

Statistics Brief

► Infrastructure Investment

OECD Countries Spend 1% of GDP on Road and Rail Infrastructure on Average

The latest update of annual transport infrastructure investment and maintenance data collected by the International Transport Forum at the OECD shows that for the last 15 years:

- Investment in inland transport infrastructure has remained constant at 0.8% of GDP for the OECD (excluding Japan) and the volume of investment has grown 30%;
- In North America and Western Europe the GDP shares for investments in road, rail and inland waterways are constant, whereas in many developing and transition economies transport investment as a share of GDP is increasing;
- Western European economies have invested increasingly in rail while in Central and Eastern European countries the focus is on roads;
- While record investment levels were reached in Central and Eastern European countries in 2009, the latest data show decline for the first time (-11% in real terms in 2010).

Our most recent data show that gross fixed capital formation (investment) in inland transport infrastructure as a percentage of Gross Domestic Product (GDP) has remained fairly constant at around 0.8% for the OECD as a whole (if Japan is excluded) over the period since 1995 for which we report data (Figure 1). Japan has followed a different trajectory and its economy is large enough to affect the overall average for the OECD significantly. Including data on Japan results in a declining trend over the period, but a higher overall average for 2010, with a 1% share of GDP for the OECD total. Historically, transport infrastructure investment in Japan was relatively high in relation to GDP but has been in decline since the 1990s. Expenditures were affected by general budget cuts towards the end of the 1990's. Subsequently, modification of the allocation of revenues from gasoline tax, earlier earmarked for highway development and maintenance, has strongly reduced the level of investment in roads in Japan.

The International Transport Forum has collected data on investment and maintenance expenditure on transport infrastructure since the late 1970s. In Western Europe, the investment share of GDP has declined steadily from 1.5% in 1975 to 1.2 % in 1980 and further to 1.0% in 1982 after which it levelled off. Our latest data show that the GDP share of investment in inland transport

► GDP share of investment constant in developed economies

infrastructure has remained between 0.8% and 1.0% on average since the 1990s in Western European countries. Only Greece, Spain and Portugal show significantly higher than average shares over the period 1995-2010 (1.6% – 2.0%). Data for North America also show a constant GDP share (0.6%) until very recently. The latest estimates indicate a slight growth in investment as a share of GDP, reaching 0.7% in 2009 and 2010 (Figure 2).

An investment level of 1% per GDP remained a norm for many years, such that it became *de facto* political benchmark in the 1980s, though with no theoretical basis behind it. The investment needs for transport infrastructure depend on a number of factors, such as the quality and age of the existing infrastructure, geography of the country and transport-intensity of the country's productive sector, among other things. The fact that the share of GDP dedicated to transport infrastructure has tended to remain constant in many countries suggests investment levels are affected by factors other than real investment needs, such as institutional budget allocation procedures or budgetary constraints. The impact of government policy can also be identified, as for example in Japan and in the data for Australasia. Here, the share of infrastructure investment in GDP grew 50% partly as a result of the last five-year investment plan in Australia.

Trends for developing and transition economies differ markedly from those described above. The share of investment in inland transport infrastructure in Central and Eastern European countries (CEECs), which until 2002 had remained at around 1.0% of GDP, has grown sharply, reaching 2.0% in 2009 – the highest figure ever reported by these countries (Figure 2). Data for 2010 suggest a drop to 1.7%, affected by the economic crisis.

Data for India suggest a similar growth trend in the GDP share of investments since 2004. In the Russian Federation the investment share of GDP has been more volatile. Rising levels of investment in developing economies reflect efforts to meet rising needs for road network capital, reinforced by the demands of growing economies.

The volume of investment (expenditure in real terms) in the OECD total (excluding Japan) has grown 30% in the last 15 years. If data on Japan is included, the volume has remained fairly stable around the 1995 level (Figure 3). In Western European countries, the volume of investment started growing in 2002, and was 28% above the 1995 level in 2006. The level of investment then declined again. The latest data for 2010 show volume 12% higher than the 1995 level (Figure 4). The volume of inland infrastructure investment in North America grew by around 30% from 1995 to 2002. Our estimate suggests a slow decline in investment volume that continued all the way to 2008. Recent data indicate again a growth in the volume of investment in North America, returning to the 2001 level in real terms in 2010.

The volume of infrastructure investment has accelerated strongly in developing and transition economies, notably in Central and Eastern European countries since 2003. This growth has turned negative after reaching a record level in 2009. Investment in inland transport infrastructure declined 11% in real terms from 2009 to 2010 (Figure 4).

The share of rail investment has increased from 15% to 23% for the OECD total from 1995 to 2010, according to our estimate. This trend is mainly determined by the development in Japan and Europe. Data presented in Figure 5 show long-run trends in the modal share of investment in Western European and

► Investment levels in developing countries hit record highs in 2009

► Volume of investment increases slowly in developed economies

► Investment volumes decline for the first time in CEECs

► Mature economies invest increasingly in rail

Central and Eastern European countries. In the Western European countries, the share of investment in rail infrastructure has increased steadily from around 20% of total investment in inland transport infrastructure in 1975 to 30% in 1995 and to 40% in 2010. The trend observed in our data for Western Europe is partly a reflection of political commitment to development of railways and the recent data does not seem to indicate any change in policy.

Whereas Western European countries have increasingly directed their investment toward rail, Central and Eastern European countries are investing more heavily in roads. The share of roads in inland transport infrastructure investment increased from 65% in 1995 to 82% in 2010 in this region. The last five years, however, suggest a stabilisation of the trend and the modal split of investment has remained at 2005 level in 2010 (Figure 5).

The available data seems to suggest that the balance between road maintenance and investment has been relatively constant over time in many regions. We estimated the share of maintenance in total road expenditure in our previous brief to be between 25% and 35% in Western European and Central and Eastern European countries. However, there are significant differences between individual countries as illustrated in Figure 6.

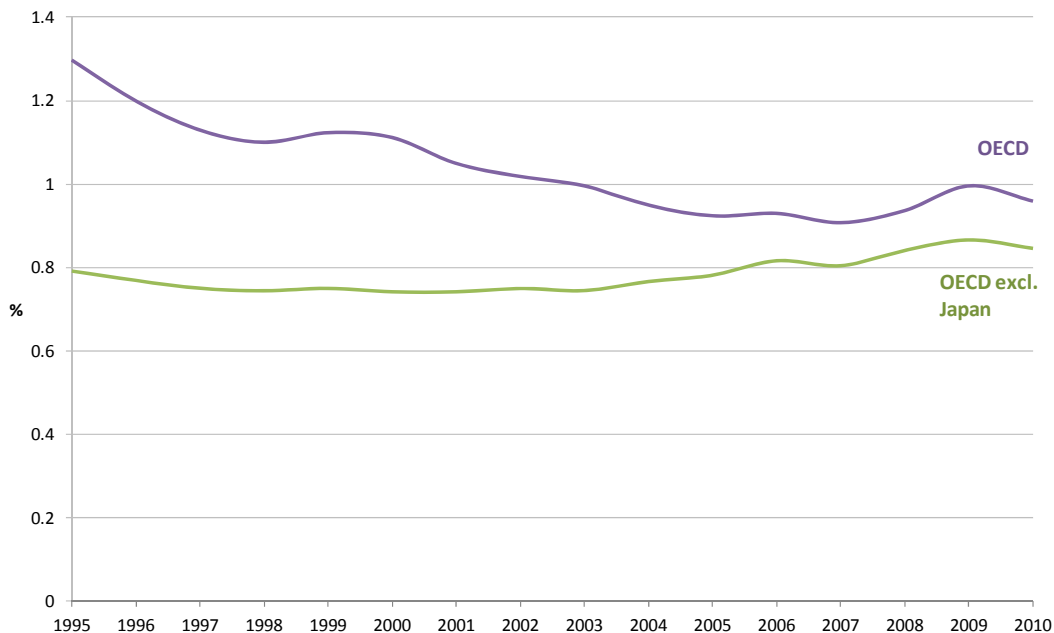
Infrastructure investments are a key determinant of performance in the transport sector. However, the sector lacks standardised definitions and methods for measuring investment – and *a fortiori* assets. The lack of clear definitions and common practices hinders meaningful analysis and comparison, and this may undermine decision making. In order to improve future data on transport investments, the International Transport Forum at the OECD organised an international workshop on measuring investment in transport infrastructure. As a follow-up to the workshop, a Task Force was established aiming at creating a “best practice manual” to better understand and quantify the impact of transport investment on the economy, to increase the meaningfulness of data analysis and to create better tools for decision making. Findings will be available at the International Transport Forum’s Summit on “Funding Transport” to be held in May 2013.

▶ **Transition economies investing in roads**

▶ **Maintenance share of expenditure 25%-35%**

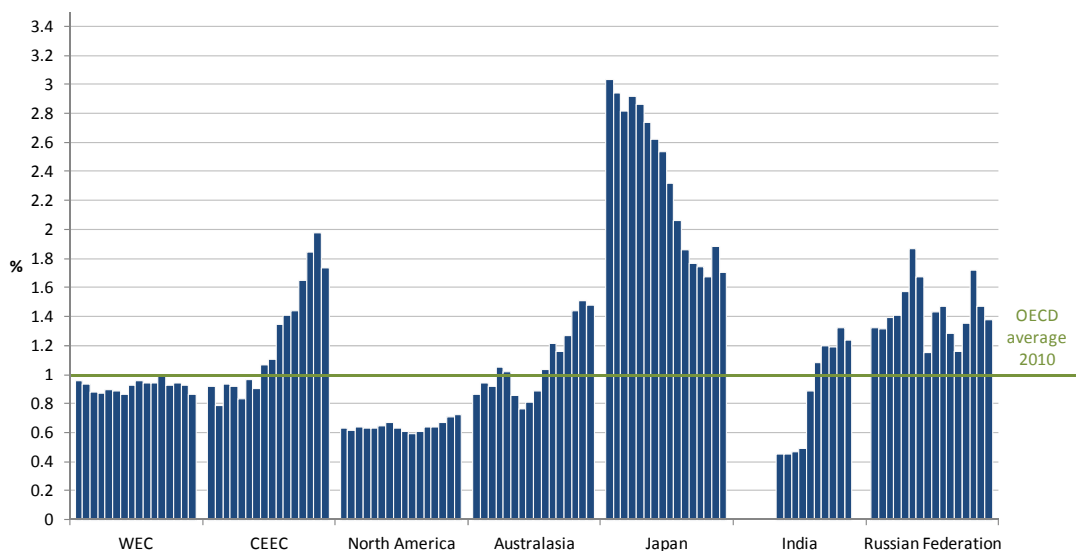
▶ **Investment data need to be improved**

Figure 1. **Investment in inland transport infrastructure in the OECD
1995-2010**
(as a percentage of GDP, at current prices)



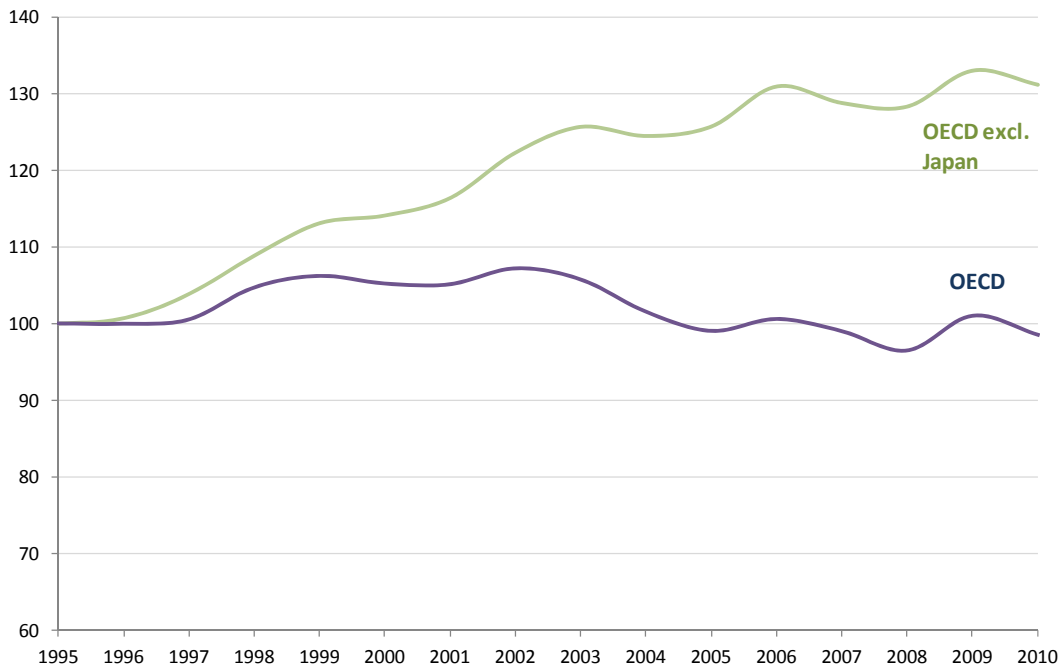
Source: International Transport Forum at the OECD estimate. **Note:** OECD includes 30 countries (excludes non-ITF states Chile and Israel; no data for the Netherlands and Korea). See methodological note for details of data and coverage.

Figure 2. **Investment in inland transport infrastructure by region
1995-2010**
(as a percentage of GDP, at current prices)



Source: International Transport Forum at the OECD. **Note:** WECs include Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom. CEECs include Albania, Bulgaria, Croatia, Czech Republic, Estonia, FYROM, Hungary, Latvia, Lithuania, Montenegro, Poland, Romania, Serbia, Slovakia and Slovenia. North America include Canada, Mexico and the United States. Australasia include Australia and New Zealand.

**Figure 3. Volume of investment in inland transport infrastructure
1995-2010**
(at constant 2005 prices, 1995=100)



**Figure 4. Volume of investment in inland transport infrastructure by
region 1995-2010**
(at constant 2005 prices, 1995=100)

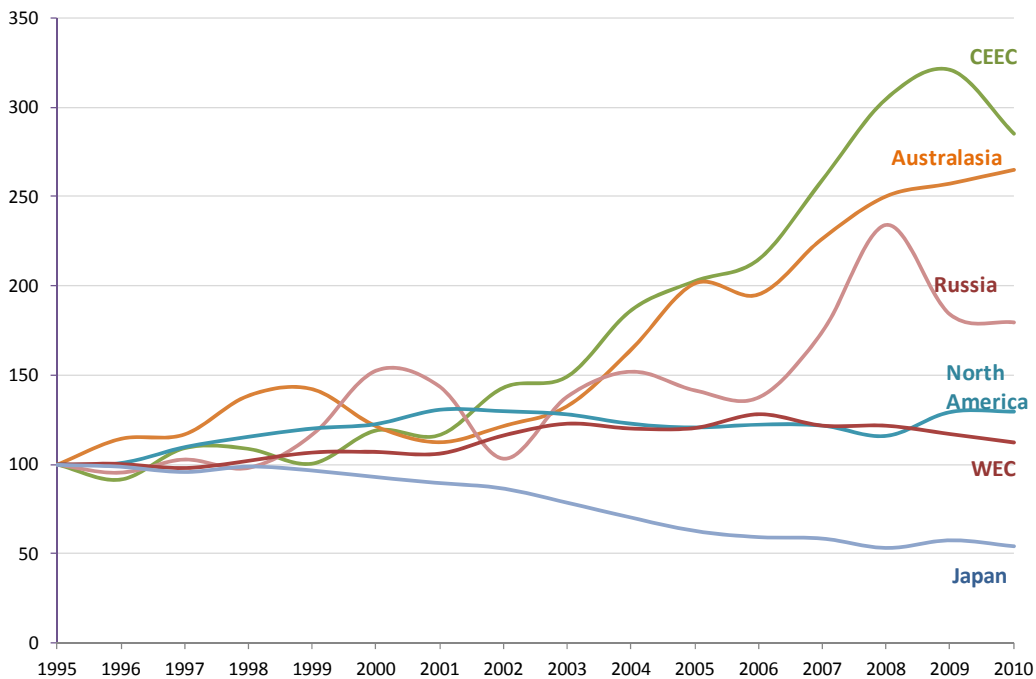


Figure 5. **Distribution of infrastructure investment between modes**
(Euros, current prices, current exchange rates)

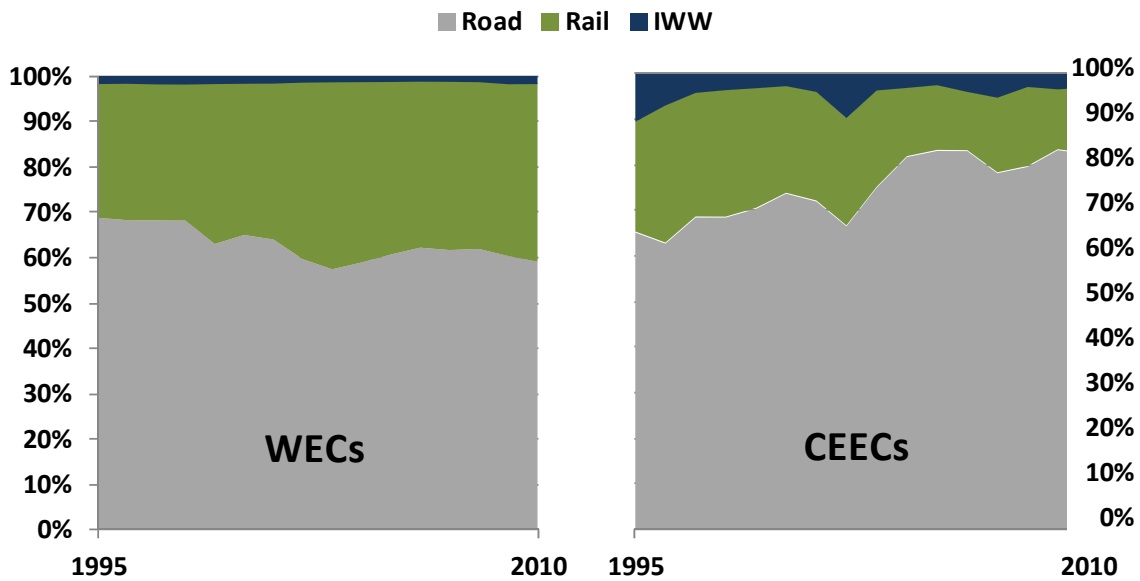
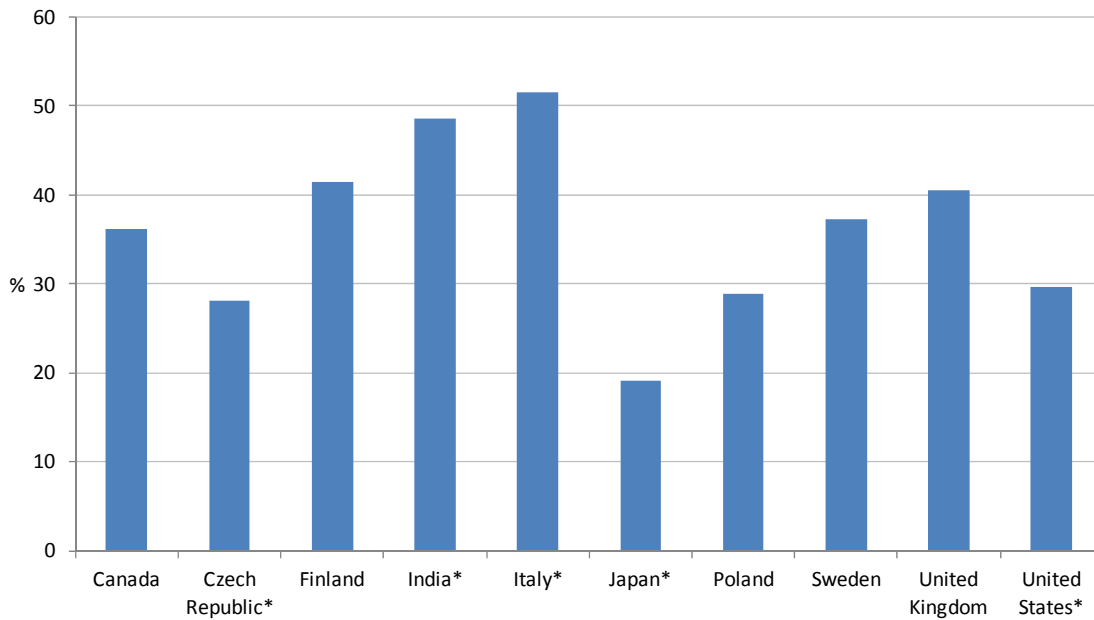


Figure 6. **Road maintenance share of total road expenditure 2010**
(at current prices)



Note: * 2009 data.

About the statistics

The International Transport Forum statistics on investment and maintenance expenditure on transport infrastructure for 1995-2010 are based on a survey sent to 52 member countries. The survey covers total gross investment (defined as new construction, extensions, reconstruction, renewal and major repair) in road, rail, inland waterways, maritime ports and airports, including all sources of financing. It also covers maintenance expenditures financed by public administrations.

The Secretariat has collected and published data on this topic since the late 1970s. The latest survey covers the years 1995-2010. Member countries supply data in current prices. In order to draw up a summary of aggregate trends for selected countries, data has been calculated in Euro values at both constant (2005) and current prices. In order to ensure comparability, the Secretariat has devoted a significant amount of effort to collecting relevant price indices in order to make calculations at constant prices. Where available, a cost index for construction on land and water is used. Where these indices are not available, a manufacturing cost index or a GDP deflator is used.

Despite the relatively long time series, these data are often dogged by problems of definition and coverage, which make international comparisons difficult. Also there exists no purchasing power parity corrected general index for transport infrastructure investment. Finally, indicators such as the share of GDP needed for investment in transport infrastructure, depend on a number of factors, such as the quality and age of existing infrastructure, maturity of the transport system, geography of the country and transport-intensity of its productive sector. We therefore advise caution when making comparisons of investment data between countries.

Aggregates

OECD: Excludes non-ITF states Israel and Chile (at the time of data collection). Data are not available for Korea and the Netherlands.

WECs: Include Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

CEECs: Include Albania, Bulgaria, Croatia, Czech Republic, Estonia, FYROM, Hungary, Latvia, Lithuania, Montenegro, Poland, Romania, Serbia, Slovakia and Slovenia.

North America: Canada, Mexico and the United States.

Australasia: Australia and New Zealand.

Estimations for missing data

The following data are estimated for 2010: Japan road based on MLIT statistics on construction investments; Norway based on KOSTRA and STATRES databases; Switzerland rail based on V6V Schweiz, road based on 2009 data; United States 2004-2010 private rail investment based on U.S. Census Bureau data on Construction Spending. Public rail investment estimated based on Bureau of Economic Analysis data on Investment in Government Fixed Assets (transportation) using fixed share for rail investment based on 2003 data. Inland waterways investment estimated based on data from U.S. Census Bureau data on Construction Spending (from 2003 level annual change)). For Austria, Belgium, Greece, Italy and Luxembourg estimated based on 2009 data; Greece and New Zealand estimate 1995-2000; Japan not including private investments. New Zealand excluding rail.

This summary covers only aggregate trends in inland transport infrastructure (road, rail, inland waterways). Detailed country data on other items (maritime ports and airports) together with more detailed data descriptions and a note on the methodology are available at:

<http://www.internationaltransportforum.org/statistics/investment/invindex.html>

Presentations from the [International Workshop on Measuring Investment in Transport Infrastructure](#)

If you would like to receive more information about this Statistics Brief, please contact Mr Jari Kauppila (jari.kauppila@oecd.org). Information about the international workshop and data requests, please contact Mr Mario Barreto (mario.barreto@oecd.org).