0.30	0.14
% change (1990-2001)	-11.6	-12.3	-13.8	2.9	12.3	-8.4	-3.0	-3.9	-2.9	-16.3	-12.0
Structure of energy supply, 2001 (%)	4										
Solid fuels	12.3	5.1	23.9	19.2	22.1	47.9	7.0	12.2	13.2	49.9	21.2
Oil	35.5	60.8	39.6	49.2	51.9	28.7	34.3	42.8	41.7	19.9	44.0
Gas	28.6	22.4	22.7	12.4	9.6	17.6	29.1	22.6	22.6	19.0	23.3
Nuclear	8.0	1.5	9.2	16.0	15.0	-	-	-	20.7	9.1	-
Hydro, etc.	15.6	10.2	4.5	3.1	1.4	5.8	29.7	22.4	1.7	2.1	11.5
<b>ROAD TRANSPORT</b> 5											
Road traffic volumes per capita, 1999 (1000 veh.-km/cap.)	9.4	0.6	15.8	6.0	1.8	9.3	7.9	7.8	8.7	3.1	8.4
Road vehicle stock, 1999 (10 000 vehicles)	1784	1459	21533	7003	1116	1199	231	485	512	373	223
% change (1990-1999)	7.8	47.7	14.1	24.0	228.9	22.7	25.2	31.3	20.2	43.7	17.9
per capita (veh./100 inh.)	58	15	79	55	24	63	60	60	50	36	42

.. not available. - nil or negligible. x data included under Belgium.

- 1) Data may include provisional figures and Secretariat estimates. Partial totals are underlined.
- 2) Value added: includes mining and quarrying, manufacturing, gas, electricity and water and construction; production: excludes construction.

Source: OECD Environmental Data Compendium.

## OECD EPR / SECOND CYCLE

FIN	FRA	DEU	GRC	HUN	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SLO	ESP	SWE	CHE	TUR	UKD	OECD
123	1401	1922	165	117	8	110	1292	19	399	125	352	168	59	740	<b>216</b>	199	390	1295	24908
25.1	24.1	21.9	36.2	15.8	32.1	125.2	19.8	70.8	35.4	47.7	46.3	34.6	23.0	36.2	<b>25.0</b>	10.0	41.7	30.8	33.0
24.0	23.8	23.3	16.1	11.9	26.4	30.0	22.3	43.5	24.9	27.8	9.2	16.2	11.5	18.6	<b>24.7</b>	27.4	6.0	21.9	22.1
38.1	27.3	35.5	20.5	54.9	39.7	93.7	26.9	146.6	61.7	41.8	29.6	30.1	72.8	28.5	<b>43.3</b>	42.7	28.8	25.8	21.4
32	25	30	23	31	27	42	29	20	26	38	30	29	32	30	<b>28</b>	27	31	26	29
68.5	18.0	12.7	14.6	67.8	..	284.4	12.6	30.1	20.3	40.7	66.6	22.3	8.1	21.5	<b>36.2</b>	19.1	52.6	6.2	<u>24.0</u>
4	3	1	7	4	9	3	3	1	3	2	3	4	5	3	<b>2</b>	1	12	1	3
-9.9	5.4	-5.9	13.6	-22.6	9.5	4.1	5.3	x	-4.9	-14.3	-14.3	0.7	..	15.0	<b>-10.4</b>	-6.0	12.9	-7.9	..
8	162	123	20	13	1	54	72	x	43	9	58	19	7	99	<b>13</b>	12	112	114	2667
34	266	351	29	25	3	15	172	4	77	27	91	25	19	127	<b>51</b>	28	72	235	5333
15.9	16.9	-1.4	29.4	-11.0	54.8	41.7	12.7	7.4	16.1	23.8	-9.3	44.1	-12.6	39.7	<b>9.4</b>	11.6	36.7	10.8	18.1
0.27	0.19	0.18	0.17	0.22	0.44	0.14	0.13	0.20	0.19	0.21	0.26	0.15	0.31	0.17	<b>0.24</b>	0.14	0.19	0.18	0.21
-5.8	-4.7	-19.0	-1.3	-20.6	16.4	-33.3	-5.6	-36.8	-14.0	-15.3	-37.2	7.6	-25.9	4.6	<b>-10.8</b>	1.5	4.0	-13.7	-9.6
18.5	4.7	24.2	32.7	14.4	2.7	17.5	8.0	3.3	11.0	3.6	61.1	12.9	23.3	14.7	<b>5.4</b>	0.5	28.4	17.0	20.8
28.6	34.5	38.3	56.7	26.4	24.4	56.9	51.6	74.2	38.9	30.7	22.5	64.2	16.4	52.8	<b>27.3</b>	48.0	40.1	34.8	40.8
11.2	13.5	21.5	5.9	42.7	-	23.9	34.6	20.7	46.9	20.6	11.4	9.1	32.4	12.9	<b>1.5</b>	8.8	18.5	37.1	21.3
18.0	40.4	12.7	-	14.7	-	-	-	-	1.4	-	-	-	23.7	13.1	<b>36.5</b>	24.2	-	10.0	11.2
23.6	6.8	3.1	4.8	1.7	72.9	1.7	5.9	1.8	1.8	45.0	5.0	13.7	4.3	6.5	<b>29.2</b>	18.5	13.0	1.2	5.9
8.9	8.4	7.4	7.3	3.4	6.5	8.3	8.0	8.9	7.0	7.2	4.5	5.6	2.2	4.2	<b>8.4</b>	7.2	0.8	7.8	8.0
240	3309	4503	389	271	17	148	3545	31	675	225	1104	461	141	2048	<b>424</b>	376	548	2909	57281
7.6	16.3	20.7	54.1	12.7	27.3	55.8	15.9	40.2	17.7	16.0	72.6	109.5	..	41.8	<b>7.9</b>	13.9	132.1	15.4	<u>21.7</u>
47	56	55	37	26	62	39	61	71	43	51	29	45	26	52	<b>48</b>	53	8	49	51

3) Agriculture, forestry, hunting, fishery, etc.

4) Breakdown excludes electricity trade.

5) Refers to motor vehicles with four or more wheels, except for Italy, which include three-wheeled goods vehicles.

**I.C: SELECTED SOCIAL DATA (1)**

	CAN	MEX	USA	JPN	KOR	AUS	NZL	AUT	BEL	CZE	DNK
<b>POPULATION</b>											
Total population, 2002 (100 000 inh.)	311	1001	2855	1273	473	195	39	81	103	103	54
% change (1990-2002)	13.4	24.8	15.5	3.2	11.1	15.2	17.1	5.5	3.0	-1.6	4.5
Population density, 2002 (inh./km <sup>2</sup> )	3.2	51.8	30.0	337.3	480.0	2.5	14.6	97.1	335.8	129.3	124.7
Ageing index, 2001 (over 64/under 15)	67.1	17.0	58.4	125.1	36.3	61.0	52.4	92.5	94.5	84.4	79.3
<b>HEALTH</b>											
Women life expectancy at birth, 2001 (years)	82.0	77.1	79.5	84.9	79.2	82.4	80.8	81.7	80.8	78.5	79.0
Infant mortality, 2001 (deaths /1 000 live births)	5.3	21.4	6.9	3.1	6.2	5.3	5.8	4.8	5.0	4.0	4.9
Expenditure, 2001 (% of GDP)	9.7	6.6	13.9	7.6	5.9	8.9	8.1	7.9	9.0	7.3	8.6
<b>INCOME AND POVERTY</b>											
GDP per capita, 2002 (1000 USD/cap.)	27.8	8.0	32.1	24.9	15.1	25.0	19.5	24.7	25.1	14.0	26.3
Poverty (% pop. < 50% median income)	10.3	21.9	17.0	8.1	..	9.3	..	7.4	7.8	..	5.0
Inequality (Gini levels)	2	28.5	52.6	34.4	26.0	..	30.5	25.6	26.1	27.2	..
Minimum to median wages, 2000	3	42.5	21.1	36.4	32.7	25.2	57.7	46.3	x	49.2	32.3
<b>EMPLOYMENT</b>											
Unemployment rate, 2002 (% of total labour force)	7.7	2.7	5.8	5.4	3.0	6.3	5.2	5.3	7.3	7.3	4.5
Labour force participation rate, 2002 (% 15-64 year-olds)	78.6	55.6	76.1	77.5	65.9	75.5	76.7	77.5	66.9	71.6	79.9
Employment in agriculture, 2001 (%)	4	2.9	17.6	2.4	4.9	10.3	4.9	9.1	5.7	2.2	4.8
<b>EDUCATION</b>											
Education, 2001 (% 25-64 year-olds)	5	81.9	21.6	87.7	83.1	68.0	58.9	75.7	77.0	59.5	86.2
Expenditure, 2000 (% of GDP)	6	6.4	5.5	7.0	4.6	7.1	6.0	5.8	5.7	5.5	4.6
<b>OFFICIAL DEVELOPMENT ASSISTANCE</b>											
ODA, 2002 (% of GNI)	7	0.28	..	0.13	0.23	..	0.26	0.22	0.26	0.43	..
ODA, 2002 (USD/cap.)	64	..	46	73	..	50	31	64	104	..	306

.. not available. - nil or negligible. x not applicable.

1) Data may include provisional figures and Secretariat estimates. Partial totals are underlined.

2) Ranging from 0 (equal) to 100 (inequal) income distribution; figures relate to total disposable income (including all incomes, taxes and benefits) for the entire population.

3) Minimum wage as a percentage of median earnings including overtime pay and bonuses.

Source: OECD.

## OECD EPR / SECOND CYCLE

FIN	FRA	DEU	GRC	HUN	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SLO	ESP	<b>SWE</b>	CHE	TUR	UKD	OECD
52	592	823	106	102	3	38	579	4	160	45	386	103	54	403	<b>89</b>	72	686	600	11386
4.3	4.9	3.9	5.6	-1.9	12.9	11.2	2.4	15.5	7.7	7.0	1.3	5.1	1.5	4.4	<b>4.3</b>	8.6	24.0	4.7	10.1
15.4	108.3	231.0	80.7	109.3	2.8	55.4	192.7	171.7	387.8	14.0	123.5	112.8	109.7	80.1	<b>19.8</b>	176.6	89.4	246.0	32.7
84.4	86.2	116.3	111.9	92.4	50.0	52.2	124.9	74.6	73.0	75.0	67.0	90.7	60.2	116.3	<b>100.1</b>	95.6	18.4	82.3	65.9
81.5	83.0	80.7	80.7	76.5	82.2	79.2	82.9	81.3	80.6	81.4	78.4	80.3	77.6	82.9	<b>82.1</b>	82.8	70.9	80.4	..
3.2	4.6	4.5	5.9	8.1	2.7	5.8	4.3	5.9	5.3	3.8	7.7	5.0	6.2	3.9	<b>3.7</b>	4.9	33.0	5.5	..
7.0	9.5	10.7	9.4	6.8	9.2	6.5	8.6	5.6	8.9	8.0	6.3	9.2	5.7	7.5	<b>8.7</b>	10.9	4.8	7.6	..
24.0	23.8	23.3	16.1	11.9	26.4	30.0	22.3	43.5	24.9	27.8	9.2	16.2	11.5	18.6	<b>24.7</b>	27.4	6.0	21.9	22.1
4.9	7.5	9.4	13.8	7.3	..	11.0	14.2	..	6.3	10.0	..	..	..	..	<b>6.4</b>	6.2	16.2	10.9	..
22.8	27.8	28.2	33.6	28.3	..	32.4	34.5	..	25.5	25.6	..	..	..	..	<b>23.0</b>	26.9	49.1	32.4	..
x	60.8	x	51.3	37.2	x	55.8	x	48.9	47.1	x	35.5	38.2	..	31.8	<b>x</b>	x	..	41.7	..
9.1	8.9	7.8	10.0	5.9	3.1	4.2	9.1	3.0	2.5	4.0	19.9	5.1	18.6	11.4	<b>4.0</b>	2.8	10.6	5.2	6.9
74.8	69.9	75.8	63.3	59.2	86.7	70.1	61.4	66.3	66.9	80.6	64.2	76.3	69.6	67.6	<b>76.4</b>	85.8	49.8	75.7	70.8
5.7	3.7	2.6	16.0	6.3	7.8	7.0	5.3	1.4	2.9	3.9	19.1	12.7	6.1	6.4	<b>2.3</b>	4.2	32.6	1.4	6.6
73.8	63.9	82.6	51.4	70.2	56.9	57.6	43.3	52.7	65.1	85.8	45.9	19.9	85.1	40.0	<b>80.6</b>	87.4	24.3	63.0	64.3
5.6	6.1	5.3	4.0	5.0	6.3	4.6	4.9	..	4.7	5.9	5.2	5.7	4.2	4.9	<b>6.5</b>	5.7	3.4	5.3	<u>5.5</u>
0.35	0.38	0.27	0.21	..	..	0.40	0.20	0.77	0.81	0.89	..	0.27	..	0.26	<b>0.83</b>	0.32	..	0.31	0.23
89	92	65	26	..	..	102	40	330	207	374	..	31	..	42	<b>223</b>	129	..	82	68

4) Civil employment in agriculture, forestry and fishing.

5) Upper secondary or higher education; OECD: average of rates.

6) Public and private expenditure on educational institutions; OECD: average of rates.

7) Official Development Assistance by Member countries of the OECD Development Assistance Committee.

## II.A: SELECTED MULTILATERAL AGREEMENTS (WORLDWIDE)

Y = in force S = signed R = ratified D = denounced

			CAN	MEX	USA	JPN
1946	Washington	Conv. - Regulation of whaling	Y	D	R	R
1956	Washington	Protocol	Y	R	R	R
1949	Geneva	Conv. - Road traffic	Y	R	R	R
1954	London	Conv. - Prevention of pollution of the sea by oil	Y	R	R	R
1971	London	Amendments to convention (protection of the Great Barrier Reef)				R
1957	Brussels	Conv. - Limitation of the liability of owners of sea-going ships	Y	S		D
1979	Brussels	Protocol	Y			
1958	Geneva	Conv. - Fishing and conservation of the living resources of the high seas	Y	S	R	R
1960	Geneva	Conv. - Protection of workers against ionising radiations (ILO 115)	Y		R	R
1962	Brussels	Conv. - Liability of operators of nuclear ships				
1963	Vienna	Conv. - Civil liability for nuclear damage	Y		R	
1988	Vienna	Joint protocol relating to the application of the Vienna Convention and the Paris Convention	Y			
1997	Vienna	Protocol to amend the Vienna convention	Y			
1963	Moscow	Treaty - Banning nuclear weapon tests in the atmosphere, in outer space and under water	Y	R	R	R
1964	Copenhagen	Conv. - International council for the exploration of the sea	Y	R		R
1970	Copenhagen	Protocol	Y	R		R
1969	Brussels	Conv. - Intervention on the high seas in cases of oil pollution casualties (INTERVENTION)	Y	R	R	R
1973	London	Protocol (pollution by substances other than oil)	Y		R	R
1969	Brussels	Conv. - Civil liability for oil pollution damage (CLC)	Y	D	D	S
1976	London	Protocol	Y	R		R
1992	London	Protocol	Y	R	R	R
1970	Bern	Conv. - Transport of goods by rail (CIM)	Y			
1971	Brussels	Conv. - International fund for compensation for oil pollution damage (FUND)	Y	D	D	S
1976	London	Protocol	Y	R		R
1992	London	Protocol (replaces the 1971 Convention)	Y	R		R
2000	London	Amendment to protocol (limits of compensation)	Y	R		R
2003	London	Protocol (supplementary fund)				
1971	Brussels	Conv. - Civil liability in maritime carriage of nuclear material	Y			
1971	London, Moscow, Washington	Conv. - Prohib. emplacement of nuclear and mass destruct. weapons on sea-bed, ocean floor and subsoil	Y	R	R	R
1971	Ramsar	Conv. - Wetlands of international importance especially as waterfowl habitat	Y	R	R	R
1982	Paris	Protocol	Y	R	R	R
1987	Regina	Regina amendment	Y	R		R
1971	Geneva	Conv. - Protection against hazards of poisoning arising from benzene (ILO 136)	Y			
1972	London, Mexico, Moscow, Washington	Conv. - Prevention of marine pollution by dumping of wastes and other matter (LC)	Y	R	R	R
1996	London	Protocol to the Conv. - Prevention of marine poll. by dumping of wastes and other matter		R		S

OECD EPR / SECOND CYCLE

Y = in force S = signed R = ratified D = denounced

KOR	AUS	NZL	AUT	BEL	CZE	DNK	FIN	FRA	DEU	GRC	HUN	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SLO	ESP	SWE	CHE	TUR	UKD	EU
R	R	R	R			R	R	R	R			D	R	R		R	R					R	R	R		R
R	R	R				R		R	R			R	R	R		R	R					R	R	R		R
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	S	R	R
R	R	R	R	R		R	R	R	R	R		R	R	R		R	R	R	R	R		R	R	R		R
	R	R				R	R	R	R	R				R			R						R	R		R
D			D		D	D	D	D			R		S	R	D	D	R	R			R	D	R		D	
R			R			S		S						R			R	R			R	R		R		D
R	S		R		R	R	R				S	S			R			R	R		R	R		R		R
			R	R	R	R	R	R	R	R				R		R	R	R	R	R	R	R	R	R	R	R
			S			S					S			S		R			R							
				R						R							R			R	S					S
			S	R	R	R	S	S	S	S				R		R	R	R	S	R	S	R	S	S	S	S
			S							S				S				S								
R	R	R	R	R	R	R	R		R	R	R	R	R	R	R	R	R	R	R	R	S	R	R	R	R	R
			R		R	R	R	R			R	R				R	R	R	R		R	R				R
			R		R	R	R	R			R	R				R	R	R	R		R	R				R
S	R	R		R		R	R	R	R	S		R	R	R		R	R	R	R	R		R	R	R		R
	R	S		R		R	R	R	R			R	R			R	R	R	R		R	R	R			R
D	D	D		D		D	D	D	D	D		D	D	D	R	D	D	D	R		D	D	D			D
R	R		R		R	R	R	R	R		R	D	R	R	R	R	R	R	R		R	R	R			D
R	R	R		R		R	R	R	R	R		R	R	R		R	R	R	R		R	R	R			R
			R	R	R	R	R	R	R	R	R			R	R	R	R	R	R	R	R	R	R	R	R	R
D	D	D		D		D	D	D	D	D		D	D	D		D	D	D	R		D	D	D			D
	R		R		R	R	R	R	R		R	D	R		R	R	R	R	R		R	R				D
R	R	R		R		R	R	R	R	R		R	R	R		R	R	R	R		R	R	R			R
R	R	R		R		R	R	R	R	R		R	R	R		R	R	R	R		R	R				R
				R		R	R	R	R					R							R	R				R
R	R	R		R		R	R	R	R	R		R	R	R		R	R	R	R		R	R				R
	R	R		S		R	S	R	R		R	R			S	R					R	R	R			R

## II.A: SELECTED MULTILATERAL AGREEMENTS (WORLDWIDE) (cont.)

Y = in force S = signed R = ratified D = denounced

		CAN MEX USA JPN					
1972	Geneva	Conv. - Protection of new varieties of plants (revised)	Y	R	R	R	R
1978	Geneva	Amendments	Y	R	R	R	R
1991	Geneva	Amendments	Y			R	R
1972	Geneva	Conv. - Safe container (CSC)	Y	R	R	R	R
1972	London, Moscow, Washington	Conv. - International liability for damage caused by space objects	Y	R	R	R	R
1972	Paris	Conv. - Protection of the world cultural and natural heritage	Y	R	R	R	R
1973	Washington	Conv. - International trade in endangered species of wild fauna and flora (CITES)	Y	R	R	R	R
1974	Geneva	Conv. - Prev. and control of occup. hazards caused by carcinog. subst. and agents (ILO 139)	Y				R
1976	London	Conv. - Limitation of liability for maritime claims (LLMC)	Y		R		R
1996	London	Amendment to convention	Y	S			
1977	Geneva	Conv. - Protection of workers against occupational hazards in the working environment due to air pollution, noise and vibration (ILO 148)	Y				
1978	London	Protocol - Prevention of pollution from ships (MARPOL PROT)	Y	R	R	R	R
1978	London	Annex III	Y			R	R
1978	London	Annex IV	Y				R
1978	London	Annex V	Y		R	R	R
1997	London	Annex VI	Y				
1979	Bonn	Conv. - Conservation of migratory species of wild animals	Y				
1991	London	Agreem. - Conservation of bats in Europe	Y				
1992	New York	Agreem. - Conservation of small cetaceans of the Baltic and the North Seas (ASCOBANS)	Y				
1996	Monaco	Agreem. - Conservation of cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area	Y				
1996	The Hague	Agreem. - Conservation of African-Eurasian migratory waterbirds	Y				
1982	Montego Bay	Conv. - Law of the sea	Y	R	R		R
1994	New York	Agreem. - relating to the implementation of part XI of the convention	Y	R		S	R
1995	New York	Agreem. - Implementation of the provisions of the convention relating to the conservation and management of straddling fish stocks and highly migratory fish stocks	Y	R		R	S
1983	Geneva	Agreem. - Tropical timber	Y	R		R	R
1994	New York	Revised agreem. - Tropical timber	Y	R		R	R
1985	Vienna	Conv. - Protection of the ozone layer	Y	R	R	R	R
1987	Montreal	Protocol (substances that deplete the ozone layer)	Y	R	R	R	R
1990	London	Amendment to protocol	Y	R	R	R	R
1992	Copenhagen	Amendment to protocol	Y	R	R	R	R
1997	Montreal	Amendment to protocol	Y	R		R	R
1999	Beijing	Amendment to protocol	Y	R		R	R



OECD EPR / SECOND CYCLE

Y = in force S = signed R = ratified D = denounced

KOR	AUS	NZL	AUT	BEL	CZE	DNK	FIN	FRA	DEU	GRC	HUN	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SLO	ESP	SWE	CHE	TUR	UKD	EU	
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
R	R	R	R		R	R	R	R	R		R		R	R		R	R	R	R	R		R	R		R	R	
R	R				R	R	R		R		R				R		R				R	R				R	
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	S	S	R	
R	R	R	R	R	R	R	R	R	R	R	R	S	R	R	R	R	S	R			R	R	R	R		R	
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
					R	R	R	R	R		R	R	R	R		R		R	R	R		R	R				
	R	R		R		R	R	R	R	R		R			R	R	R			R	R	R	R	R	R	R	
	R					R	R	S	R						S	R						R			R	R	
					R	R	R	R	R	R		R			R		R	R	R	R	R	R	R	R		R	
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R			R	R	R	R	R	R	R	R		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
					R		R	R								R						R	R				
	R	R		R	R	R	R	R	R	R		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
					S	R	R	R	R	R	R		R	R	R	R	R	R	R	R	R	R	R	R	R	R	
					R	R	R	R								R							R		R	S	
								S	S					S					S			R					
				S		R	R	R	R	S	R		S		R	R					R	R	R	R	R	R	S
R	R	R	R	R	R	S	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	S	R	R
R	R	R	R	R	R	S	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	S	R	R
S	R	R	R	R		R	R	R	R	R		R	R	R	R	R	R	R	R	R	R	R	R	R		R	R
R	R	R	R	R		R	R	R	R	R		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R		R	R	R	R	R		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	S	R	R	R	R	R		R	R		R	R	R	R	R	R	R	R	R	R	R	R	R
R		R			R	R	R	R	R		R				R	R	R				R	R	R	R	R	R	R

**II.A: SELECTED MULTILATERAL AGREEMENTS (WORLDWIDE) (cont.)**

Y = in force S = signed R = ratified D = denounced

			CAN	MEX	USA	JPN
1986	Vienna	Conv. - Early notification of a nuclear accident	Y	R	R	R
1986	Vienna	Conv. - Assistance in the case of a nuclear accident or radiological emergency	Y	R	R	R
1989	Basel	Conv. - Control of transboundary movements of hazardous wastes and their disposal	Y	R	R	S
1995	Geneva	Amendment				
1999	Basel	Prot. - Liability and compensation for damage				
1989	London	Conv. - Salvage	Y	R	R	R
1990	Geneva	Conv. - Safety in the use of chemicals at work (ILO 170)	Y		R	
1990	London	Conv. - Oil pollution preparedness, response and co-operation (OPRC)	Y	R	R	R
2000	London	Protocol - Pollution incidents by hazardous and noxious substances (OPRC-HNS)				
1992	Rio de Janeiro	Conv. - Biological diversity	Y	R	R	S
2000	Montreal	Prot. - Biosafety (Cartagena)	Y	S	R	R
1992	New York	Conv. - Framework convention on climate change	Y	R	R	R
1997	Kyoto	Protocol		R	R	S
1993	Paris	Conv. - Prohibition of the development, production, stockpiling and use of chemical weapons and their destruction	Y	R	R	S
1993	Geneva	Conv. - Prevention of major industrial accidents (ILO 174)	Y			
1993		Agreem. - Promote compliance with international conservation and management measures by fishing vessels on the high seas	Y	R	R	R
1994	Vienna	Conv. - Nuclear safety	Y	R	R	R
1994	Paris	Conv. - Combat desertification in those countries experiencing serious drought and/or desertification, particularly in Africa	Y	R	R	R
1995	Rome	Code of conduct on responsible fishing				
1996	London	Conv. - Liability and compensation for damage in connection with the carriage of hazardous and noxious substances by sea (HNS)		S		
2000	London	Protocol - Pollution incidents by hazardous and noxious substances (OPRC-HNS)				
1997	Vienna	Conv. - Supplementary compensation for nuclear damage				S
1997	Vienna	Conv. - Joint convention on the safety of spent fuel management and on the safety of radioactive waste management	Y	R		R
1997	New York	Conv. - Law of the non-navigational uses of international watercourses				
1998	Rotterdam	Conv. - Prior informed consent procedure for hazardous chemicals and pesticides (PIC)	Y	R		S
2001	London	Conv. - Civil liability for bunker oil pollution damage				S
2001	London	Conv. - Control of harmful anti-fouling systems on ships				S
2001	Stockholm	Conv. - Persistent organic pollutants	Y	R	R	S

Source: IUCN; OECD.

OECD EPR / SECOND CYCLE

Y = in force S = signed R = ratified D = denounced

KOR	AUS	NZL	AUT	BEL	CZE	DNK	FIN	FRA	DEU	GRC	HUN	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SLO	ESP	SWE	CHE	TUR	UKD	EU
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	S	R	R	R	R	R	S	R	R	R	R	S	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
			R	R	R	R	R	R	R						R	R	R	R	R	R	R	R	R	R	R	R
					S	S	S			S				S								S	S		S	
	R	R				R	S	R	R	R		R	R	R		R	R	S			S	R	R		R	
R													R		R							R				
R	R	R				R	R	R	R	R		R	R	R		R	R				R	R	R		R	
					S	S	S	S	R						R		R					R				
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
S		S	R	S	R	R	S	R	S	S	R	S	R	S	R	R	R	R	S	R	R	R	R	R	R	R
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	S	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
S	R	R	R	R	R	R	R	R	R	R	R	S	R	R	S	R	R	R	R	R	S	R	R	R	S	S
					S										R							R				
R																	R					R				R
R	R		R	R	R	R	R	R	R	R	R	S	R	R	R	R	R	R	R	R	R	R	R	R	R	R
R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
					S	S		S							S	S						S			S	
					S	S	S	S	R						R		R					R				
S				S											S											
R	R		R	R	R	R	R	R	R	R	R		R	S	R	R	R	R		R	R	R	R	R	R	R
						R	S	R							S	R	R		S			R				
R	S	R	R	R	R	R	S	R	R	R	R			R	R	R	R		S		R	R	R	S	S	R
															S							R	S			
S					R	S									R							R				
S	S	S	R	S	R	R	R	R	R	S	S	R	S	S	R	R	R	S	S	R	S	R	R	S	S	S

**II.B: SELECTED MULTILATERAL AGREEMENTS (REGIONAL)**

Y = in force S = signed R = ratified D = denounced

		CAN MEX USA JPN			
1940	Washington	Conv. - Nature protection and wild life preservation in the Western Hemisphere	Y	R	R
1946	London	Conv. - Regulation of the meshes of fishing nets and the size limits of fish	Y		
1958	Dublin	Amendments	Y		
1960	London	Amendments	Y		
1961	Copenhagen	Amendments	Y		
1962	Hamburg	Amendments	Y		
1963	London	Amendments	Y		
1950	Paris	Conv. - Protection of birds	Y		
1957	Geneva	Agreem. - International carriage of dangerous goods by road (ADR)	Y		
1975	New York	Protocol	Y		
1958	Geneva	Agreem. - Adoption of uniform conditions of approval and reciprocal recognition of approval for Y motor vehicle equipments and parts	Y		
1959	Washington	Treaty - Antarctic	Y	R	R R
1991	Madrid	Protocol to the Antarctic treaty (environmental protection)	Y	S	R R
1960	Paris	Conv. - Third party liability in the field of nuclear energy	Y		
1963	Brussels	Supplementary convention	Y		
1964	Paris	Additional protocol to the convention	Y		
1964	Paris	Additional protocol to the supplementary convention	Y		
1982	Brussels	Protocol amending the convention	Y		
1982	Brussels	Protocol amending the supplementary convention	Y		
1988	Vienna	Joint protocol relating to the application of the Vienna Convention and the Paris Convention	Y		
1962	Stockholm	Agreem. - Protection of the salmon in the Baltic Sea	Y		
1972	Stockholm	Protocol	Y		
1964	London	Conv. - Fisheries	Y		
1967	London	Conv. - Conduct of fishing operations in the North Atlantic	Y	S	S
1968	Paris	Conv. - Protection of animals during international transport	Y		
1979	Strasbourg	Protocol	Y		
1969	London	Conv. - Protection of the archaeological heritage	Y		
1972	London	Conv. - Conservation of Antarctic seals	Y	R	R R
1973	Oslo	Agreem. - Conservation of polar bears	Y	R	R
1973	Gdansk	Conv. - Fishing and conservation of the living resources in the Baltic Sea and the Belts	Y		
1982	Warsaw	Amendments	Y		
1974	Stockholm	Conv. - Nordic environmental protection	Y		
1992	Paris	Conv. - Protection of North-East Atlantic marine env. (replace Oslo-1972 and Paris-1974)	Y		
1992	Helsinki	Conv. - Protection of the marine environment of the Baltic Sea area	Y		
1979	Bern	Conv. - Conservation of European wildlife and natural habitats	Y		
1979	Geneva	Conv. - Long-range transboundary air pollution	Y	R	R
1984	Geneva	Protocol (financing of EMEP)	Y	R	R
1985	Helsinki	Protocol (reduction of sulphur emissions or their transboundary fluxes by at least 30%)	Y	R	
1988	Sofia	Protocol (control of emissions of nitrogen oxides or their transboundary fluxes)	Y	R	R
1991	Geneva	Protocol (control of emissions of volatile organic compounds or their transboundary fluxes)	Y	S	S
1994	Oslo	Protocol (further reduction of sulphur emissions)	Y	R	
1998	Aarhus	Protocol (heavy metals)	Y	R	R
1998	Aarhus	Protocol (persistent organic pollutants)	Y	R	S
1999	Gothenburg	Protocol (abate acidification, eutrophication and ground-level ozone)		S	S



**II.B: SELECTED MULTILATERAL AGREEMENTS (REGIONAL) (cont.)**

Y = in force S = signed R = ratified D = denounced

		CAN	MEX	USA	JPN
1980	Madrid	Conv. - Transfrontier co-operation between territorial communities or authorities		Y	
1995	Strasbourg	Additional protocol		Y	
1998	Strasbourg	Second protocol		Y	
1980	Canberra	Conv. - Conservation of Antarctic marine living resources		Y R	R R
1982	Paris	Memorandum of understanding on port state control		Y R	
1982	Reykjavik	Conv. - Conservation of salmon in the North Atlantic Ocean		Y R	R
1983	Bonn	Agreem. - Co-operation in dealing with poll. of the North Sea by oil and other harmful subst.		Y	
1989	Bonn	Amendment		Y	
1989	Stockholm	Agreem. - Transboundary co-operation with a view to preventing or limiting harmful effects for human beings, property or the environment in the event of accidents		Y	
1991	Espoo	Conv. - Environmental impact assessment in a transboundary context		Y R	S
1992	Helsinki	Conv. - Transboundary effects of industrial accidents		Y S	S
1992	Helsinki	Conv. - Protection and use of transboundary water courses and international lakes		Y	
1999	London	Prot. - Water and health			
1992	La Valette	European Conv. - Protection of the archaeological heritage (revised)		Y	
1993	Copenhagen	Agreem. - Co-op. in the prevention of marine poll. from oil and other dangerous chemicals		Y	
1994	Lisbon	Treaty - Energy Charter		Y	S
1994	Lisbon	Protocol (energy efficiency and related environmental aspects)		Y	S
1998	Aarhus	Conv. - Access to env. information and public participation in env. decision-making		Y	
2003	Kiev	Prot. - Pollutant Release and Transfer Registers (PRTR)			
1998	Strasbourg	Conv. - Protection of the environment through criminal law			
2000	Florence	Conv. - European landscape convention			

Source: IUCN; OECD.

**OECD EPR / SECOND CYCLE**

Y = in force S = signed R = ratified D = denounced

KOR	AUS	NZL	AUT	BEL	CZE	DNK	FIN	FRA	DEU	GRC	HUN	ISL	IRL	ITA	LUX	NLD	NOR	POL	PRT	SLO	ESP	SWE	CHE	TUR	UKD	EU	
			R	R	R	R	R	R	R	R	R	S	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
			S	S				R	R			S		S	R	R			S	R		R	R				
							S	R			S			R	R				S	R		R	S				
R	R	R		R			R	R	R	R				R	R	R	R				R	R			R	R	
			R		R	R	R	R	R		R	R	R		R	R	R	R			R	R			R		
					R	R					R					R						D			R		
			R		R		R	R							R	R						R			R	R	
			R		R		R	R							R	R						R			R	R	
					R	R										R						R					
			R	R	R	R	R	R	R	R	R	S	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
			R	S	R	R	R	S	R	R	R	R		R	R	S	R	S	S	S		R	R	R	S	R	
			R	R	R	R	R	R	R	R	R			R	R	R	R	R	R	R	R	R	R	R	R	S	R
			S	R	S	S	S	S	S	S	R	S		S	R	S	S	S	S	S	R	S	S	S	S	S	
			S	R	S	R	R	S	S	R		R	S	S	S	S	R	R	R	R	S	R	R	R	R		
					R	R					R				R							R					
S			R	R	R	R	R	R	R	R	R	R	S	R	R	R	R	R	R	R	R	R	R	R	R	R	
S			R	R	R	R	R	R	R	R	R	R	S	R	R	R	R	S	R	R	R	R	R	R	R	R	
			S	R	S	R	S	R	S	S	R	S	S	R	S	S	R	R	R		S	S	S		S	S	
			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
			S		S	S	S	S		S		S	S	S	S	R	S	S		S	S	S	S	S	S		

## Reference III

### ABBREVIATIONS

BOD	Biochemical oxygen demand
CFC	Chlorofluorocarbon
CGIAR	Consultative Group on International Agriculture Research
CHP	Combined heat and power
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COD	Chemical oxygen demand
EIA	Environmental impact assessment
EMAS	Eco-Management and Audit Scheme (of the European Union)
EMS	Environmental management system
EPR	Environmental Performance Review
EQO	Environmental quality objective
EU	European Union
FAO	Food and Agriculture Organization (UN)
GDP	Gross domestic product
GHG	Greenhouse gas
GNI	Gross national income
HELCOM	Helsinki Commission
IBSFC	International Baltic Sea Fishery Commission
ICES	International Council for the Exploration of the Sea
IPPC	Integrated pollution prevention and control
IMO	International Maritime Organization
ISO	International Organisation for Standardization
ITTO	International Tropical Timber Organization
IUCN	International Union for the Conservation of Nature (now the World Conservation Union)
LPG	Liquefied petroleum gas
MARPOL	International Convention for the Prevention of Pollution from Ships
Mtoe	Million tonnes of oil equivalent
NGO	Non-governmental organisation
NMVO	Non-methane volatile organic compound
NUTEK	Swedish Business Development Agency
ODA	Official development assistance



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ODS	Ozone-depleting substance(s)
OSPAR	Oslo-Paris Convention for the Protection of the Marine Environment of the North-East Atlantic
PAC	Pollution abatement and control
PAH	Polycyclic aromatic hydrocarbon
PBDE	Polybrominated diphenyls ether
PCB	Polychlorinated biphenyls
PM	Particulate matter
POP	Persistent organic pollutant
SEPA	Swedish Environmental Protection Agency
SIDA	Swedish International Development Co-operation Agency
TAC	Total allowable catch
UNECE	UN Economic Commission for Europe
UNEP	UN Environment Programme
VOC	Volatile organic compound

## Reference IV

### PHYSICAL CONTEXT

Sweden is *one of the largest countries in Western Europe*, with a total area of 450 000 km<sup>2</sup>. It occupies about two-thirds of the Scandinavian peninsula and extends for about 1 600 km from the southern Baltic to north of the Arctic Circle; its coastline measures more than 2 700 km. The Swedish countryside is dotted with more than 83 000 lakes, and thousands of islands are located off its jagged coast. Most of the land is relatively flat, but a long mountain chain in the north-west reaches heights of up to 2 111 metres.

About 68% of Sweden's *land area* (411 620 km<sup>2</sup>) is covered with forests and other wooded land. About 3% is built-up area. Some 8% is farmland, enough to make the country self-sufficient in most farm products. A further 12% consists of mires (bogs and fens). Lakes cover close to 40 000 km<sup>2</sup>. Many moose, deer, foxes and other *wildlife* can be found in much of the country, and about 230 000 reindeer roam northern Sweden. Under the Swedish right of common access to private land (*allemansrätten*), anyone may hike through forests and fields to gather berries and mushrooms.

Vast *forests* of spruce, pine and other softwood trees supply a highly developed sawmill, pulp, paper and finished wood product industry. About 85% of the paper and market pulp output and 75% of sawn timber products are exported. The state owns some 3% of the forest area. Other *natural resources* are water power, iron ore, uranium and other minerals. Sweden lacks significant oil and coal deposits. The only iron mines still in production are in the far north; their output is mainly exported. A number of mines with sulphide ores are found in central and northern Sweden.

Cheap hydropower was a major factor in the country's industrial development. Today around 32% of Sweden's total energy supply of 47 Mtoe comes from hydropower; many of the plants are on northern rivers. Eleven *nuclear* reactors supply a further 32%. The rest of the energy supply is imported oil (28.6%), solid fuels (5.5%) and gas (1.5%). After a 1980 referendum, the Riksdag, Sweden's parliament, voted to phase out the use of nuclear power by 2010, but that target was abandoned in 1997. One reactor, Barsebäck 1, has been closed so far.

## Reference V

### SELECTED ENVIRONMENTAL EVENTS (1996-2003)

#### 1996

- A government commission examining environmental research recommends that, in the next bill on the subject, the government should propose a new direction for environmental research with more emphasis on social aspects as well as science.
- The Prime minister announces that Sweden ambition is to accomplish the greening of the welfare state. Sustainability incorporated into the longstanding “People’s Home” concept of consensus politics aimed at reducing economic disparities, redistributing wealth and carrying out welfare reforms.
- The Transport Policy Commission presents a ten year investment plan for road and rail, including an environmentally sound transport system.
- At the Visby summit, regional Prime ministers establish “Baltic 21”, an Agenda 21 for the Baltic Sea region.
- Sweden’s 25th national park, Tresticklan, with almost 3 000 hectares of virgin forest, is established on the border with Norway.
- UNESCO adds two Swedish sites to its World Heritage list: the Church Town of Gammelstad, in the northern municipality of Luleå, and the Laponian area (Lapland).
- A new tax on extraction of natural gravel enters into force.
- A Government Bill proposes a CO<sub>2</sub> tax of SEK 0.37 per kg emitted, with some exemptions for energy-intensive production.
- The government proposes decreasing the 1997 budget of the Swedish Environmental Protection Agency (SEPA) to SEK 230 million, including SEK 170 million for research and SEK 40 million for purchases of nature areas.
- Several government agencies are requested to participate in a pilot project on ISO 14000 environmental management systems.

## 1997

- The government presents the first Communication to the Riksdag on work for a sustainable Sweden. Environmental quality objectives (EQOs), to be reached within one generation (by 2020), are drawn up.
- The Commission for Ecologically Sustainable Development is appointed, consisting of five ministers and chaired by the Environment minister.
- More stringent controls on exhaust emissions from motor vehicles are adopted.
- The Riksdag passes the Ordinance on Producer Responsibility for Packaging.
- All ministries and government agencies are requested to start applying the European Eco-Management and Audit Scheme (EMAS).
- The government halts work on a controversial agreement by the Social Democratic Party, Liberal Party and Moderate Party concerning infrastructure projects and road pricing in the Stockholm area.
- The government give the Riksdag a bill proposing an action plan for biodiversity, including strengthened protection of endangered species.
- In its Spring Finance Bill, the government proposes local investment programmes for environmentally sustainable development. The Riksdag approves the allocation of SEK 5.4 billion for such programmes for 1998 – 2000.
- A Government Bill proposes that annual reports from public limited companies should include environmental aspects.
- Sweden's National Parks Information Centre opens in Tyresta National Park, south of Stockholm.
- The Riksdag adopts new energy policy guidelines aimed at facilitating efforts to bring about an environmentally sustainable society.
- It is decided to ban exports of mercury, whose use is being phased out in Sweden.
- In a communication to the Riksdag, the government outlines its efforts to achieve environmental sustainability in Sweden.
- The government sends the Riksdag a Bill on Sustainable Agriculture and Fisheries Policies with a focus on environmental aspects.
- Neurological symptoms in cattle and in workers trigger a major environmental scandal in which it is revealed that large quantities of acrylamide, used in construction of a railway tunnel through the Hallandsåsen ridge in order to make the

tunnel airtight, leached into the nearest river, where cattle were drinking, and also affected construction workers. Work on the tunnel is subsequently halted.

- A government commission proposes reorganising Sweden's water administration so that it is based on catchment areas.
- The Riksdag passes a law on the phase-out of nuclear power. Two reactors at Barsebäck power plant are to be closed by 2001, provided that their power production can be replaced by renewable resources and energy conservation.

## 1998

- Sweden signs the Kyoto Protocol.
- Sweden introduces differentiated environmental dues, depending on ship-generated SO<sub>2</sub> and NO<sub>x</sub> emissions, for shipping fairways.
- The government introduces producer responsibility for end-of – life vehicles.
- The government issues its first national report on implementation of the Convention on Biodiversity.
- The OECD Megascience Forum meets in Saltsjöbaden, to examine the role of the scientific community in providing integrated analyses and advice on global scientific issues such as climate change, as well as on other environmental issues and on health and food safety.
- A Government Bill proposes a sustainable transport policy.
- The government modifies its action programme for architecture, form and design to strengthen quality in built environments.
- The Government Environment Bill presents the 15 EQOs, whose “generation goal” means that, by 2020 (for climate change, 2050), environmental pressures should be reduced to levels that are sustainable in the long run.
- The Foreign ministers of the Council of the Baltic Sea States (CBSS) adopts Baltic 21.
- Karlskrona's naval port becomes a World Heritage site.
- A planned tax on waste products that are not recycled is postponed owing to uncertainty about how it fits in with EU regulations.
- Vehicle taxes are lowered on electric cars and hybrid cars.
- EMAS is introduced for all sectors in Sweden.

- Sweden's 26th national park, Färnebofjärden, is established. Its 10 000-plus hectares include a unique river system with shallow lakes connected by rapids and surrounded by alluvial forests.
- The Swedish Council for Planning and Co-ordination of Research (FRN) reports to the government on a new strategy for research on sustainable development.
- The National Forestry presents its five-year nationwide inventory of key habitats, with 40 000 habitat indicators.
- The government proposes substantial increases in appropriations for purchases of valuable natural areas, especially forest areas, amounting to an additional SEK 660 million over three years.
- An annual environmental index for companies listed on the Stockholm Stock Exchange is launched, with a substantial number of companies participating.

## 1999

- The Environmental Code, combining 15 previous environmental statutes, is enacted to resolve three main problems: the former environmental legislation was hard to understand, many activities (e.g. roads and railways) were inadequately regulated and new environmental problems had arisen.
- The government strengthens legislation to halt illegal trade in threatened species.
- The Riksdag adopts the EQOs and asks the government to present comprehensive proposals for interim targets, measures and strategies for achieving the EQOs.
- The Government Bill on Cultural Heritage, Cultural Environments and Cultural Assets is presented to the Riksdag.
- The government proposes raising appropriations for environmental protection from SEK 1.5 billion to SEK 2 billion.
- The first nuclear reactor at the Barsebäck power plant is closed.
- SEPA proposes a new policy on Sweden's four large predators: bear, wolf, lynx and wolverine.
- In Göteborg, 27 countries sign a protocol to the Convention on Long-range Transboundary Air Pollution on abating acidification, eutrophication and ground-level ozone, setting national emission ceilings for 2010.

## 2000

- A SEK 250 per tonne tax on landfilling enters into force.
- A ban on lead shot takes effect.
- Sweden participates in the World Bank's Prototype Carbon Fund. The Ministry of Industry, Employment and Communications expects to buy about 1-2 million tonnes of CO<sub>2</sub>.
- A Government Bill on a strategy for chemicals to aid in attaining the EQO "A Non – Toxic Environment" is presented to the Riksdag. It outlines ways to reach the EQO and includes a set of interim targets.
- A Commission on Producer Responsibility is established.
- The government concludes a covenant with the motor industry on development of alternative-fuel vehicles.
- A strategy on a "green tax shift" is introduced as a result of an agreement by the Social Democratic government, the Left Party and the Green Party.
- Sweden's 27th national park, Söderåsen, is established to protect some 1 600 hectares including unique virgin deciduous forest with very extensive flora and fauna and virgin watercourses.
- A government commission proposes new guidelines on chemical policies to promote stricter EU legislation on chemicals.
- The government establishes a national committee on Agenda 21 and Habitat.
- UNESCO adds the agricultural landscape of southern Öland, a Baltic island, and the "High Coast" (Höga Kusten) of the county of Ångermanland to the list of World Heritage sites.
- The Environmental Committee of the Confederation of Swedish Enterprise presents its "Vision for Sustainable Industrial Development in the year 2025".
- The European Commission approves the Swedish Environmental and Rural Development Programme for 2000 – 06.
- The Climate Commission proposes that the levels of Sweden's GHG emissions should be halved by 2050 from 1990 levels.
- The government purposes a substantial increase in CO<sub>2</sub> tax, from SEK 0.37/kg to SEK 0.53/kg.

## 2001

- Sweden's six-month presidency of the Council of the European Union begins. Environmental issues are one of the government's three priority areas.
- The government issues its second national report on implementing the Convention on Biodiversity.
- A Government Commission on Waste is established.
- The government presents a Bill on Interim Targets and Action Strategies for the EQOs and proposes an Environmental Objectives Council, associated with SEPA. The government also announces it intends to submit a proposal to the Riksdag for a 16th EQO, on biodiversity.
- As part of the Environmental and Rural Development Programme, the Board of Agriculture, the County Administrative Boards, the Federation of Swedish Farmers and various agri-business companies launch a joint initiative called "Focus on Nutrients" to reduce nutrient losses from agriculture to air and water. The initiative draws on the EQOs, especially "Zero Eutrophication".
- The Stockholm Convention on Persistent Organic Pollutants, which requires the complete phase-out of nine toxic pesticides and limits the use of several other chemicals, is signed by 92 countries.
- SEPA and the Centre for Biodiversity establish a Swedish Species Information Centre.
- The European Council, meeting in Göteborg, adopts a sustainable development strategy.
- EU Environment ministers unanimously adopt a common position on a Sixth Environmental Action Plan and the Council Conclusions on future EU policy on chemicals.
- The mining area of the Great Copper Mountain (Kopparbergslagen) and the central Swedish town of Falun are named World Heritage sites.
- The government's budget bill for 2002 proposes introducing climate investment programmes to replace the local investment programmes, and appropriating SEK 200 million for the first year, rising to SEK 400 million by 2004. The purpose is to support municipal measures to reduce GHG emissions.
- The Riksdag postpones the shutdown of the second reactor at Barsebäck, after deciding that the requirements have not been met, and orders a new evaluation to be made in 2003.



- The government sends the Riksdag a Bill on Climate Change proposing that national GHG emissions should be reduced by 4% by 2010.
- The government initiates an inquiry on how to implement the EU Water Framework Directive in Sweden.

## 2002

- Sweden ratifies the Kyoto Protocol.
- Requirements concerning separation of combustible waste and a ban on dumping separated combustible waste enter into force. The landfill tax is increased from SEK 250 to SEK 288 per tonne.
- Sweden ratifies the 1999 Beijing Amendment to the Montreal Protocol on ozone-depleting substances.
- The government sends the Riksdag a Bill on infrastructure for a long-term sustainable transport system, and launches an assessment of shipping fairway dues to make them more cost-effective.
- The government formulates a comprehensive nature conservation policy, presenting new strategies that take into account sustainable development and the EQOs, and highlighting key new ideas such as sectoral integration and enhanced dialogue with local communities.
- Sweden ratifies the Stockholm Convention on Persistent Organic Pollutants.
- An expert is launched on management and final disposal of radioactive waste from non-nuclear activities.
- Ratification of the EU burden sharing agreement confirms that Sweden may increase its CO<sub>2</sub> emissions by 4%.
- On the 30th anniversary of the UN Conference on the Human Environment, which was held in Stockholm, the government assembles 250 experts from around the world to review three decades of international environmental co-operation and discuss strategies for the next 30 years. The Riksdag adopts the Government Energy Bill on co-operation to achieve a secure, efficient and environment-friendly energy supply.
- A government negotiator is appointed to seek agreement between government and industry on a long-term sustainable policy for the phase-out of nuclear power and continued change in the energy system.

- The International Secretariat of the Global Water Partnership, a network on global water resources, is established in Stockholm.
- Sweden ratifies the Cartagena Protocol on Biosafety, an agreement under the Convention on Biodiversity concerning genetically modified organisms.
- Sweden presents its national report, “From Vision to Action,” at the World Summit on Sustainable Development in Johannesburg.
- Sweden establishes its 28th national park, Fulufjället, whose 38 500 hectares include virgin forests with long valleys, steep-sided ravines and Sweden’s highest waterfall.
- The government decides to designate new areas as vulnerable zones in accordance with the EU nitrate directive.
- Envisions 2002, a stakeholder conference on sustainable development, is held in Västerås to discuss the follow-up to the Johannesburg Summit. Some 700 people participated, including representatives of governments, municipalities, NGOs and industry.
- The government inquiry on implementation of the Water Framework Directive results in a proposal to establish five water administration agencies.
- SEPA launches a campaign to increase knowledge about, and change attitudes towards, the greenhouse effect.

## 2003

- The landfill tax is raised from SEK 288 to SEK 370 per tonne.
- A forum for environmental NGOs on efforts to achieve the EQOs is established.
- The national Environmental Court rules that the National Rail Administration can triple the amount of groundwater drained from the railway tunnel being built through the Hallandsåsen ridge. Local residents challenge the decision in the Environmental Court of Appeal.
- The Swedish Business Development Agency (NUTEK) proposes establishing a national centre for environment-driven business development and exports of environmental technology.
- In a proposal to the European Commission, the government seeks the inclusion of a further 54 Swedish sites in the Natura 2000 network, for a total of 3 581 Swedish sites.

- The government sends the Riksdag its Ecocycle Bill proposing “a society with a non-toxic and resource-saving ecocycle”. It also introduces a Bill on Shared Responsibility: Sweden’s Policy for Global Development.
- The Riksdag adopts the government proposal on green certificates for electricity produced from renewable sources.
- A Government Bill proposes a new system for property registration.
- The Government establishes a Council for Outdoor Recreation Activities.
- A Chinese tanker sinks in the Baltic Sea, releasing a large amount of oil. The accident brings renewed calls for the Baltic to be classified as a particularly sensitive sea area.
- The Commission on Ocean Environment presents its proposal to the government on actions and strategies for the Baltic Sea and the North Sea.
- The government appoints a commission of inquiry on objectives and strategies for the continued introduction of vehicle fuels from renewable sources.
- Three environment ministerial meetings are held in Luleå, northern of Sweden: the Nordic Environment ministers, the Environment ministers of the Barents Euro-Arctic Council and the CBSS Environment ministers.
- The Environmental Court of Appeal agrees to study the Hallandsåsen ridge railway tunnel project and advise the government on whether it should continue.
- An agreement by the government, the Left Party and the Green Party on the 2004 budget includes a decision to expand the green tax shift by SEK 2.0 billion and raise resources for biodiversity protection to SEK 1.4 billion.
- Several private companies and public agencies declare their intention to join the “At Least One Green Car” network (Minst en miljöbil), whose members agree to buy at least one alternative-fuel vehicle.
- The government presents a communication to the Riksdag on a revised set of Swedish priorities for EU environmental co-operation. Marine issues are added as a priority, joining air pollution, climate, acidification, chemicals and sustainable use of natural resources.
- The government announces a programme for local nature protection projects entailing funding of SEK 300 million over the period 2004-06.
- The government completes its proposal for the European Nature 2000 network, bringing the total of proposed Swedish Natura sites to 3 949.

## Reference VI

### SELECTED ENVIRONMENTAL WEB SITES

<b>Web site</b>	<b>Host institution</b>
<a href="http://miljo.regeringen.se">http://miljo.regeringen.se</a>	Ministry of the Environment
<a href="http://naring.regeringen.se">http://naring.regeringen.se</a>	Ministry of Employment, Industry and Communications
<a href="http://jordbruk.regeringen.se">http://jordbruk.regeringen.se</a>	Ministry of Agriculture, Food and Consumer Affairs
<a href="http://social.regeringen.se">http://social.regeringen.se</a>	Ministry of Health and Social Affairs
<a href="http://www.utrikes.regeringen.se">http://www.utrikes.regeringen.se</a>	Ministry of Foreign Affairs
<a href="http://finans.regeringen.se">http://finans.regeringen.se</a>	Ministry of Finance
<a href="http://www.naturvardsverket.se">http://www.naturvardsverket.se</a>	Swedish Environmental Protection Agency
<a href="http://www.kemi.se">http://www.kemi.se</a>	National Chemicals Inspectorate
<a href="http://www.formas.se">http://www.formas.se</a>	Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning
<a href="http://www.fhi.se">http://www.fhi.se</a>	National Institute of Public Health
<a href="http://www.sos.se">http://www.sos.se</a>	National Board of Health and Welfare
<a href="http://www.lst.se">http://www.lst.se</a>	Sweden's County Administrations
<a href="http://www.imm.ki.se">http://www.imm.ki.se</a>	Institute of Environmental Medicine
<a href="http://www.fiskeriverket.se">http://www.fiskeriverket.se</a>	National Board of Fisheries
<a href="http://www.sjv.se">http://www.sjv.se</a>	Swedish Board of Agriculture
<a href="http://www.svo.se">http://www.svo.se</a>	National Board of Forestry

## TABLE OF CONTENTS

<b>1. CONCLUSIONS AND RECOMMENDATIONS</b> .....	15
1. Environmental Management .....	16
Implementing more efficient environmental policies .....	16
Water .....	18
Nature and biodiversity .....	20
2. Towards Sustainable Development .....	21
Integration of environmental concerns into economic decisions .....	21
Integration of environmental and social concerns .....	23
Health .....	24
3. International Commitments .....	25

### Part I

## ENVIRONMENTAL MANAGEMENT

<b>2. IMPLEMENTING ENVIRONMENTAL POLICIES</b> .....	29
Recommendations .....	30
Conclusions .....	30
1. Institutional and Legal Framework .....	32
1.1 Reform of environmental legislation: the Environmental Code .....	33
1.2 EU environmental regulations .....	36
1.3 Environmental planning reform: EQOs and targets .....	36
2. Regulatory Instruments .....	40
2.1 Licensing .....	40
2.2 Inspection and enforcement .....	41
2.3 Administrative and judicial procedures .....	43
3. Economic Instruments .....	45
4. Other Instruments: Spatial Planning and EIA .....	47
4.1 Spatial planning .....	48
4.2 Environmental impact assessment .....	49
5. The Role of Industry .....	49
5.1 Environmental management and initiatives .....	50
5.2 Influencing product and production processes .....	51
<b>3. WATER MANAGEMENT</b> .....	53
Recommendations .....	54
Conclusions .....	54

1. Water Management Objectives .....	55
2. Performance Concerning Freshwater Resources.....	61
2.1 Progress on acidification .....	63
2.2 Dealing with eutrophication .....	63
2.3 Toxic contaminants.....	64
2.4 Groundwater quality.....	66
3. Performance Concerning the Baltic and North Seas.....	66
4. Waste Water Treatment .....	67
5. Integrating Agricultural and Water Policies.....	68
6. Expenditure and Water Charges.....	73
6.1 Expenditure and financing.....	73
6.2 Water charges and economic instruments.....	74
<b>4. NATURE CONSERVATION AND BIODIVERSITY.....</b>	<b>75</b>
Recommendations.....	76
Conclusions .....	76
1. Policy Objectives.....	77
2. State of Nature and Biodiversity .....	78
2.1 Species .....	78
2.2 Habitats.....	80
3. Policy Responses.....	81
3.1 Protected areas.....	82
3.2 Forestry.....	85
3.3 Agriculture.....	87
3.4 Freshwater fishing and ecosystems .....	88
3.5 Shore protection, land use changes.....	89
3.6 Wetland protection.....	90
3.7 International co-operation in nature conservation.....	90
<b>Part II</b>	
<b>SUSTAINABLE DEVELOPMENT</b>	
<b>5. ENVIRONMENTAL-ECONOMIC INTERFACE.....</b>	<b>91</b>
Recommendations.....	92
Conclusions .....	92
1. Decoupling of Environmental Pressures from Economic Growth.....	93
1.1 Emission intensity .....	93
1.2 Energy intensity.....	97
1.3 Material intensity.....	97
2. Towards Sustainable Development .....	98
2.1 Sweden's sustainable development strategy.....	98
2.2 Institution-based integration.....	99
2.3 Market-based integration.....	101

3. Sectoral Integration .....	109
3.1 Integration of environmental concerns into energy policy .....	109
3.2 Integration of environmental concerns into transport policy.....	111
3.3 Integration of environmental concerns into agriculture policy .....	114
4. Environmental Expenditure and Financing.....	116
4.1 Overall environmental expenditure .....	116
4.2 Financing environmental research and technology .....	117
4.3 Local investment programmes .....	117
4.4 Environmentally motivated subsidies.....	118
<b>6. ENVIRONMENTAL-SOCIAL INTERFACE .....</b>	<b>121</b>
Recommendations.....	122
Conclusions .....	122
1. Environment and Employment.....	123
1.1 Employment effects of environmental policy .....	123
1.2 Environmental employment market .....	126
2. Environmental Democracy: Information, Participation, Legal Recourse and Education .....	127
2.1 Availability of and access to environmental information .....	127
2.2 Public participation.....	129
2.3 Legal recourse.....	131
2.4 Environmental education.....	131
3. Distributional Aspects of Environmental Policies .....	132
3.1 Access to nature, pollution exposure.....	132
3.2 Distributional effects of the green tax shift .....	133
3.3 Regional development .....	135
<b>7. HEALTH AND ENVIRONMENT .....</b>	<b>137</b>
Recommendations.....	138
Conclusions .....	138
1. Institutional Framework .....	139
1.1 Policy objectives.....	142
1.2 Responsible institutions .....	143
2. Air Pollution and Public Health .....	145
2.1 Outdoor air quality .....	145
2.2 Indoor air quality .....	147
3. Noise.....	149
4. Chemicals and Health.....	150
4.1 National level.....	150
4.2 International level .....	153
5. Access to Nature and Green Spaces .....	153

## Part III

**INTERNATIONAL COMMITMENTS**

<b>8. INTERNATIONAL CO-OPERATION</b> .....	155
Recommendations.....	156
Conclusions .....	156
1. Objectives.....	158
2. Climate protection.....	159
2.1 Intentions, actions and results.....	159
2.2 Going beyond Kyoto .....	161
3. Transboundary Air Pollution.....	164
3.1 Sulphur oxides .....	167
3.2 Nitrogen oxides .....	168
3.3 Volatile organic compounds .....	168
3.4 POPs and heavy metals .....	168
4. The Marine Environment .....	169
4.1 Pollution from land-based sources .....	169
4.2 Pollution from ships .....	170
4.3 Scrapping of ships .....	172
5. Management of Living Marine Resources .....	172
5.1 Offshore fisheries: overfishing.....	173
5.2 Protection of marine ecosystems.....	174
6. Environmental Development Aid.....	175
7. Regional Co-operation for Sustainable Development.....	177
8. International Trade and the Environment.....	177
8.1 Ozone-depleting substances .....	178
8.2 Hazardous waste .....	179
8.3 Timber.....	179
8.4 Endangered species.....	179

**REFERENCES**

I.A Selected environmental data.....	182
I.B Selected economic data .....	184
I.C Selected social data .....	186
II.A Selected multilateral agreements (worldwide).....	188
II.B Selected multilateral agreements (regional).....	194
III. Abbreviations .....	198
IV. Physical Context.....	200
V. Selected environmental events (1996-2003).....	201
VI. Selected environmental Web sites.....	210



## LIST OF FIGURES, TABLES AND BOXES

### Figures

Map of Sweden .....	13
3.1 Water use .....	62
3.2 Population connected to public waste water treatment plant .....	69
3.3 Agricultural inputs.....	72
4.1 Fauna and flora.....	79
4.2 Protected areas.....	83
5.1 Economic structure and trends .....	95
5.2 Road fuel prices and taxes.....	113
5.3 Private sector investment and current environmental expenditure.....	117
6.1 Social indicators .....	125
7.1 Selected environmental health indicators.....	146
7.2 POPs in mothers' milk .....	152
8.1 Energy structure and intensity .....	162
8.2 Air pollutant emissions.....	163
8.3 Official development assistance .....	176

### Tables

2.1 Environment staff.....	33
2.2 Selected environmental legislation.....	35
2.3 Environmental quality objectives and interim targets .....	37
2.4 Environmental-sanction (civil) fines .....	44
2.5 Environmental cases brought to court .....	45
2.6 Voluntary environmental agreements .....	51
3.1 Selected water-related objectives .....	57
3.2 Reduction in Swedish nutrient discharges to the Baltic .....	67
4.1 Types of protected areas .....	82
4.2 Protected forest areas.....	86
5.1 Decoupling: economic trends and environmental pressures .....	96
5.2 Revenue from selected environment-related taxes, and energy and vehicle taxes	101
5.3 Selected environment-related taxes on energy and transport .....	104
5.4 Local investment programmes .....	118
5.5 Environmentally motivated subsidies .....	119
6.1 Structure of the Swedish environment sector.....	127
7.1 Health effects of selected environmental factors in Sweden.....	141

7.2	Selected national objectives related to environment and public health.....	142
8.1	GHG emissions from energy and transport, actual and projected.....	160
8.2	GHG emissions in Sweden, actual and projected.....	164
8.3	Sweden's performance under the Convention on Long-range Transboundary Air Pollution .....	167
8.4	Fishing catch, aquaculture and fishers .....	173
I.A	Selected environmental data.....	182
I.B	Selected economic data .....	184
I.C	Selected social data .....	186
II.A	Selected multilateral agreements (worldwide).....	188
II.B	Selected multilateral agreements (regional) .....	194

### Boxes

2.1	Environmental institutions .....	32
2.2	General principles of the Environmental Code .....	34
3.1	Contaminated sites: liability and public funding.....	65
3.2	Innovation for sustainable sewage treatment .....	70
4.1	Major types of protected areas .....	83
4.2	Nature protection at local level .....	84
5.1	Economic context.....	94
5.2	Green tax shift .....	102
6.1	Social context .....	124
6.2	Sámi development policies.....	134
7.1	Equity in public health policy .....	140
7.2	Public health and electromagnetic radiation .....	144
7.3	Incidence of environment- and lifestyle-related disease .....	148
8.1	Protecting the Arctic from long-range POPs pollution .....	165
8.2	Reducing air emissions from ships in the Baltic Sea .....	166

## Signs

The following signs are used in Figures and Tables:

.. : not available

– : nil or negligible

. : decimal point

## Country Aggregates

OECD Europe: All European member countries of the OECD, i.e. countries of the European Union plus the Czech Republic, Hungary, Iceland, Norway, Poland, the Slovak Republic, Switzerland and Turkey.

OECD: The countries of OECD Europe plus Australia, Canada, Japan, the Republic of Korea, Mexico, New Zealand and the United States.

Country aggregates may include Secretariat estimates.

The sign \* indicates that not all countries are included.

## Currency

Monetary unit: Sweden Krona (SEK)

In April 2004, SEK 9.19 = EUR 1.

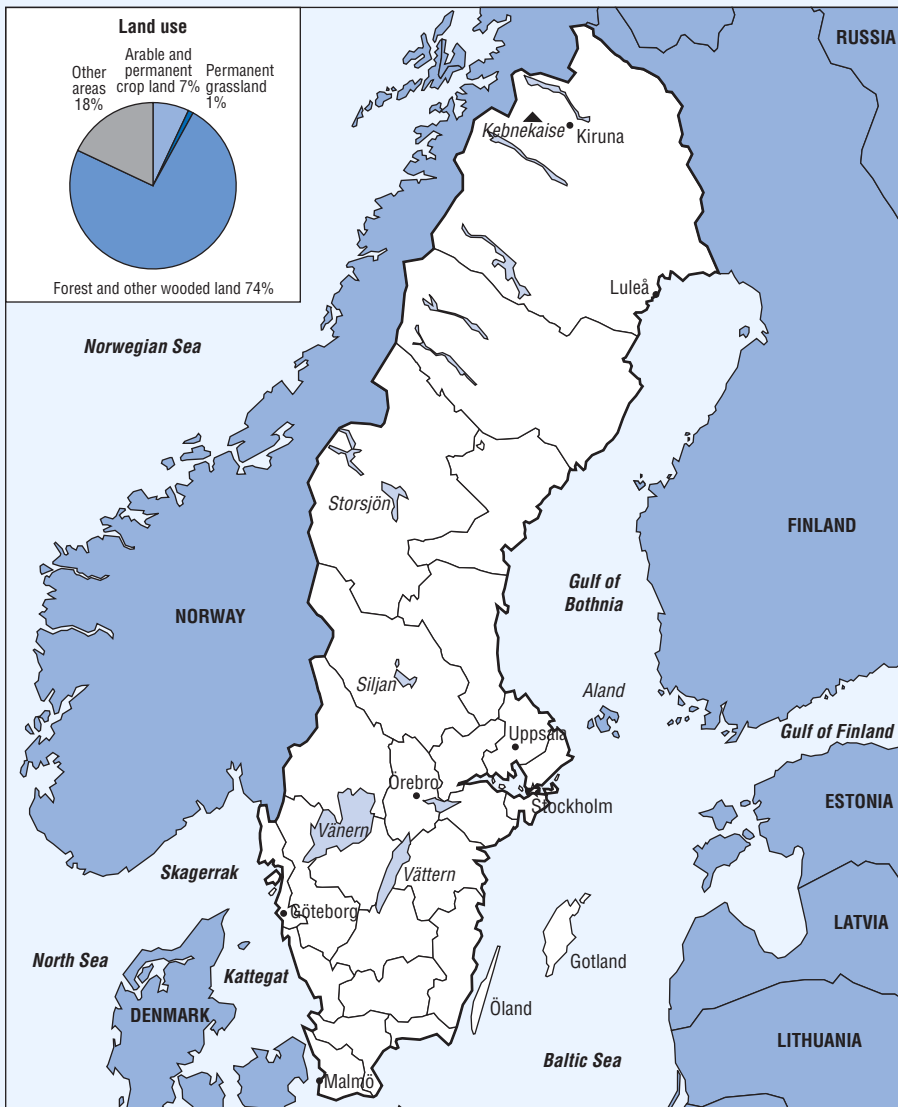
## Cut-off Date

This report is based on information and data available up to May 2004.

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### Map of Sweden



Source: OECD.



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