

Infrastructure to 2030 (Vol.2): Mapping Policy for Electricity, Water and Transport

Summary in English

Infrastructures are not an end in themselves. Rather, they are a means for ensuring the delivery of goods and services that promote prosperity and growth and contribute to quality of life, including the social well-being, health and safety of citizens, and the quality of their environments. The longer-term future performance of OECD economies, and indeed of the global economy, will depend to an important extent on the availability of adequate infrastructures to sustain growth and social development. Through to 2030, annual infrastructure investment requirements for electricity, road and rail transport, telecommunications and water are likely to average around 3.5% of world gross domestic product (GDP).

A large share of investments will be undertaken in the developing world, where countries such as China, India and Brazil will be spending billions of dollars on infrastructures to underpin their booming economies and satisfy the growing aspirations of their populations.

However, despite their significantly lower economic growth rates over the next few decades, OECD countries too will be required to invest heavily to maintain, upgrade or replace existing (and often ageing) infrastructures, and to preserve their international competitiveness. For OECD countries as a whole, investment requirements in electricity transmission and distribution are expected to more than double through to 2025/30, in road construction almost to double, and to increase by almost 50% in the water supply and treatment sector.

The purpose of the OECD International Futures Programme project on “Global Infrastructure Needs: Prospects and Implications for Public and Private Actors” was to take stock of the long-term opportunities and challenges facing infrastructures worldwide and to propose a set of policy recommendations to OECD governments that aim to enhance infrastructures’ contribution to economic and social development in the years to come. The project had a time horizon to 2020-2030 and covered electricity, surface transport (road, rail and urban public transport), water and telecommunications.

Infrastructure investment gap

In OECD countries, traditional sources of public finance alone will not suffice to meet future infrastructure needs, which are huge and growing. This book addresses key questions:

- Where will new sources of finance come from and what role will the private sector play?
- Will the financial, organisational, institutional and regulatory arrangements (the “business models”) currently in place be able to respond adequately to the complex challenges they face, and are they sustainable over the longer term?

Bridging the infrastructure investment gap will demand innovative approaches, both to finding additional finance, and to using infrastructures more efficiently and more intelligently through new technologies, demand management strategies, regulatory changes and improved planning.

Long-term challenges

In particular for OECD countries, infrastructure investment will be challenged by a range of fundamental long-term trends. These include:

- Demographic developments – ageing populations, population growth or decline, urbanisation trends, and population movements to rural and coastal areas.
- Increasing constraints on public finances due to ageing populations, security concerns, etc.
- Environmental factors, such as climate change and rising quality standards.
- Technological progress especially, but not only, in information and communication technology.
- Trends towards decentralisation, and growing local public involvement.
- The expanding role of the private sector.
- The growing importance of maintenance, upgrading and rehabilitation of existing infrastructures.

At present, governments are not well placed to meet these growing, increasingly complex challenges. The traditional sources of finance, *i.e.* government budgets, will come under significant pressure over the coming decades in most OECD countries — due to ageing populations, growing demands for social expenditures, security, etc. — and so too will their financing through general and local taxation, as electorates become increasingly reluctant to pay higher taxes. Moreover, looking across the full range of economic, social and environmental forces affecting the infrastructure sectors addressed in this project, nowhere does the current public policy, regulatory and planning framework appear adequate to tackle the multiple challenges facing infrastructure development over the next 25 years.

Failure to make significant progress towards bridging the infrastructure gap could prove costly in terms of congestion, unreliable supply lines, blunted competitiveness, and growing environmental problems, with all the implications for living standards and quality of life.

Infrastructures will also need to work more efficiently. Ways of squeezing more efficiencies out of the system include investment in new technologies, and demand management strategies to better control traffic flows through road, rail, electricity and water systems. In the BRICs and most developing countries, by contrast, the lion's share of investment is likely to go on new construction as governments strive to expand inadequate networks.

Where will the financing come from?

Looking across the globe, a not insignificant part of infrastructure is already in private hands — this is especially true of telecommunications and, to a lesser degree, of power generation and railways – and it is to be expected that private money will continue to flow to these activities. More problematic is the area of publicly owned and operated infrastructures, because it is here that pressures on budgets and tax-raising capacity are already starting to be felt.

Evidence suggests that in the advanced countries, public capital investment has accounted for a steadily declining proportion of total government expenditure. For the OECD area as a whole, government spending on gross fixed capital formation as a share of total general government outlays fell from 9.5% in 1990 through 8% in the mid-1990s, to approximately 7% in 2005.

At the same time, social expenditures have increased their share noticeably. Between 1980 and 2003, they rose on average from about 16% to 21% of GDP. The two key drivers of increases in social spending have been expenditures on health and on the retired population. Both are expected to expand considerably in the coming decades, outpacing the growth of government budgets and that of GDP by a substantial margin. Projections suggest that for the OECD area as a whole, spending on public health and long-term care could increase from the current level of 6.7% of GDP to between 10.1% and 12.8% by 2050, while pensions could rise on average by around three to four percentage points of GDP over the same period.

These mounting pressures will probably only be offset in small part by lower spending on education for the young, and child or family benefits. Moreover, scarcer labour is expected to put pressure on governments to increase investment in all forms of education, including lifelong learning. Accordingly, the scope for public investment in infrastructure within government budgets will be increasingly constrained.

What are the options for the public sector to bridge the infrastructure gap?

Despite growing pressures on public budgets, general and local taxes will continue to provide the single most important source of financing in many cases. However, in most OECD countries and some BRICs, ageing populations are likely to lead to shrinking wage bills, thereby reducing tax receipts. To some extent, the severity of the effect will depend on such factors as the evolution of labour market participation rates, immigration, productivity, and the balance between consumption-based and income-based tax

revenues. Some compensation may be forthcoming in the guise of increased tax receipts from accumulated pension assets, but the offset effect is likely to be limited to generally no more than one percentage point of GDP.

In other words, public budgets fed by taxes will not suffice to bridge the infrastructure gap. What is required is greater recourse to private sector finance, together with greater diversification of public sector revenue sources.

Private sector finance, as noted above, has traditionally had a strong presence in some infrastructure sectors in some countries. In recent years, as the share of government investment in infrastructures has declined, that of the private sector has increased. Privatisations (*i.e.* the sale of state-owned assets) have been an important driver. Since the 1980s more than USD 1 trillion of assets has been privatised in OECD countries. Infrastructures have consistently been on centre stage. Averaged out over the 1990-2006 period, almost two-thirds of all privatisations in the OECD area have concerned utilities, transport, telecommunications and oil facilities.

Elsewhere, too, privatisation activity has been vigorous. Over roughly the same period, some USD 400 billion of state-owned assets were sold in non-OECD countries, of which about half were accounted for by infrastructures.

New business models with private sector participation, notably variants of public private partnership models (PPPs) that are being increasingly used particularly in OECD countries, offer further scope for unlocking private sector capital and expertise. So too do the huge pools of private sector capital managed by pension funds and insurance companies. Infrastructures, with their low-risk and steady-return profile, are of considerable potential interest to such funds. Alone in the OECD area, pension funds today amount to some USD 18 trillion, up from USD 13 trillion in 2001.

Diversifying the sources of public sector finance includes:

- Making more and better use of user fees.
- Creating mechanisms for securing long-term financing for infrastructures (*e.g.* long-term infrastructure funds).
- Exploring the possibilities offered by land value capture.
- Promoting innovative variations on traditional financing mechanisms.

Expanding access to additional private and public sector sources of finance will make a significant contribution to bridging the infrastructure gap. However, it will not suffice on its own. The challenges facing governments are simply too diverse and complex. In the coming years, policy makers will in addition need to:

- Improve efficiency in the construction and operation of infrastructures.
- Increase efficiency levels in the use of infrastructures through better management of demand.
- Ensure infrastructures are reliable and resilient.
- Enhance the design and capacity of infrastructures to meet future environmental and security challenges.

- Strengthen life-cycle management of infrastructure assets as the focus of investment turns increasingly to maintenance, upgrading and refurbishment of existing facilities and networks.
- Raise the effectiveness of infrastructure development both in meeting multiple objectives — economic, social, environmental, etc. — and in allocating resources to create maximum value.

In rising to meet these challenges, governments will need to complement the search for fresh sources of capital with a wide array of other measures. These must include *inter alia*: regulatory changes to encourage the emergence of new business models and the development and integration of new technologies; the promotion of more competition in procurement and operation; legal and administrative changes to speed up planning, procurement and implementation; application of new technologies and new schemes to enhance efficient use of infrastructures and better manage demand; closer international co-operation; improved security; and the underpinning of infrastructure design, financing and funding with long-term strategic planning.

Finally, the planning, financing and management of infrastructures will need to be supported by better basic tools. Information, data collection, research and analysis need strengthening. Accounting for improved asset management should be used more widely, as should rigorous evaluation methods for stronger evidence-based policy making. Greater use can be made of on-line tools for communication and dialogue. And there is ample scope in education and training institutions for greater efforts to develop the interdisciplinary skills and knowledge that will be required to tackle the opportunities and problems raised by infrastructures in the years ahead.

The principal policy recommendations in brief

1. Innovative approaches to finance

1. Encourage public private partnerships (PPPs) as a means of raising additional financing for infrastructure investment and diversifying business models.
2. Encourage the investment of pension funds and other large institutional investors in infrastructures.
3. Make greater use of user charges for funding infrastructures. They should be designed to signal prices, reflect real costs and contribute to demand management.
4. Diversify and expand traditional revenue-raising sources.
5. Explore the funding possibilities offered by land value capture.

2. Improving the regulatory and institutional framework conditions

6. Examine the legal and regulatory framework conditions with a view to encouraging the emergence of fresh sources of capital and new business models for the construction, maintenance and operation of infrastructures.
7. Encourage the emergence of new players and new business models through the creation and promotion of frameworks that stimulate the development of effective competition either in or for the market.
8. Place greater emphasis on the issue of reliability of infrastructure functioning.
9. Strengthen the framework for standards, as a tool both for encouraging new operational models and for improving interoperability.
10. Explore the potential for new institutional arrangements that may provide more effective and efficient financing, funding and/or delivery of infrastructure.

3. Strengthening governance and strategic planning

11. Support the development of long-term, co-ordinated approaches to infrastructure development.
12. Reduce the vulnerability of long-term infrastructure planning and implementation to short-term thinking and priority setting.
13. Ensure the involvement of a broader range of stakeholders in the process of needs assessment, prioritisation, design, planning and delivery of infrastructures.
14. Step up efforts to reduce the length and complexity of the planning-to-implementation process.
15. Strengthen international co-operation to improve the efficiency, reliability and security of flows of goods, services and information across transborder infrastructures.

4. Developing and integrating technology

16. Support the use of technologies both to improve efficiency in infrastructure and to enhance demand management.

5. Expanding and improving the toolkit

17. Strengthen public capacity to inform decision-making, improve analysis, monitor performance, and develop the requisite interdisciplinary skills to address infrastructure issues.

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