

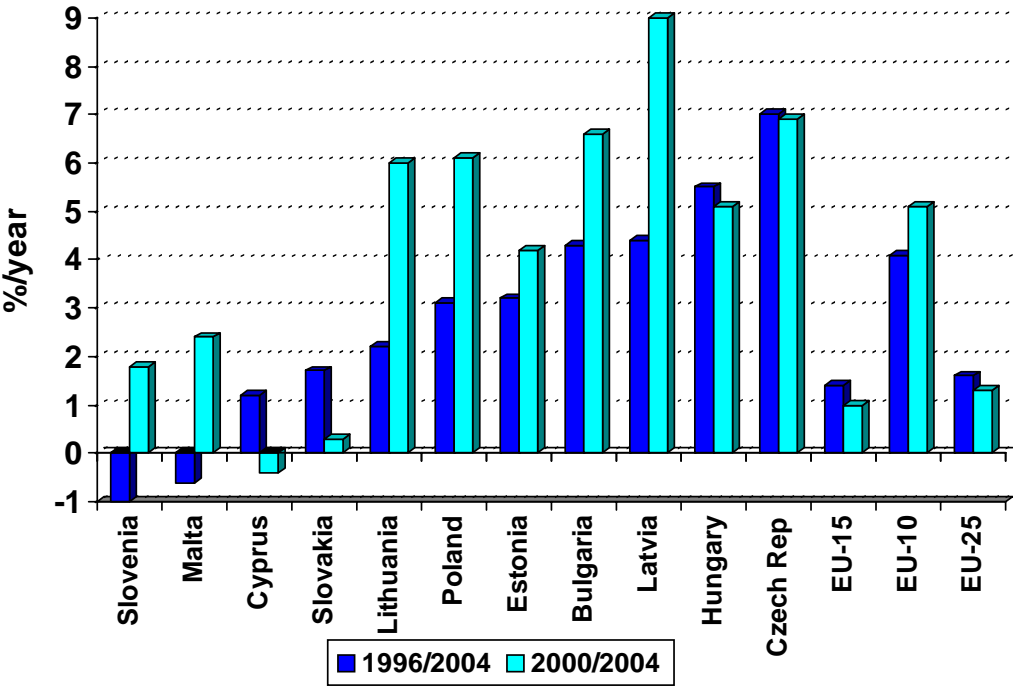
3. Energy Efficiency Trends in the Transport Sector

3.1. Energy use patterns

Rapid growth until 1999 and a net slowdown afterwards

The energy consumption of the transport sector increased very rapidly between 1996 and 2004 in the EU-10 (at about 4%/year) (**Figure 3-1**). Since 2000, there has even been an acceleration (5%/year on average for EU-10), with 5 countries with a demand growth above 6%/year. This situation contrasts with that of EU-15 countries, where the progression is much slower and has even slowed down since 2000 (around 0.9 %/year over the period 2000-2005). As a result of this rapid growth, the share of transport in final energy consumption has now reached 22 % in the EU-10, up from 17 % in 1996. In the EU-25 as a whole, the share of transport is 30% (348 Mtoe in 2004), up from 29 % in 1996 (304 Mtoe).

Figure 3-1: Trends in the energy consumption of transport in the EU-10

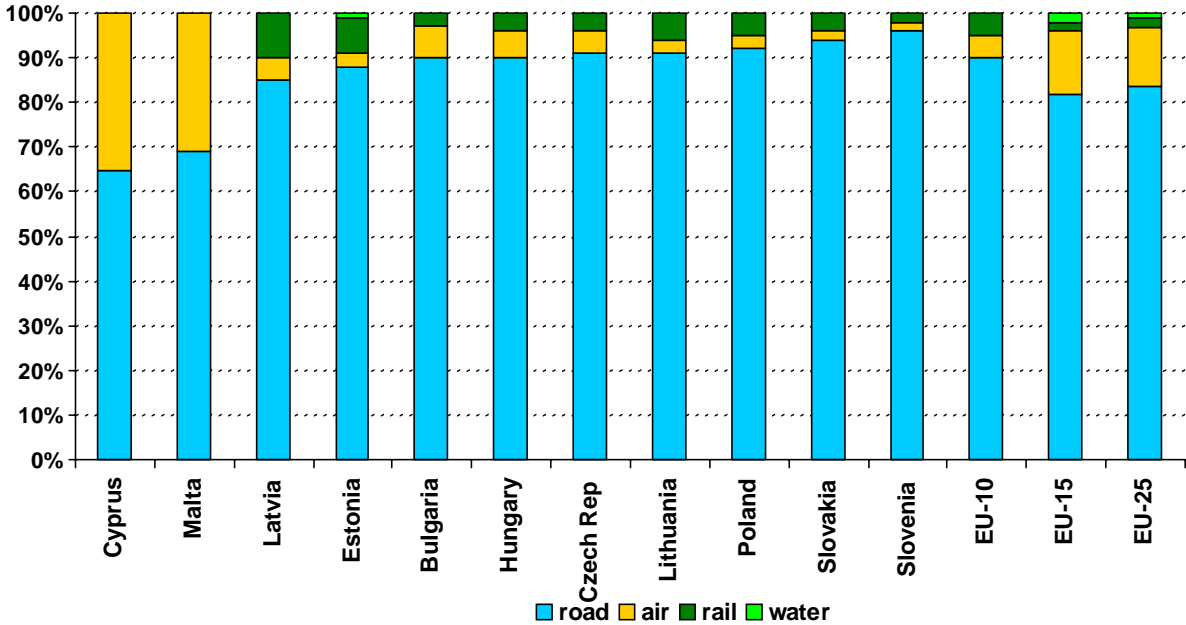


The progression of diesel, already very rapid in the EU-15, has increased even more in New Member Countries: from 38% of total transport consumption in 1996 to 48% in 2004 for EU-10 and from 41% to 51% in the EU-15. Diesel represents now half of the transport consumption in the EU-25 in 2004.

For most NMCs, road transport share is higher than in EU-15 countries

Road transport represents 90 % of total transport consumption in 2004 of EU New Member Countries (EU-10), compared to 82% in the EU-15 (**Figure 3-2**). Apart from Cyprus and Malta, air transport plays a lower role in these countries compared to EU-15, with some very large airports (e.g. UK, France, the Netherlands). Rail transport represented around 5 % of total transport energy demand in EU-10, which is much higher than in EU-15 countries (2%). Domestic water transport is negligible.

Figure 3-2: Energy consumption of transport by mode



About 60% of road transport consumption is for cars, but this share is in decline

Cars account for about 60% of road transport consumption (**Figure 3-3**). The share of cars is declining in almost everywhere. On average, this reduction is higher in EU-15 countries than in new EU members (EU-10) (60 % in 2004 compared with 58 % in 1996 for EU-15 and from 62% to 61% for EU-10). In Hungary and Slovenia, the share of cars is estimated around 70%. The lack of data on the consumption of other vehicles, in particular on road goods transport (trucks and light duty vehicles), limits the possibilities of analysis in that sector.

Figure 3-3: Share of cars in road transport energy consumption⁴³

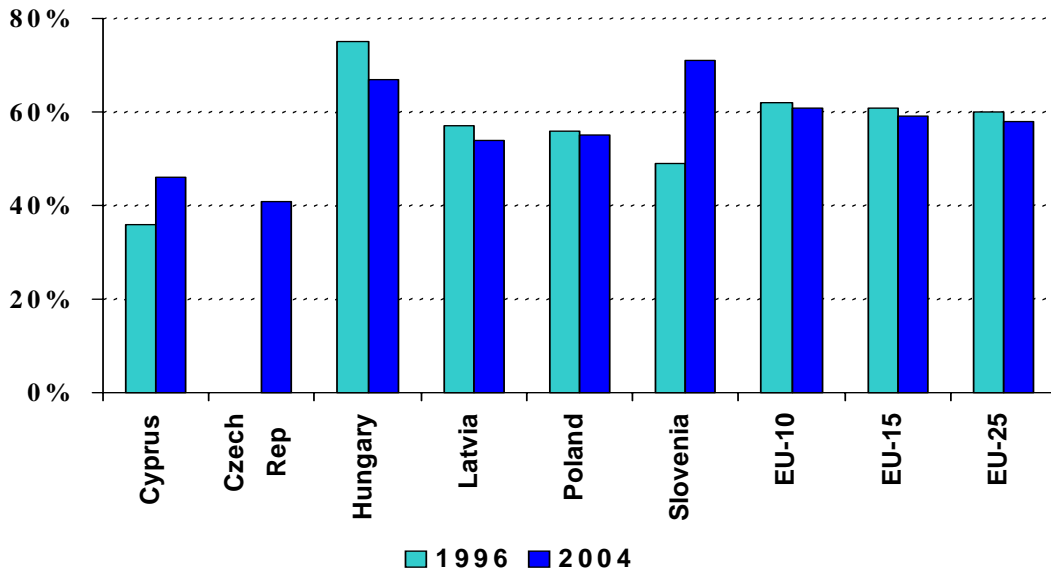
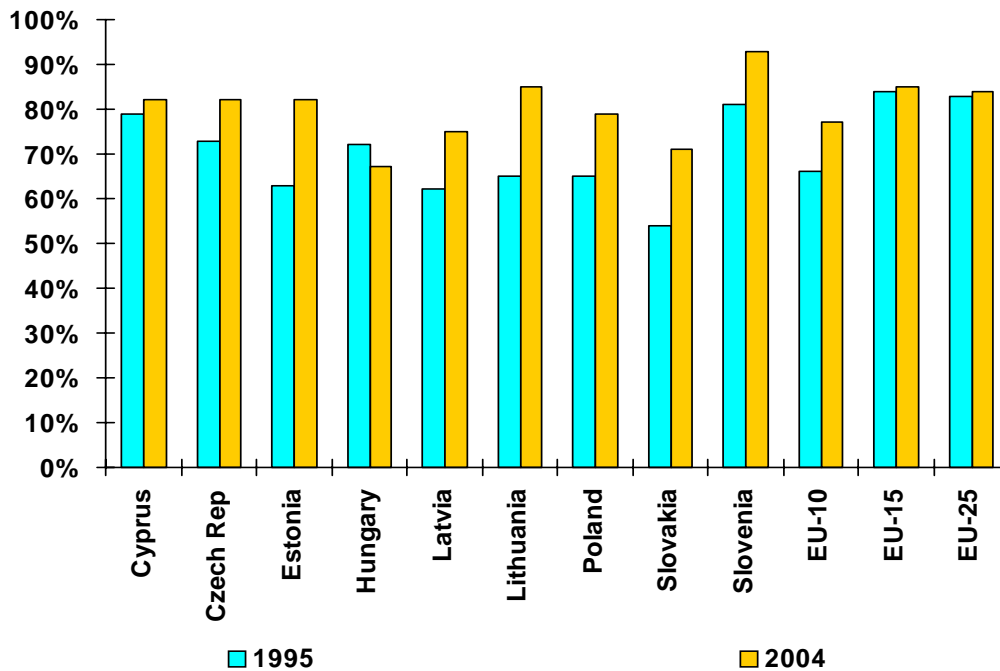


Figure 3-4: Share of cars in passenger transport

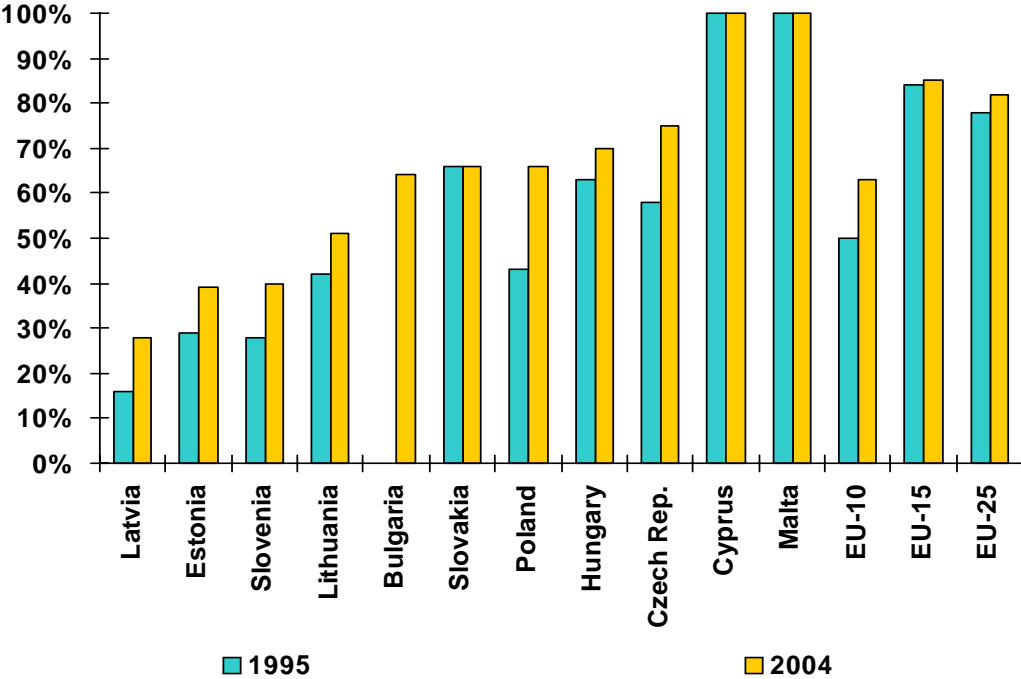


⁴³ EU-10: preliminary data; EU-10 based on 80% of consumption and EU-25 on 98%

Road transport increases rapidly its market share in both passenger and goods transport

In almost all NMCs, cars increase its market share compared to public modes of transport (rail and buses): on average for EU-10, the share of cars in total passenger traffic increased from 66% in 1995 to 77% in 2004 (Figure 3-4). The same trend can be observed for the transport of goods (Figure 3-5): the market share of trucks and light vehicles went from 50 to 65% over the same period, which represents a very large modal shift. Due to the liberalisation of the economy for goods transport and higher incomes for cars are the main driving forces behind these very large modal shifts (+ 13 points for trucks and +11 points for cars). These modal shifts are probably the main factors behind the rapid increase in the energy consumption of that sector.

Figure 3-5: Share of road in transport of goods



3.2. Energy efficiency trends in road transport

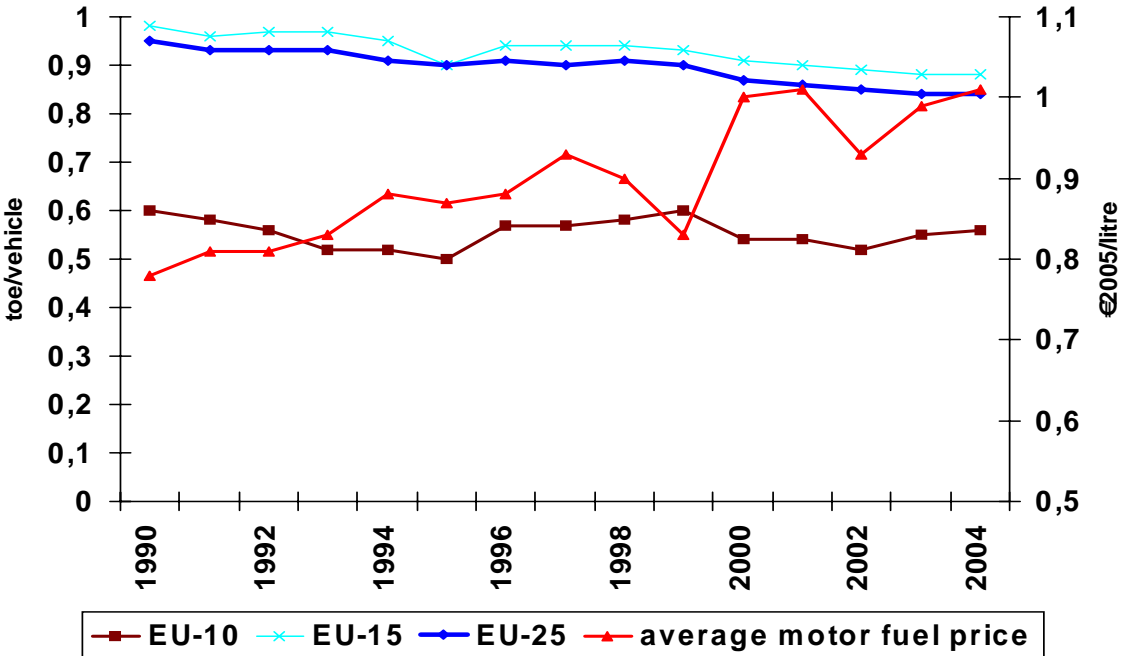
On average a decrease in the average consumption of road transport per vehicle since 1999, with different trends according to the countries

For New Member Countries, the average energy consumption of road transport per equivalent car is on average one third lower than in the EU-25⁴⁴ (Figure 3-6): this reflects probably a lower utilisation of vehicles (in terms of distance travelled per year), in particular cars. Since 1999, this unit consumption has been decreasing both in

⁴⁴ Overall energy efficiency of road transport trends is assessed with an average consumption per equivalent car, in which the different types of vehicles are accounted for in equivalent car terms (see glossary).

EU-10 countries and in the EU-25 as a whole, as result of the sharp price increase. In the EU-25, the average energy consumption of road transport per equivalent car has been decreasing since 1999 (by about 1 %/ year).

Figure 3-6: Consumption per car equivalent for road transport in the EU-25



In about half of countries, vehicles are becoming more efficient, as shown by the decrease in the average fuel consumption of road transport per vehicle in car equivalent (**Figure 3-7**). This is the same trend as in EU-15 countries. In the other half, this unit consumption is increasing, especially in Hungary and the Czech Republic. This increase is probably due to road transport of goods; however, lack of reliable data breaking down the consumption by type of vehicle is a severe limitation to a good interpretation of the trend observed.

Cars: different trends and performance level in New Member Countries

As opposed to EU-15 countries, where there is a regular monitoring, there is no data on the energy performance of new cars in New Member Countries. We can expect that the trends are similar to EU-15 countries. For the performance of the existing stock, data are available for only 4 countries. For these countries, the average specific consumption of cars in 2004 ranged from a minimum of 6.1 to 8.2 litres per 100 km (**Figure 3-8**). For EU-15 countries, this specific consumption ranged from 6.6 to 8.8 l/100 km (average of 7.6 l/100km).

Figure 3-7: Consumption per vehicle for road transport (toe/equivalent-car)

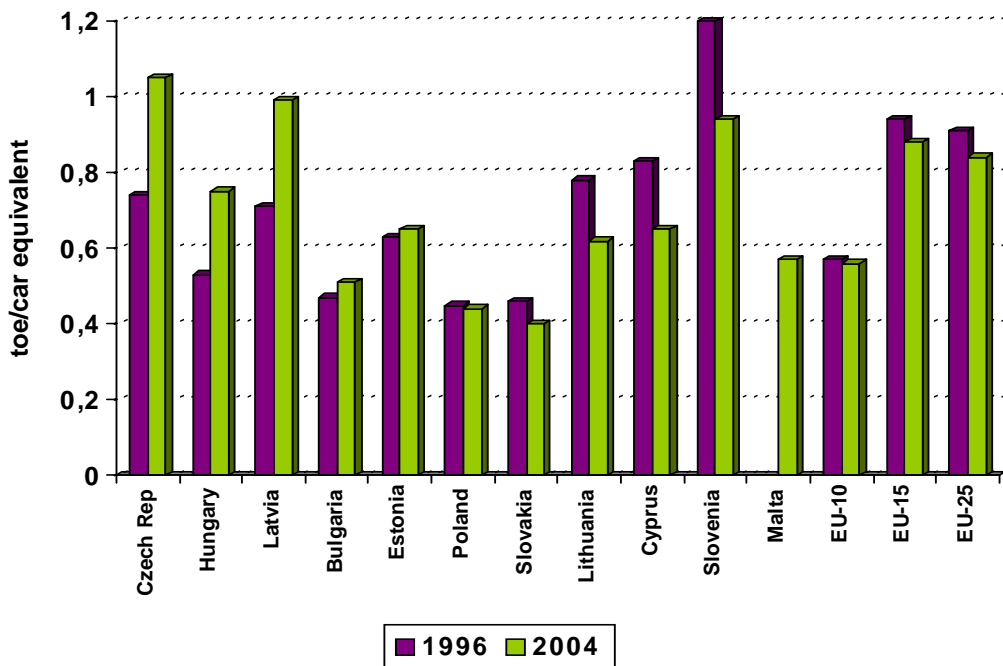
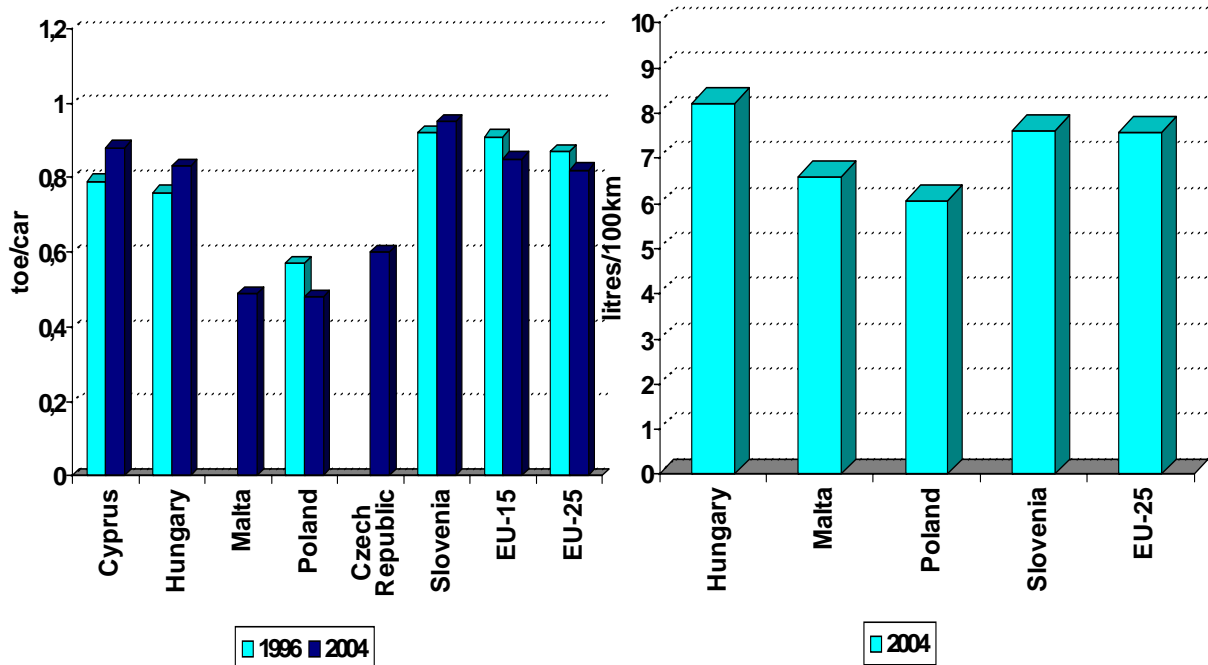


Figure 3-8: Annual and specific consumption of cars in 2004 in EU-10 countries



There are two more countries with estimate of the annual consumption of a car in toe per year (6 countries in total) (Figure 3-8). This indicator is usually estimated from a breakdown of motor fuel sales by type of vehicle. As underlined previously for total

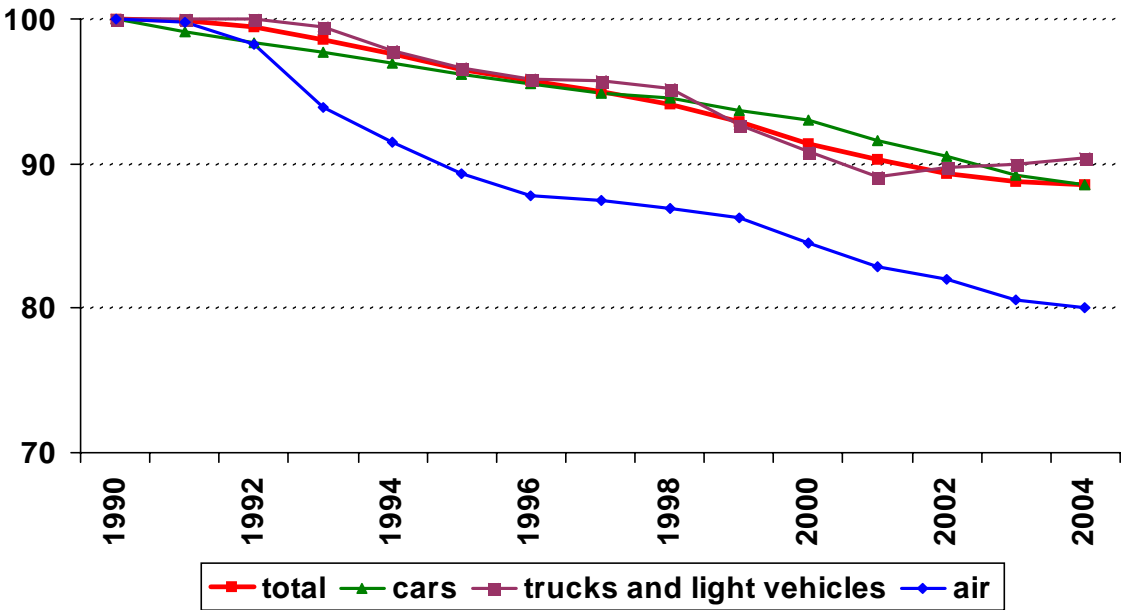
road transport, there are different trends according to the countries: increasing annual consumption in Hungary, Cyprus and Slovenia and decrease in Poland; for two countries, the time series is too short to show a trend. Without additional data on the two drivers of this unit consumption, the specific consumption and the annual distance travelled per year, it is difficult to draw any conclusions.

3.3. Energy efficiency trends

Regular improvement of the energy efficiency of transport in the EU-25 (12 %)

As shown by ODEX, the energy efficiency of transport in the EU-25 improved by about 12 % between 1990 and 2004 (0.9 %/year) (Figure 3-9)⁴⁵. This progress was slightly faster since 1996 (1.1%/year). Greater progress was achieved in the energy efficiency of both cars and airplanes than was the case for the rest of the sector. For the road transport of goods no further progress has been registered since 2001.

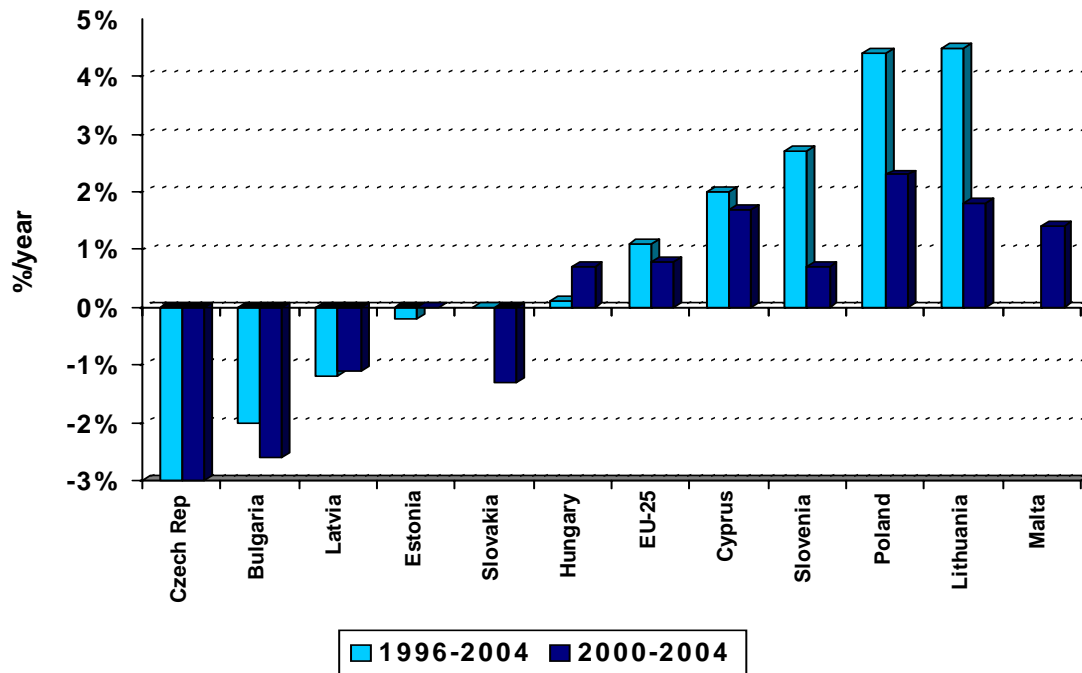
Figure 3-9: Energy efficiency progress in transport in the EU-25



In only six new EU members, transport sector actually improves its energy efficiency; in the other countries, there was deterioration. In most countries there has been a slowdown since 2000 (Figure 3-10).

⁴⁵ See in Annex the definition of ODEX for transport.

Figure 3-10: Energy efficiency progress in transport in EU NMCs



3.4. CO₂ emissions

CO₂ emissions in the transport sector have increased by 25 % since 1990

In all other sectors apart from transport, CO₂ emissions from energy uses are below their 1990 levels. The emissions of the transport sector have increased by 25 % since 1990, compared to a reduction of about 15 % in industry and 5 % in households, services and agriculture. Since 2000, emissions from transport have increased by 6 %, compared to an increase of 4% for total emissions and emissions of households, services and agriculture and a reduction of 2% for industry: although they have slowed down, emissions from transport are still driving total CO₂ emissions from energy use.

Road transport of goods is driving CO₂ emissions from transport

The emissions from road goods transport increased by almost 45 % and made up 36 % of the emissions of the sector in 2004 (compared with 31 % in 1990). This is the main source for the rapid growth in emissions from this sector. The emissions from cars increased by 25 %, the same as the total emissions of the sector (**Figure 3-11**).

CO₂ savings have offset 20 % of the increase in CO₂ emissions since 1990

More vehicles on the road and the increase in traffic should have increased CO₂ emissions by 245 Mt CO₂ between 1990 and 2004 in the EU-25. However, savings in

CO₂, which were almost exclusively due to the reductions in the emissions from cars, limited this progression to 190 Mt (Figure 3-12).

Figure 3-11: Variation of CO₂ emissions from transport (EU-25)

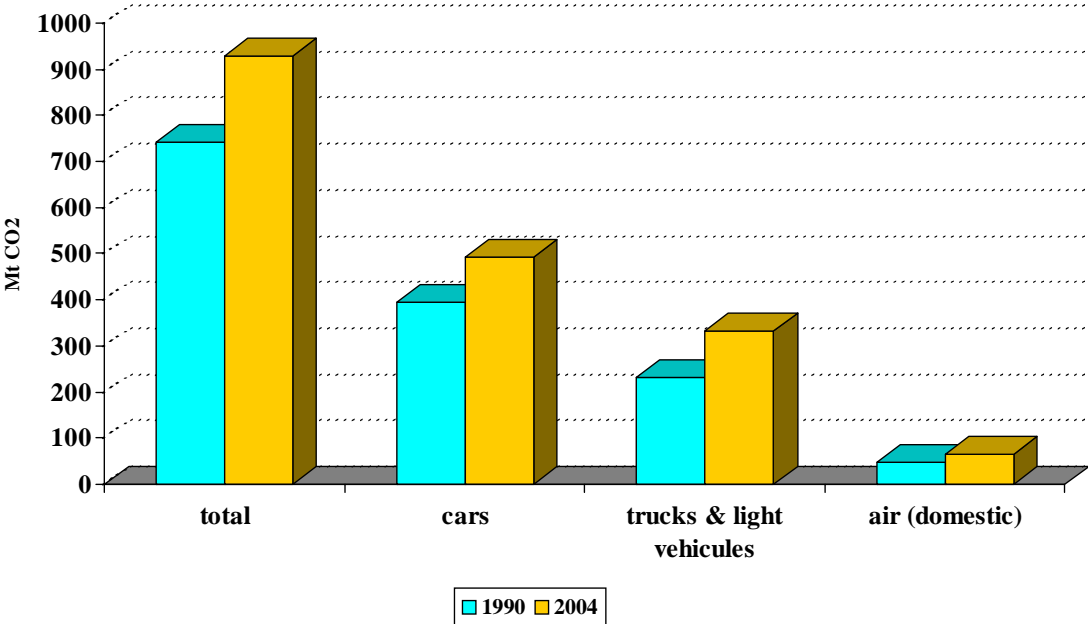
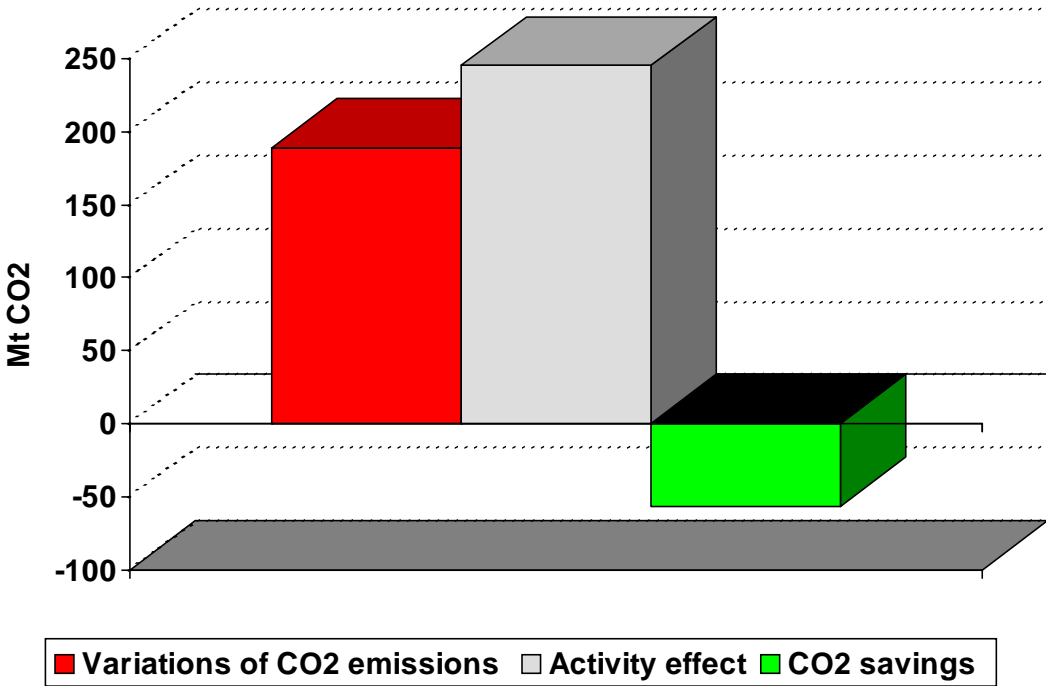


Figure 3-12: Variation of CO₂ emissions in transport (EU-25)



3.5. Conclusions

- The transport sector demand has grown very rapidly in all new EU member countries, in particular in comparison to EU-15 countries. One factor behind this rapid growth is the modal shift to road transport both for passenger and goods.
- The transport sector was 12 % more energy efficient in 2004 than in 1990 in the EU-25. Most of the gains come from cars. There has been no efficiency improvement for road freight transport since 2001, a mode with a very rapid growth in energy consumption.
- Data limitations do not allow to monitor energy efficiency trends for cars in New Member Countries.
- The transport sector is the only sector where CO₂ emissions continue to increase: emissions in 2004 were 25 % above their 1990 level in this sector in the EU-25.