

INVESTMENT AND MAINTENANCE IN INLAND TRANSPORT INFRASTRUCTURE 1995-2008

SUMMARY OF AGGREGATE TRENDS

1. Introduction

The International Transport Forum statistics on investment and maintenance expenditure on transport infrastructure for 1995-2008 are based on a survey sent to 51 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, as well as maintenance expenditures financed by public administrations. Based on the responses received before 17th March 2010, data for 39 countries is analysed here.

The ITF has collected and published data on this topic since the late 1970s. Member countries supply data in current prices. The latest survey covers the years 1995-2008. 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, relevant price indices are required. The Secretariat has devoted a significant amount of effort collecting relevant price indices in order to make calculations at constant prices. Where available, a cost index for land and water construction 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. We therefore call for caution when comparing investment data between countries.

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/inindex.html>.

2. Trends in inland transport infrastructure investment and maintenance

2.1. Trends in relation to GDP

Gross fixed capital formation (investment) in inland transport infrastructure as a percentage of Gross Domestic Product (GDP) has declined steadily in Western Europe since the 1970s. Our first reports from the 1980s noted that the average share fell from 1.5% in 1975 to 1.2 % in 1980 and further to 1.0% in 1982 after which it levelled off (ECMT 1998, 1992, 1999).

This investment level of 1% per GDP remained a norm for many years such that it became *de facto* political benchmark and recommendation for infrastructure investment, though with no theoretical or research basis behind it (ECMT 1997). Obviously, the investment share of GDP dedicated to transport infrastructure depends 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, etc.

Our most recent data show that investment in inland transport infrastructure as a percentage of GDP in the *Western European countries (WECs)*¹, has continued to decline, 1.0% in 1995 and less than 0.8% in 2007 and 2008, the lowest recorded level since our records began (Figure 1). The GDP share of inland transport investment in the WECs is apparently approaching that of the United States, where the share has remained relatively constant over time, at around 0.6 - 0.7% of GDP.

Data for Japan indicates some interesting differences to the analysis above. Historically, transport infrastructure investment has been relatively high in relation to GDP but has been in decline since the 1990s. The major source of funding for road investment in Japan has been earmarked gasoline and registration tax revenues for highway development and maintenance. It seems that the direct funding mechanism via earmarked tax revenues was partly responsible for the relatively high level of transport investment. However, since the end of the 1990s, expenditure has been affected by general budget cuts, explaining partly the decline in investment relative to GDP.

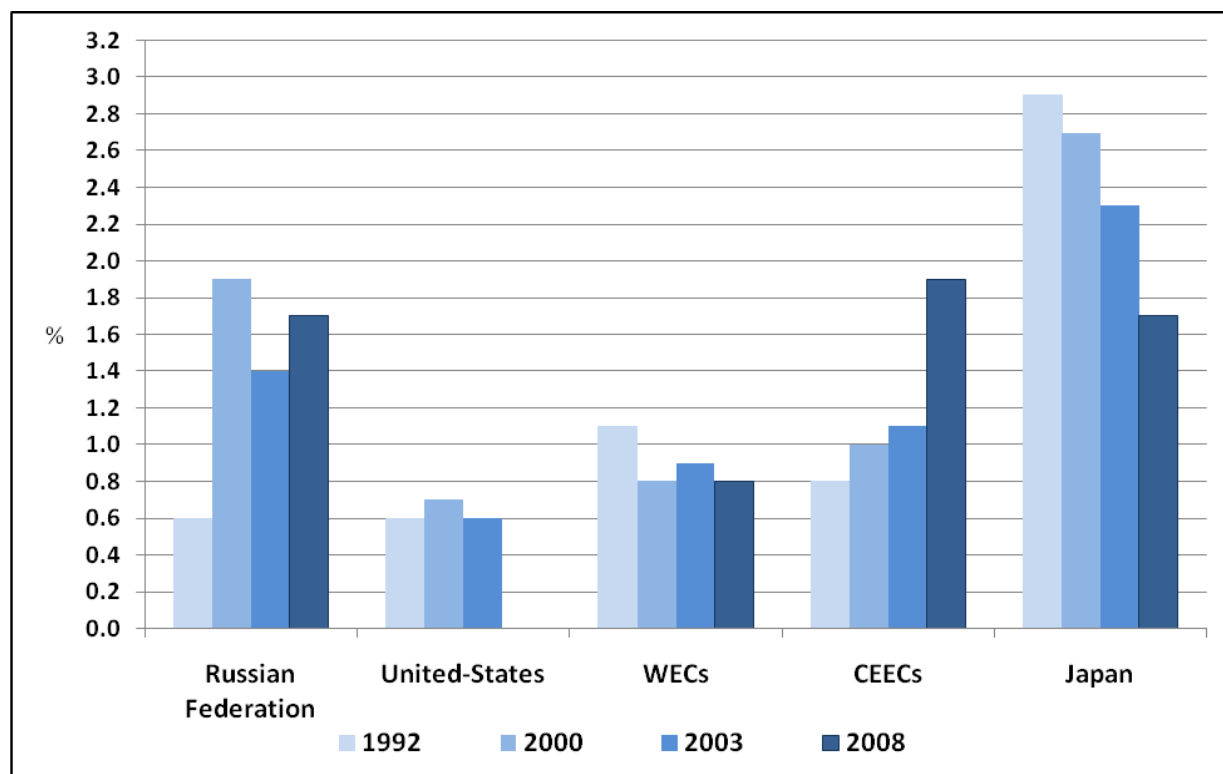
In the *Central and Eastern European countries (CEECs)*² the share of investment in inland transport infrastructure, which until 2002 had remained at around 1% of GDP, has grown sharply, jumping to 1.9% in 2008 – the highest figure ever reported by these countries. In the *Russian Federation* investment was 1.9% of GDP in 2000. Despite growth in investment volume, the share of inland transport infrastructure investment declined to 1.4% of GDP by 2003 because of the even stronger real growth in GDP. Data for 2008 shows renewed growth in investment, reaching 1.7% of GDP.

The rising levels of investment in the Central and Eastern European countries certainly reflect efforts to compensate for the earlier underinvestment in the road network capital stock, reinforced by the demands of growing economies. It is also clear that aid from the European Union as part of the accession process for most of these countries played a major part in this development.

¹ Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Luxembourg, Spain, Sweden, United Kingdom

² Croatia, Czech Republic, Estonia, FYR Macedonia, Hungary, Latvia, Poland, Romania, Serbia, Slovakia and Slovenia

Figure 1. Investment in inland transport infrastructure as a percentage of GDP
at current prices



Note: CEECs and WECs in Euros, current prices and exchange rates. Japan 2008 refers to 2007.
Source: International Transport Forum, [Investment in Transport Infrastructure](#).

2.2. Volume of investment

In the *Western European countries*, the volume of investment (excluding change in prices and better reflecting the physical output) grew by only around a half per cent from 1995 to 2000. This period of slow growth appeared to come to a halt in 2001 when investment in inland transport infrastructure increased by 18% in real terms through 2003. However, new data show that the level of investment has since declined. Investment in inland transport infrastructure fell by over 4% from 2003 to 2007 in real terms. The latest data show 2.5% growth from 2007 to 2008 but the volume of investment is still nearly 2% lower than in 2003.

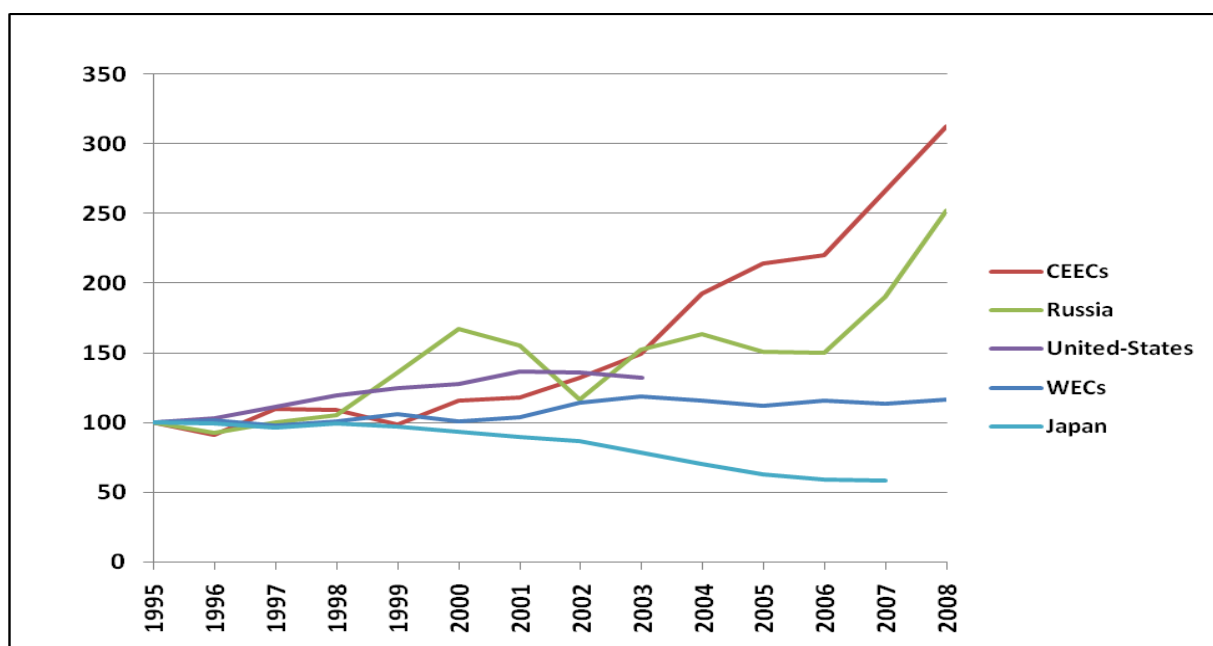
The volume of inland infrastructure investment in the *United States* grew by 36 per cent from 1995 to 2001. However, data show a falling trend since 2001. Lack of comparable data from 2003 onwards has limited our further analysis, but available data on investment in highways and local roads suggest a continuation of this trend until 2007. The latest data for highways and roads show 5% growth in 2008 in real terms, driven by the federal economic stimulus spending.

The volume of infrastructure investment has accelerated strongly in *Central and Eastern European countries* since 2003. This growth, reported also in our previous survey, has shown no signs of slowing down. Investment in inland transport infrastructure increased over 17% in real terms from 2007 to 2008 and the level is currently over 100% higher than the point at which growth began, in 2003.

Our data on the *Russian Federation* also show that the growth in the volume of inland infrastructure investment continued strongly in 2008, rising to a new peak in real terms. The volume of investment grew 33% from 2007 to 2008.

Data for Japan likely reflect likely both the declining funds available, especially for road investment, and the maturity of the national transport system. Inland transport infrastructure investment in 2007 was nearly 42% lower than in 1995 in real terms.

Figure 2. Trends in annual investment in inland transport infrastructure (1995=100) at constant 2005 prices



Note: CEECs and WECs in Euros, constant prices, 2005 exchange rates.
 Source: International Transport Forum, [Investment in Transport Infrastructure](#).

2.3. Modal split of investment

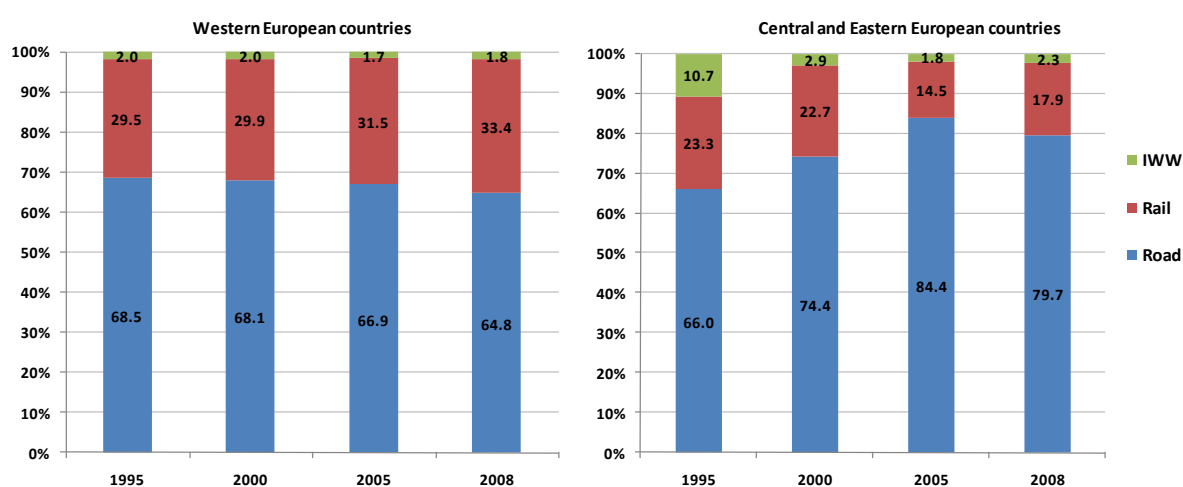
Data presented in Figure 3 show long-run trends in the modal share of investment. In the *Western European Countries*, the share of investment in road infrastructure compared with that in rail infrastructure has continued to decline. While the share of road investment amounted to close to 80% in Western Europe in 1975, the latest figures show a strong decline.

According to our latest data, the share of road investment amounted less than 65% of total investment in inland transport infrastructure in 2008. We had already witnessed a fall from nearly 69% in 1995, to slightly below 67% in 2005. The last two years in particular show a sharp increase in rail share. For inland waterways, there has been a slight decrease in recent years (Figure 3).

The trend observed in our data for the Western European Countries is certainly a reflection of the political commitment to the railways, and the recent data does not seem to indicate any change in this commitment, especially in the European Union.

Whereas Western European countries have increasingly directed their investment toward rail, *Central and Eastern European countries* are investing heavily in roads. While this trend was noted in our previous surveys, the last two years (2007 and 2008) seem to indicate a turn in the trend, with an increase in the modal share of rail investment in 2008. This is the second consecutive year with a significant increase. Rail investment, as a share of total investment in inland transport infrastructure, reached 17% in 2007 and over 18% in 2008. The share had constantly fallen from over 35% at the end of the 1990s to only 13% in 2006. While the volume of road investment has continued to grow strongly, the change in trend can be traced to the even stronger growth, in real terms, in the volume of rail investment in 2007 and 2008 - especially in Hungary, Poland and Romania.

Figure 3. Distribution of infrastructure investment between modes, selected years
Euros, current prices and exchange rates



Source: International Transport Forum, [Investment in Transport Infrastructure](#).

2.4. Trends in maintenance

We observe marked differences in the level of investment between Western European Countries (roughly described as mature economies) and Central and Eastern European Countries (growing economies). In this section we examine differences in expenditure on infrastructure maintenance. If we assume that the decline in the share of investment in GDP reflects the fact that the main transport infrastructure is in place, we might expect that the volume of maintenance spending is increasing faster than investment in more mature economies.

We examine these differences mainly between WECs and CEECs. Lack of data on maintenance has resulted in a slightly different composition of countries included in the following analysis to that shown above.³

Despite data limitations and notably uncertainty over the allocation of spending between maintenance and new build in some cases, our hypothesis seems to hold true for the WECs

where the volume of maintenance on inland transport infrastructure has increased more rapidly than the volume of investment; the former grew by 76%, while the latter by around 35% from 1995 to 2008

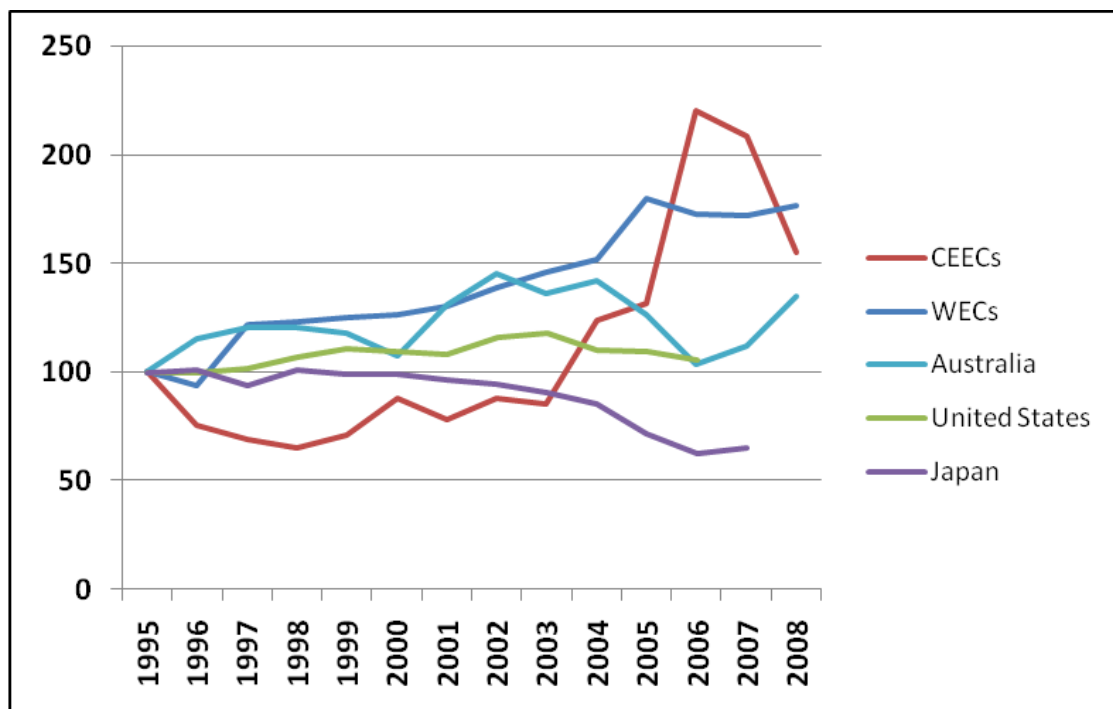
³ For the comparison of investment and maintenance, WECs include Denmark, Finland, France, Iceland, Luxembourg, Sweden, and the United Kingdom. CEECs include Croatia, Czech Republic, FYROM, Hungary, Latvia, Poland, Serbia, Slovakia, and Slovenia.

(Figure 5). This has also resulted in an increased share of maintenance in total inland infrastructure expenditure (Figure 6).

In CEECs, the volume of maintenance has not increased quite as rapidly as investment and hence the share of maintenance on total expenditure fell from over 45% in 1995 to less than 30% in 2008. The increase in maintenance in 2006 and 2007 were contributed by increased road maintenance in Hungary during these years. However, data for 2008 seems to indicate a return to the previous declining levels.

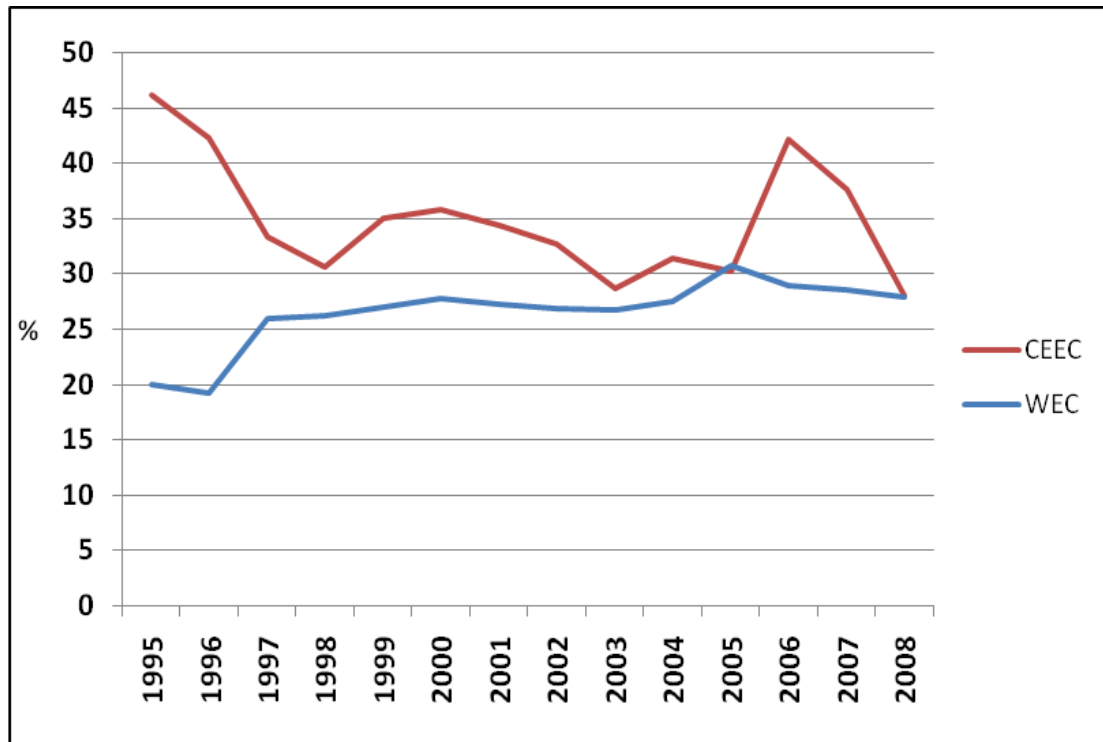
The volume of maintenance in the United States has grown slightly slower than the volume of investment. Both trends show decline in recent years. Similarly, in Japan overall budget cuts have affected both investment and maintenance levels, both declining strongly during the period 1999-2007.

Figure 4. Trends in maintenance in inland transport infrastructure (1995=100)
at constant 2005 prices



Source: International Transport Forum, [Investment in Transport Infrastructure](#).

Figure 5. Maintenance share of total inland transport infrastructure expenditure
Euros, current prices and exchange rates



Source: International Transport Forum, [Investment in Transport Infrastructure](#).