

Statistics Brief

► Infrastructure Investment

Inland transport infrastructure investment on the rise

After nearly five years of a downward trend in inland transport infrastructure spending, 2015 reveals a slight shift in investment with rises occurring in aggregate expenditures for Europe, North America and the OECD. Based on the latest available data collected by the International Transport Forum at the OECD, it can be suggested that the impact of the economic crisis on transport investments might be waning.

- Investment in inland transport infrastructure as a share of GDP has shown minimal fluctuations in recent years in OECD countries. The latest available data on spending however reveals an increase of nearly 7% in constant euros for 2015 in the volume of investment in transport infrastructure (Figure 3).
- For the 15 Central and Eastern European Countries (CEECs) included in this analysis, investment spending as a share of GDP has followed a general downward trend from 2009 until 2014. The 2015 data however shows a small jump from 1.0% to 1.2% of GDP (Figure 2).
- The share of rail investment in CEECs has steadily increased since 2012. In 2015, it reached 28% of their total inland transport investment (Figure 5), the highest percentage since 1996.
- Road maintenance as a share of total road expenditures has been levelling off in OECD countries in recent years. On the other hand, Australasia and CEECs are spending proportionately less on road maintenance (Figure 6).

Investment trends in inland transport infrastructure

From 1995 through 2011, the gross fixed capital formation (investment) in inland transport infrastructure as a percentage of the Gross Domestic Product (GDP) never descended below the threshold of 0.8% for OECD countries. This overall trend, coupled with the recent steady decline in the investment share of GDP, has led to each of the past four years being record lows (Figure 1). Part of the decline can be explained by Japan, given that it has followed a different trajectory from the rest of the OECD up until 2007 and that it has an economy large enough to affect the overall average. One of the main reasons for this gap is the budget cuts that occurred in Japan towards the end of the 1990s. As a result of those cuts, there were modifications of the allocation of revenues from gasoline tax, which had previously been earmarked for highway development and maintenance, leading to a reduced

level of investment in roads. However, this divergence has been diminishing in recent years; indeed, the percentage of GDP used for transport infrastructure investment in 2015 was 0.71% for the OECD aggregate and 0.74% when excluding Japan.

In the years following the economic crisis, investment in transport infrastructure was declining at a continuous rate, with the exception of 2009 when stimulus packages created a surge in spending. However, 2015 marks a slight change in this trend, with a 6.9% increase (+8.5% when excluding Japan) in the volume of inland transport infrastructure investment as compared to the previous year (Figure 3). This is the equivalent of nearly 18 billion more euros being spent on inland infrastructure in OECD countries (in constant prices). To give a more global comparison, while in 2014 the volume of investment in infrastructure had returned to roughly the same level it was back in 1995, in 2015 it was 7% higher than that reference point. Furthermore, if we remove Japan from the aggregate, the OECD average for investment spending was 34% higher in 2015 than it was in 1995.

► Possible signs of recovery from financial crisis

In Western Europe, the inland transport infrastructure investment share of GDP declined steadily from 1.5% in 1975, to 1.2% in 1980, and to 0.9% in 1995, after which it levelled off. Looking more closely at the latest data, we see that while the investment share of GDP has been falling since 2009, it has started to slowly rise in 2015 (Figure 2). In constant prices, this increase corresponds to 4.3 billion euros more being spent on inland transport infrastructure in 2015 as compared to the previous year for the 21 Western European Countries (WECs) included in the data. Examining country trends for 2015, the data shows that Norway continues to dedicate a relatively important percentage of its GDP to investment (1.3%), joined this year by Switzerland (1.4%), Greece (1.3%) and Turkey (1.2%).

► Slight rise in WEC's investment as a percentage of GDP in 2015

In North America, investment share of GDP has remained around 0.6% over the last twenty years, with a small peak in 2009 and 2010 reaching 0.7% (Figure 2). Similar to the WEC trend, North America showed a small but steady descent following the economic crisis up until 2015 and the latest data shows a slight rise. The increase in investment spending in the region is mainly due to the United States, which spent 16.8% more on transport infrastructure as compared to the previous year (in constant prices).

In light of the fact that transport infrastructure needs differ markedly for developing and transition economies as compared to those of developed economies, it is only natural that their investment spending patterns differ significantly as well. Specifically, the investment in inland transport infrastructure share of the GDP in Central and Eastern European Countries has remained consistently larger than that of Western European Countries. Up until 2003 CEECs spent around 1.0% of their GDP on transport infrastructure, a figure which grew sharply up until 2009, when it reached a peak of 1.9% (Figure 2). The share of GDP declined for five years following that peak, returning to the 1% level in 2013. However, the latest data shows it has just risen to 1.2%. Furthermore, while investment spending levels in constant euros nearly halved between 2009 and 2014, the rise in spending during the past year has lowered the difference between the 2009 peak and the present to 28%. Among the 15 CEECs included, the recent rise could be explained by increases in transport infrastructure spending of the Czech Republic (+89%), Slovakia and Serbia (+70% each), and Poland (+41%).

► First rise in investment levels in CEECs since 2009 (1.2% of GDP)

In the Russian Federation, the investment share of GDP has been high compared with Western European and North American countries, but nevertheless volatile throughout the period. The most recent trends show a decline in the investment share of GDP, descending from a peak in 2008 at 1.7% and reaching a new record low in 2015 at 0.9%. On the other hand, India has steadily increased since 2011, and has spent 1.4% of its GDP on investment in transport infrastructure in 2015. Given the strong

GDP growth rate in India for the past five years (13.2% on average in current local national currency), this trend could be an indication of the importance that is being placed in recent years on the development of transport infrastructure. In particular, India spent 26% more on investment in 2015 as compared to the previous year.

Distribution of spending among inland transport modes

The data presented in Figure 5 shows long-run trends in the modal distribution of investment in inland transport infrastructure in Western Europe and in Central and Eastern Europe. Since 2006, the proportion of inland transport spending on rail has been slowly but continuously increasing for Western European Countries (WEC-21). This trend is partly a reflection of political commitments towards the development of railways. The most recent data suggests that there have not been significant changes in this policy, with rail spending reaching a record high of 42% of the total inland investment for 2015.

Looking at the country level, the biggest contributor to this continued rise is the United Kingdom, spending 57% more (in current prices) on investment in railways in 2015 as compared to 2014. Within the largest economies outside of Europe, the countries with the most significant increases in rail spending in 2015 are the United States (+38%), India (+31%) and China (18%).

Among Central and Eastern European Countries (CEEC-15), there continues to be a gradual shift in investment from road to rail. The proportion of spending on rail as compared to other inland transport modes is the highest it has been since 1996, reaching 28% in 2015 (Figure 5). There was a general peak for CEECs in road spending around 2009, with a steady negative curve bringing it down to 69% in the latest data. The primary notable trend in the region is that the Czech Republic has more than doubled its rail infrastructure spending in 2015 when compared to the previous year.

Road maintenance

Observers in many countries have raised concerns about under-funding of road assets. Road maintenance is often postponed on the expectation that it will be made up in the future and that there is no risk of immediate asset failure. The available data shows that the balance between road maintenance and investment has been relatively constant over time in many regions, although there are admittedly certain cyclical variations. We estimate that the share of maintenance in total road expenditure for the past 20 years has remained within the range of 25% and 40% for Europe and North America. However, there are significant differences between regions as illustrated in Figure 6. Lack of data on the condition of road assets makes it difficult to verify possible underfunding of road assets.

In the 2015 data, the most notable changes in road maintenance expenditure are less spending in Australasia and CEECs. Both aggregates dropped by a few percentage points reaching 18% for the former and 26% for the latter. While the Australasia trend represents a slight decrease in road maintenance spending that is mainly due to Australia, the CEECs' trend appears to be more linked to increases in road investment spending, mainly from the Czech Republic, Poland, Serbia and Slovenia.

Capital value

Figure 7 shows the evolution of the countries for which we received the most complete data on capital value. Much work still needs to be done on synchronizing and clarifying differences in methods of calculating capital value, but we will nevertheless present some preliminary results in this brief. The country with the highest percentage of

▶ **India infrastructure investments continue to grow, reaching 1.4% of GDP in 2015**

▶ **Rail spending reached record high in 2015 for Western Europe (42%)**

▶ **CEECs continue to increase the share of rail infrastructure spending in 2015**

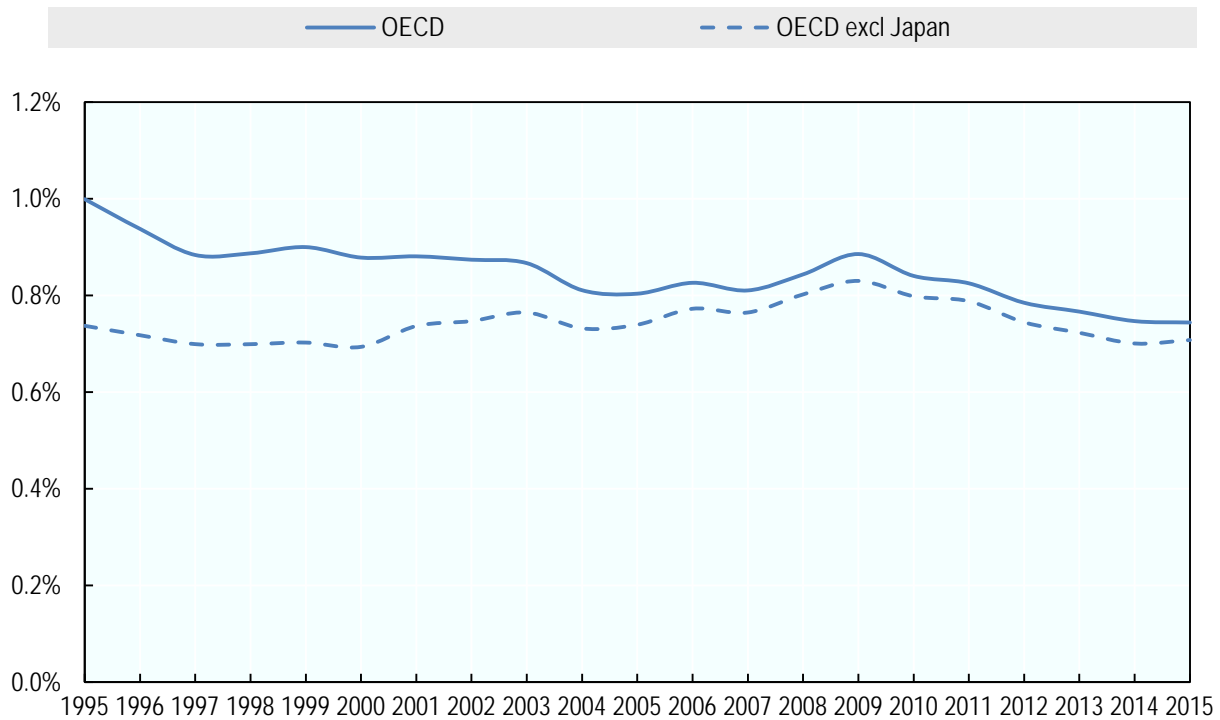
▶ **Challenge of identifying underfunding of road maintenance**

growth in capital value over the past two decades is Israel, with a strong positive slope reaching 201% in 2013. Finland, Switzerland, Norway, Sweden and the United States are the countries most centred on the middle of the graph, which seems to indicate a relative stability in the capital value of their inland transport infrastructure. While Finland and Switzerland remain relatively close to the 100% line, Norway, Sweden and the United States have been following a more positive trend reaching 157%, 143% and 142% respectively in 2013 when compared to 1996 levels. Lastly, Germany has a noticeable bit of variation as well, with an overall negative trend leading to its capital value being 19% less in 2013 than it was in 1996.

Concluding remarks

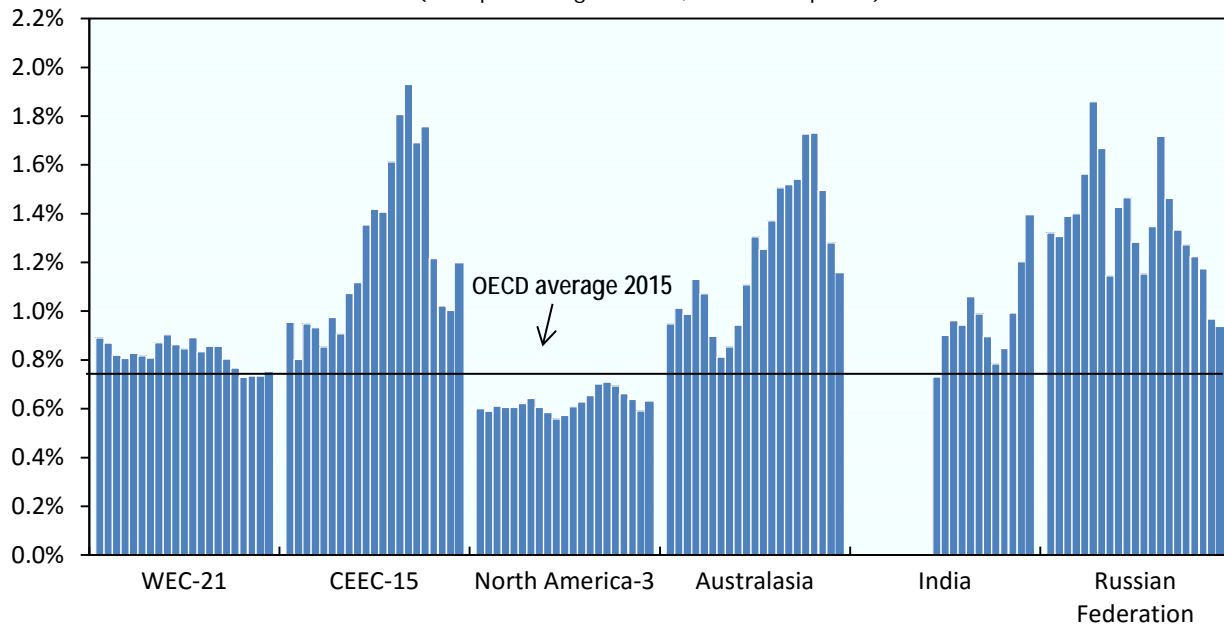
Despite the relatively long time series of the data presented in this brief, complexities with regards to data definition and coverage have rendered international comparisons difficult. In addition, the investment needs for transport infrastructure depend on a number of factors, such as the quality and age of the existing infrastructure, the geography of the country and the transport-intensity of the country's industrial production. The fact that the share of GDP dedicated to transport infrastructure seems to have remained constant in many countries suggests that 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 seen in cases like Australia, where the inland infrastructure investment share of GDP has remained relatively high (>1.0%) partly as a result of long-term political commitment for transport infrastructure spending. In light of these sources of influence on transport infrastructure spending, we advise caution when making comparisons of investment data between countries, and instead encourage studying the evolution of individual countries or aggregates over time.

Figure 1. **Investment in inland transport infrastructure in the OECD 1995-2015**
(As a percentage of GDP, at current prices)



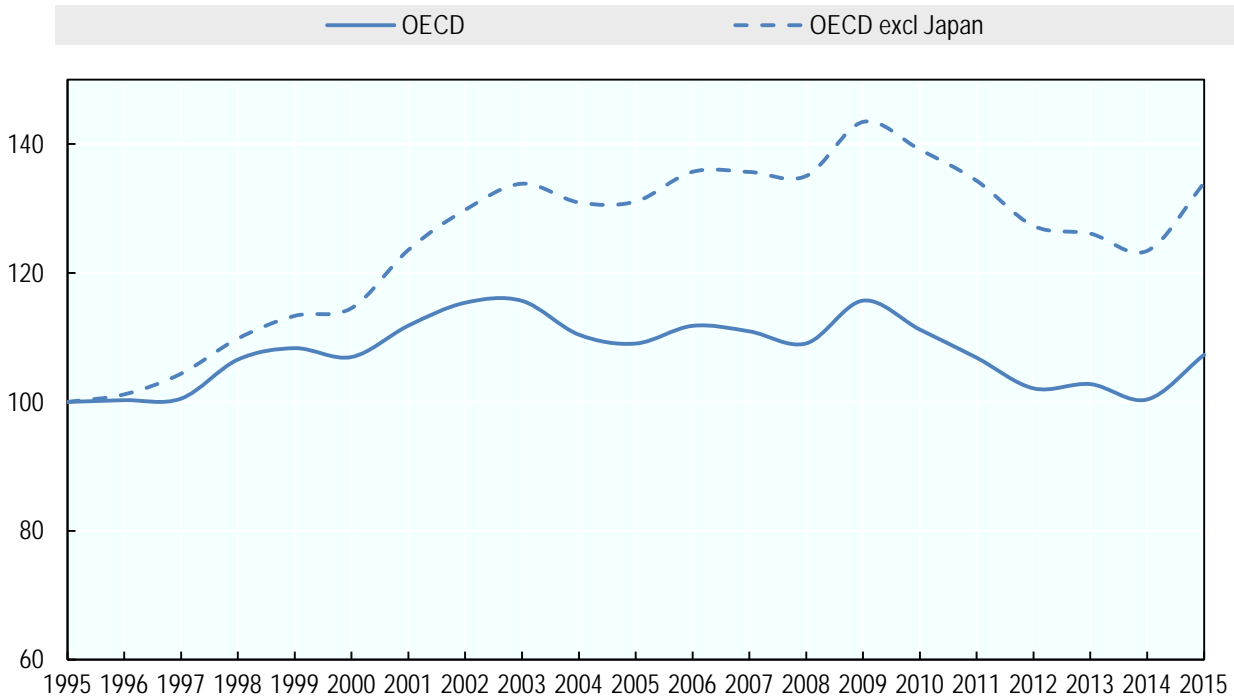
Source: International Transport Forum at the OECD. See methodological note for details of data and coverage.

Figure 2. **Investment in inland transport infrastructure by region 1995-2015**
(As a percentage of GDP, at current prices)



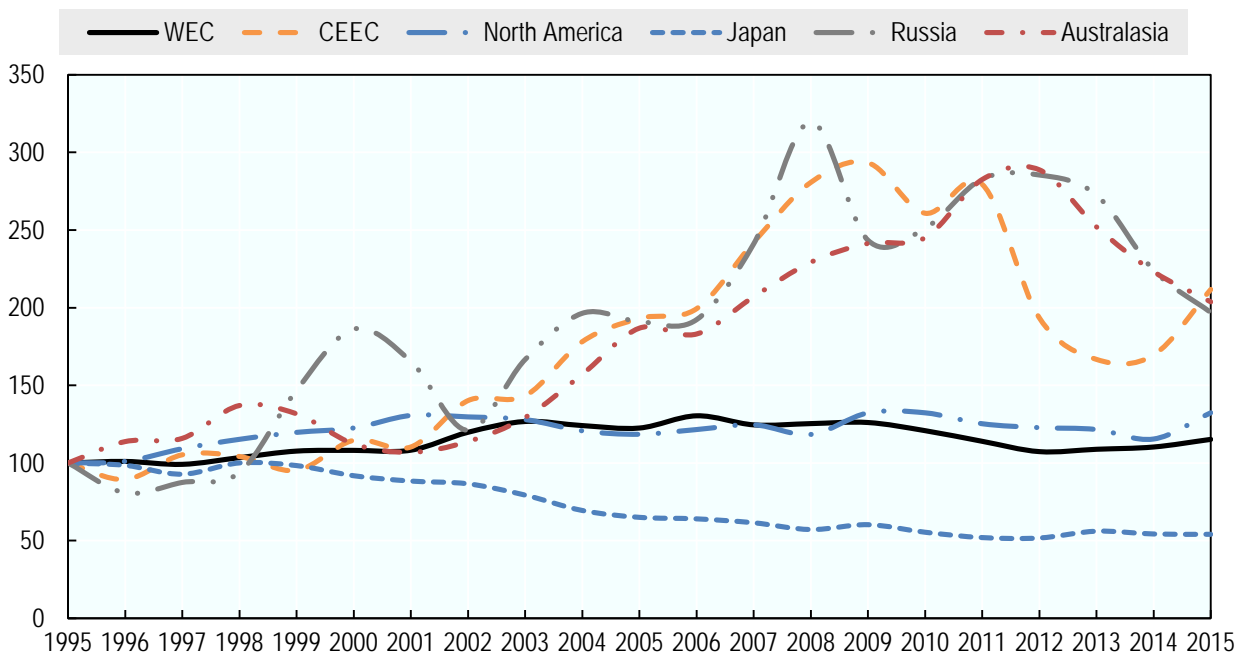
Source: International Transport Forum at the OECD.

Figure 3. Volume of investment in inland transport infrastructure 1995-2015
(At constant 2010 prices, 1995=100)



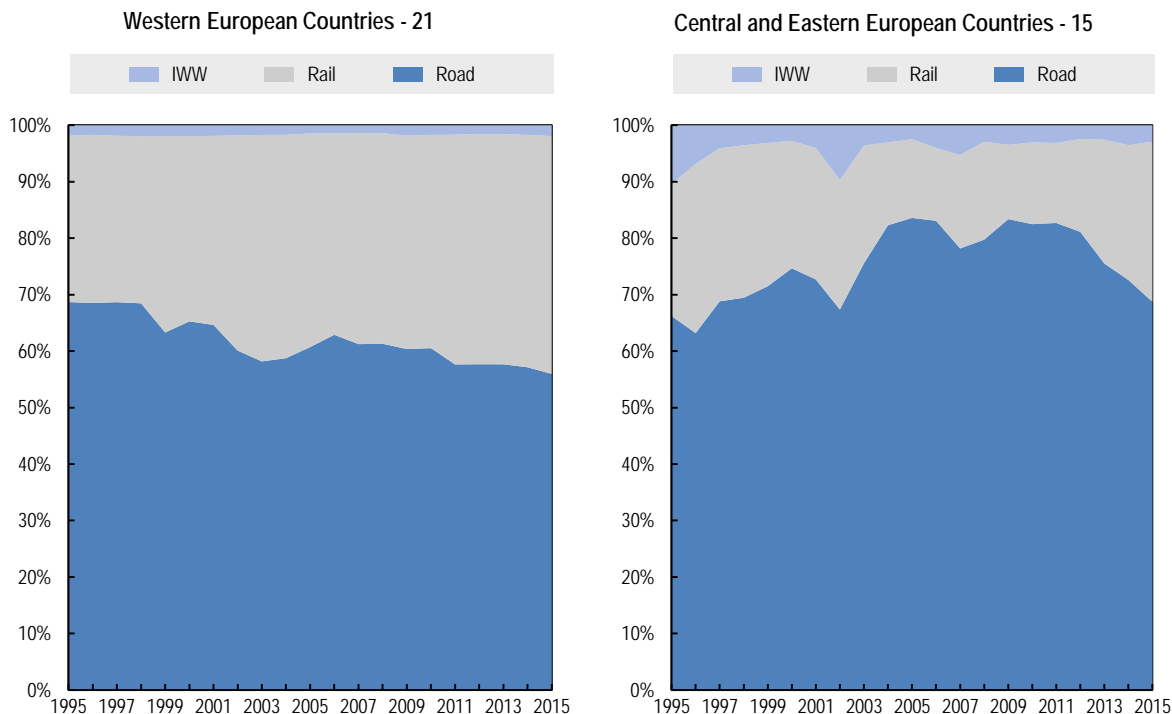
Source: International Transport Forum at the OECD.

Figure 4. Volume of investment in inland transport infrastructure by region 1995-2015
(At constant 2010 prices, 1995=100)



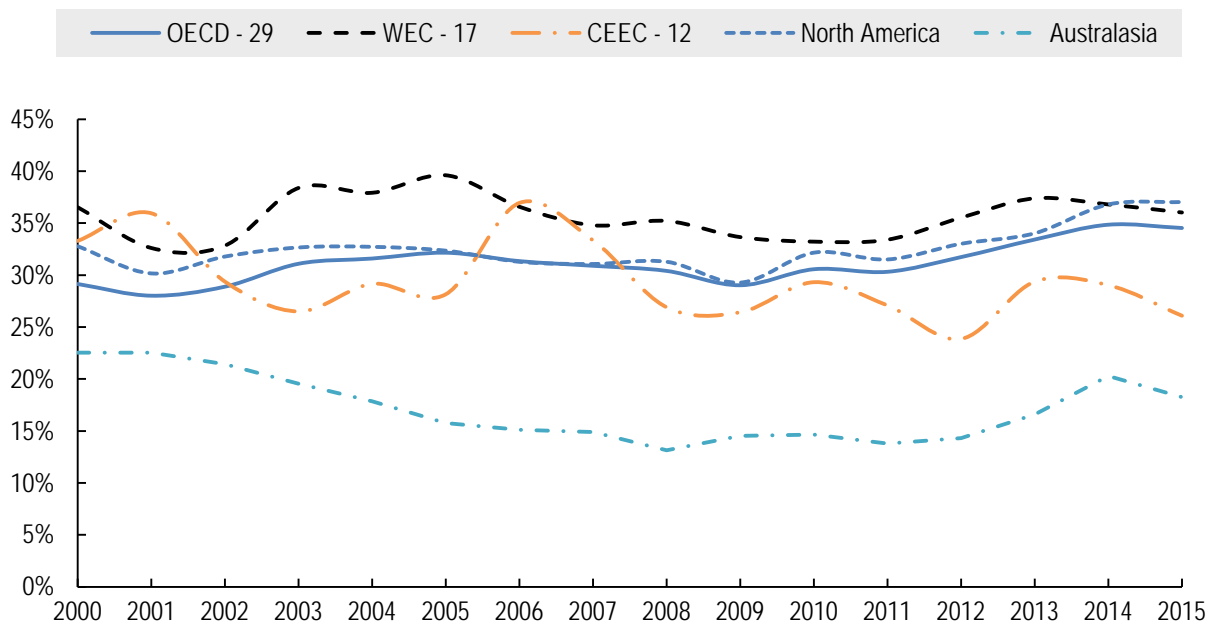
Source: International Transport Forum at the OECD.

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



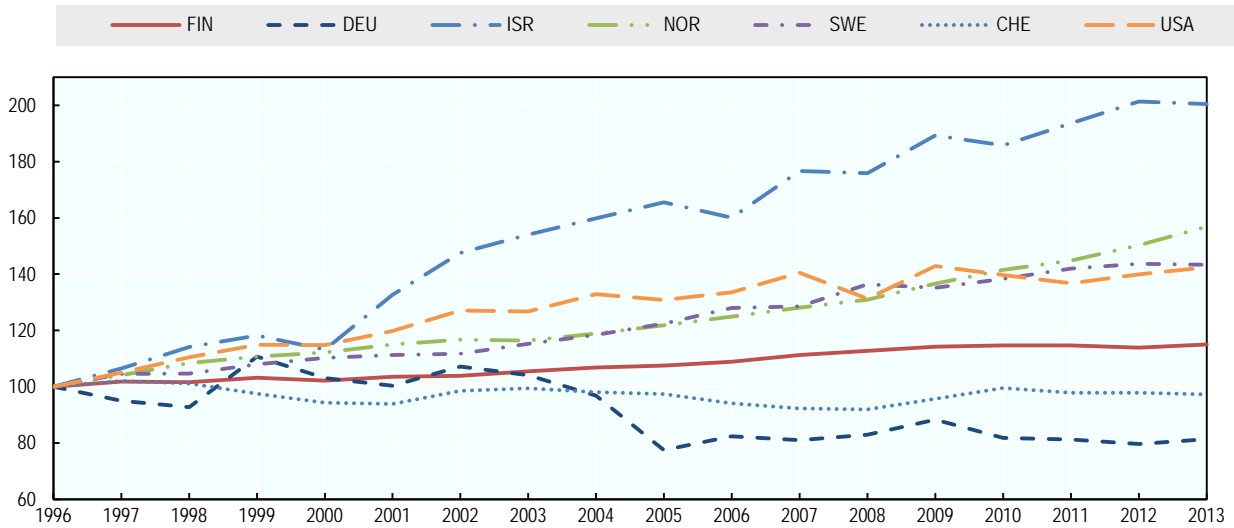
Source: International Transport Forum at the OECD.

Figure 6. Road maintenance share of total road expenditure 1995-2015
(At current prices)



Note: OECD 29 excludes Chile, Germany, Greece, Israel, Korea, and Spain. WEC 17 includes Austria, Belgium, Denmark, Finland, France, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Sweden, Switzerland, Turkey and the United Kingdom. CEEC 12 includes Albania, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Poland, Serbia, Slovakia and Slovenia.

Figure 7. Capital value for inland transport infrastructure 1996-2013
(At constant 2010 prices, 1996=100)



Source: International Transport Forum at the OECD.

About the statistics

The International Transport Forum statistics concerning expenditures on transport infrastructure for 1995 through 2015 are based on a survey sent to 52 of the 57 ITF member countries (excluding Argentina, Bosnia-Herzegovina, Belarus, Chile and FYROM). 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. Additionally, capital value was reintroduced this year into the questionnaire, including data for all of the above mentioned modes of transport.

The Secretariat has collected and published data on this topic since the late 1970s. 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 (2010) 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. Ideally, a purchasing power parity corrected general index would be used; however, none currently exists for transport infrastructure investment. Thus, a cost index for construction on land and water was used whenever possible. When such indices were not available, a manufacturing cost index or GDP deflator was used.

Despite the relatively long time series, complexities with regards to data definition and coverage have rendered international comparisons difficult. Indicators presented in this report, such as the investment share of GDP, depend on a number of varying factors, such as the quality and age of existing infrastructure, the maturity of the transport system, the geography of the country and the transport-intensity of its productive sector. We therefore advise caution when making comparisons of investment data between countries, and instead would encourage studying the evolution of individual countries or aggregates over time.

Aggregates

Unless otherwise specified

OECD: Excludes Chile.

WECS: Include Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey 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 on road or rail investment are estimated using secondary sources: Albania 1995, Bulgaria 1995-2004, Estonia 2012-2015, FYROM 2012-2015, Georgia 2015, Greece 1995-1999 & 2014-2015, Ireland 2008-2015, Italy 2015, Japan 2014-2015, Korea 2014-2015, Malta 2015, Mexico 2014-2015, Moldova 2015, the Netherlands 1995-1996 & 2012-2015, Norway 2015, Portugal 2011 & 2014-2015, Romania 2015, Switzerland 2014-2015.

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://stats.oecd.org/Index.aspx?DataSetCode=ITF_INV-MTN_DATA

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