



## Economic and Social Council

Distr.  
GENERAL

ECE/TRANS/WP.5/2008/4  
9 June 2008

Original: ENGLISH

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### ECONOMIC COMMISSION FOR EUROPE

#### INLAND TRANSPORT COMMITTEE

Working Party on Transport Trends and Economics

Twenty-first session  
Geneva, 9-10 September 2008  
Item 6 of the provisional agenda

### EMERGING TRANSPORT TRENDS IN THE ECE REGION

#### Review of the transport situation in the ECE region

#### Note by the secretariat

#### **I. MANDATE**

1. At its sixty-ninth session (6-8 February 2007), the Inland Transport Committee considered the review of the transport situation and emerging development trends (ECE/TRANS/2007/5) and asked the secretariat to produce a similar review in 2008. This document reviews the transport situation in the ECE region in 2007, as well as some underlying trends and projections. It has been prepared by the secretariat on the basis of available statistical data, as well as contributions from Belgium, Croatia, Hungary, Germany, Ireland, Poland, Turkey, Switzerland, European Investment Bank (EIB), International Union of Railways (UIC) and International Union of Combined Road-Rail Transport Companies (UIRR).

2. The next section of the note describes main economic and transport trends in the ECE region. The following section discusses obstacles to the development of transport as well as policy and regulatory responses. The concluding section concludes. It is followed by tables and an annex with short summaries of the country contributions submitted. **Contributions in full are available at the Transport Division website (<http://www.unece.org/trans/welcome.html>).**

## II. RECENT ECONOMIC AND TRANSPORT TRENDS

3. Following the global credit tightening in response to developments in the American subprime mortgage market, economic growth decelerated in most parts of the ECE region, averaging close to 3% in 2007. GDP growth rates varied considerably across subregions, reflecting the dynamic catch up in per capita productivity and income levels. The pace of expansion is expected to slow further in 2008 in most ECE economies (Table 1).

4. Eastern Europe, South-Caucasus and Central Asia (CIS) continued to outperform other ECE subregions. Despite some deceleration in the second half of the year, growth remained also strong in new member States of the European Union (EU) and South-Eastern Europe (SEE).<sup>1</sup> Output expansion was understandably less dynamic in high-income economies of Western Europe and North America.

5. The pattern of growth differed across markets and transport modes. In the United States, the freight transportation services index rose by 1.2% in the first 11 months of 2007 while the passenger transportation index was up by only 0.7%.<sup>2</sup> In Western Europe, CIS and SEE inland transport services grew broadly in line with macroeconomic activity, with a few exceptions. According to the Commonwealth of Independent States (CIS) Statistical Committee (<http://www.cisstat.com/>), inland freight traffic in tonne-km (excluding pipelines) grew in CIS during the first three-quarters of 2007 by about 6% over the same period of 2006. Intercity passenger transport (excluding private cars) increased by 3% over the same time period. Private automobile transport grew presumably at a faster pace.<sup>3</sup>

6. UIC statistics for the first half of 2007 show that rail freight traffic, measured by tonne-km, increased in the EU by some 2% over the corresponding period of the preceding year; in contrast, it jumped by almost 9% in the Russian Federation while stagnating in Turkey.<sup>4</sup> Rail passenger traffic, measured in passenger-km, increased in the EU by about 1.6% over the same time period; it fell in the Russian Federation by 0.5% and increased in Turkey by almost 7%.

7. Available national data indicate that road traffic kept increasing in 2007. Passenger road transport continued to grow in all countries, although its growth was weaker in Western Europe than in CIS and SEE. Road freight transport continued to hold its dominant share as the principal transport mode throughout the EU, as well as in the SEE countries. In contrast, rail accounted for a predominant share of freight transport in CIS (Table 2). However, in nine CIS countries railway labour productivity has remained well below the 1989 level, implying large over-employment. Productivity in the remaining three CIS countries (Georgia, Kazakhstan and Russian Federation) has surpassed the 1989 level by 18-25%. In contrast, railway labour

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<sup>1</sup> For a comprehensive analysis of growth trends in 2006 and early part of 2007 in ECE emerging market economies see EBRD, Transition Report, London, 2007.

<sup>2</sup> The freight and passenger transportation services indices are updated monthly by the Bureau of Transportation Statistics <<http://www.bts.gov/xml/tsi/src/index.xml>>.

<sup>3</sup> CIS went from 64 passenger cars per 1,000 persons in 1990 to 141 in 2003. In 2003, the number of passenger cars per 1,000 persons ranged from 38 in Kyrgyzstan to 161 cars per 1,000 inhabitants in the Russian Federation (which has shown the most significant increase, from 60 in 1990 to 161 in 2003).

<sup>4</sup> For details, see <[http://www.uic.asso.fr/stats/article.php3?id\\_article=2](http://www.uic.asso.fr/stats/article.php3?id_article=2)>.

productivity in Estonia has more than tripled since 1989 (Figure 1).<sup>5</sup>

8. UIRR statistics show that road-rail intermodal traffic continued to increase rapidly in Europe in 2007, following the 15% jump in 2006 when it reached 2.7 million consignments or 5.4 million twenty-foot equivalent units (TEU). Within this, international unaccompanied combined transport continued to concentrate on the trans-Alpine corridors. The pace of development of intermodal transport has been particularly fast in new EU member States, reflecting strong inflows of foreign direct investment (FDI) from West to East and expanding trade flows in both directions. Similar trends appear to be imminent in the European part of CIS, following a significant increase of FDI in manufacturing, including the automotive sector.<sup>6</sup> The gradual liberalization of the railway market was among the underlying factors explaining the increase in international intermodal transport; however, the rail service quality has improved only slightly. In the early months of 2007 only 55% of international intermodal trains arrived on time.<sup>7</sup>

### III. TRANSPORT ISSUES AND POLICY RESPONSES

#### A. Investment and Funding

9. Following its decline to 0.8% of GDP in the 1990s, investment in transport infrastructure averaged 1% of GDP in Western Europe in the first half of the 2000s. This type of investment has also increased in EU member States from Central Europe and candidate countries from South-Eastern Europe (Croatia, Turkey and The former Yugoslav Republic of Macedonia), reaching 1.5% of GDP by the mid-2000s. The road sector accounted for more than 60% of inland transport investment in Western Europe and about 80% in the new member States and candidate countries.<sup>8</sup>

10. The EU structural and cohesion funds for co-financing of transport infrastructure projects have been beneficial to the regions lagging behind in per capita incomes. New member States as well as candidate countries benefit significantly from their access to EIB financing and other forms of EU assistance in their efforts to overcome past underinvestment in the road, rail and urban transit infrastructure.

11. Similarly as in the EU area, transport infrastructure investment has picked up in CIS since the early 2000s. The volume of infrastructure investment has been especially impressive in resource-rich economies of the subregion. For example, over the period 2000-2006 transport infrastructure investment accounted for 18% of fixed capital formation, averaging 3% of GDP in the Russian Federation.<sup>9</sup> The transport infrastructure investment/GDP ratio is thus three times higher than in Western Europe and about twice as high as in the new EU member States and

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<sup>5</sup> The passenger rail service (South-West Railways) was privatized at the end of 2000 and the freight carrier (Estonian Railways) in August 2001. In January 2007 the Government bought back the majority stake in Estonian Railways from private investors. Over the period 2001-2006, labour productivity of the Estonian railway sector almost doubled. Annual productivity levels are available at <http://www.ebrd.com/country/sector/econo/stats/sci.xls>.

<sup>6</sup> According to Russian Railways, in 2007 “test shipments of Toyota car components have been carried out along the Trans-Siberian [line]” [http://www.eng.rzd.ru/news.html?action=view&nav\\_id=15&ti\\_id=2618](http://www.eng.rzd.ru/news.html?action=view&nav_id=15&ti_id=2618).

<sup>7</sup> Less than 30 minutes late.

<sup>8</sup> For details, see <http://internationaltransportforum.org/statistics/investment/invindex.html> and national statistics.

<sup>9</sup> For details, see <http://www.gks.ru/wps/portal/english>.

candidate countries. Despite these developments in financing, it is not likely that the huge gaps in the levels of infrastructure availability and quality can be closed in the near term.

12. International financial institutions have continued to play an important role in infrastructure development in emerging market economies of the ECE region. In 2007 the World Bank (IBRD and IDA) lending for the development of transportation in Central, Eastern and South-Eastern Europe amounted to \$722 million while new commitments reached \$455 million. The lending for infrastructure projects by the European Bank for Reconstruction and Development (EBRD) was of comparable magnitude. The expansion of the external lending mandate of the EIB for the period 2007-2013 has already resulted in signed projects in the Republic of Moldova (€30 million for the rehabilitation of the trunk road network), Turkey (€630 million for a new high-speed railway line) and Ukraine (€200 million for the rehabilitation of the highway between the capital city of Kyiv and Western Europe). The Ukrainian project has been co-financed with the EBRD while the Moldovan project has been co-financed with the EBRB and the World Bank. In addition, a number of ECE emerging market economies have financed transport infrastructure projects with the aid of the loans provided by the Asian Development Bank and Islamic Development Bank. Nevertheless, finance remains scarce relative to basic infrastructure maintenance and construction needs in the least-developed countries of the ECE region that are characterized by difficult operating conditions and limited borrowing capacity.

13. In CIS and SEE countries, the pace of infrastructure reforms has remained slow. According to the latest EBRD data for both subregions, in 2007 the reform of railways advanced in only one country (Russian Federation) while the reform in the road sector advanced in two countries (Bosnia and Herzegovina, Kazakhstan). Further, a number of key infrastructure projects have been initiated or continued in order to overcome major bottlenecks or complete missing links. Some Governments have pursued ambitious PPP projects that would help them to modernize important segments of their transport infrastructure. Whereas such projects are already under way in Turkey, the legislation governing concessions has been adopted only recently in a number of CIS and SEE countries. Moreover, the quality of these concession laws remains inadequate, ranging from very low (3 countries) and low (5 countries) to medium (7 countries).<sup>10</sup> Closing the infrastructure gap and attracting more private investment, including FDI, to the transport sector are likely to remain major policy issues in CIS and SEE countries.

## **B. Poverty Reduction and Transportation Development**

14. Despite some positive investment trends mentioned above, the provision of efficient transport services has not been feasible in low-income ECE economies, where lack of financing remained a serious barrier to the modernization of obsolete infrastructure and fleet. With a majority of the population still facing limited access to the labour market, the role of public transport and also the availability of roads, particularly rural roads are critical. Transport offers access to opportunities and thus eventually it is an important component of measures aiming at poverty reduction.

15. Investment in the building and maintenance of rural roads can increase significantly agricultural productivity and rural wages, facilitate the shift from subsistence farming to commercial activities and contribute to social development through improved access to basic

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<sup>10</sup> For details, see the 2007 EBRD transition indicators <<http://www.ebrd.org/country/sector/econo/stats/sib.xls>>.

education and health services.<sup>11</sup> For example, the rural infrastructure development project in Armenia, initiated last year with the support of the US Millennium Challenge Corporation, may be one of the best practices in how to address broader issues through transport development. The investment programme aims to improve the living conditions of 75% of the Armenian rural population with the aid of a \$67 million grant to rehabilitate over 900 km of rural roads.

### C. Transit and Trade Facilitation

16. Given the financial constraints on infrastructure investment in a number of CIS countries, the use of existing transport links ought to be optimized. Priority projects should focus on the maintenance and upgrading of the existing networks before new investment is embarked on. However, frozen conflicts continue to impede multilateral and regional consultations on investment planning. Moreover, the recent ECE-ESCAP study on Euro-Asian inland transport links concludes that *non-physical obstacles* to transport development are extensive in a number of economies in the Caucasus and Central Asia.<sup>12</sup> Imperfect transport markets contribute to high transaction costs of international trade in landlocked countries on the Euro-Asian land bridge. For instance, most recent estimates of the World Bank imply that the costs associated with export and import procedures are up to 5-6 times higher in Central Asia than in ECE countries with efficient regulations.<sup>13</sup> Inland transportation accounts for about three quarters of the cost of international trade in Central Asian countries.

17. Border-crossing procedures have continued to be cumbersome in many parts of the ECE region. For instance, a fully integrated cross-border signalling system for rail transport has not yet been established throughout the EU, where more than 20 different signalling and speed control systems are still in use. Despite some progress, most international passenger and freight trains still have to stop at border stations to change locomotives and drivers. Border-crossing obstacles are often aggravated by the lack of track-sharing agreements and time-consuming train re-marshalling at borders.

18. Competition-restraining rules have posed another significant barrier to the development of more efficient inland transport in the ECE region. The previous year's review noted that lack of competition hindered efficient provision of rail services. Restrictions of competition in the road and inland navigation sectors are also counterproductive. The considerable costs and waiting times associated with the issuance of visas for professional drivers have also limited competitive pressures, resulting in higher than necessary transaction costs and, ultimately, higher consumer prices. In particular, the expansion of the Schengen zone in December 2007 has resulted in the tightening of the visa regime for professional truck drivers from a number of CIS and SEE countries. Furthermore, line-ups of trucks waiting for clearance at the external border of the EU with the Russian Federation have lengthened,<sup>14</sup> reflecting traffic bottlenecks as well as lack of intergovernmental cooperation.

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<sup>11</sup> For additional information, see <<http://www.cuts-citee.org/DI-enewsletter1-08.htm>>.

<sup>12</sup> The study is available at <[http://www.unece.org/trans/main/eatl/in\\_house\\_study.pdf](http://www.unece.org/trans/main/eatl/in_house_study.pdf)>.

<sup>13</sup> For details, see <<http://www.doingbusiness.org/ExploreTopics/TradingAcrossBorders>>.

<sup>14</sup> To illustrate: the queue at the Latvian-Russian border at the Terehova checkpoint reached 1,500 trucks (about 4 waiting days) in December 2007. For more details, see European Voice, 8 January 2008.

## **D. Liberalization and privatization**

19. International road transport in large parts of the ECE region has continued to be adversely affected by growing protectionism with respect to road permit quotas and also by cumbersome administrative barriers at border-crossing points, including extensive cargo searches, compulsory convoys and limited opening hours. Moreover, the rules and regulations governing transit and border crossing in a number of low-income ECE countries have remained unclear while changing frequently without notice. Aside from North America, the only large ECE subregion that has achieved a high level of liberalization in transport services is the European Union.

20. Within the EU, the comparatively liberal regime in the transport sector has been expanded in 2007 with the complete opening of the rail freight market to competition (including cabotage). Moreover, the EC third railway package provides for the market opening of the international rail passenger transport by 2010 (without cabotage). However, even full-scale liberalization of the EU rail sector cannot revitalize it unless the infrastructure is modernized to achieve interoperability, a necessary precondition for effective competition. Voluntary agreements of national authorities have already reduced the burden of certification of railway vehicles in five EU countries and Switzerland. The European Rail Traffic Management System (ERTMS) has been implemented to date on 1,700 km of lines in nine EU countries. ERTMS will continue to be expanded by competent rail authorities in coming years.

21. So far, the EU countries that opened their rail freight markets to competition (Germany, Sweden, United Kingdom) experienced stronger efficiency gains and lower transport prices than those with closed markets. The establishment of rail regulators has been a major institutional change both in EU member States and also in several non-EU countries. One of the dilemmas was the choice between a multi-sectoral regulator that is responsible for a number of markets (e.g. energy, water, transport) and independent regulators for specific activities. Privatization is another major change in the transport sector traditionally dominated by State-owned enterprises (SOEs). The recent acquisition of MAV Cargo (the Hungarian national rail freight operator in the MAV SOE group) by a consortium of Rail Cargo Austria (rail freight operator of the Austrian national railroad company ÖBB) and GYSEV (the independent Austrian-Hungarian railway company, also known as *Raberbahn*) has created the third largest rail freight operator in the EU with direct access to CIS and SEE subregions. All these trends are expected to raise the efficiency of transport services.

## **E. Road Safety**

22. Road safety has continued to be a serious problem throughout the ECE region, resulting in more than 140,000 traffic fatalities per year. Following improving outcome in preceding years, the year 2007 saw a pronounced increase in the number of people killed in road-traffic accidents in many countries of the region. The data available for the first half of the year show that road fatalities increased in comparison with the same period of 2006 by more than 10% in the EU, CIS and SEE subregions.<sup>15</sup> The factors underlying this regressive tendency have yet to be identified. There are, however, positive examples that are worth taking note of such as the 2001 commitment of the EU to halve the number of road accident victims by 2010. Even though this

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<sup>15</sup> Data on road traffic injuries in 2007 are not yet available for some ECE countries, including Canada and the United States.

ambitious target is unlikely to be reached in 2010, the number of fatalities will be significantly below the 2001 level.

23. Achieving sustainable mobility has become an important policy objective in most countries. Road traffic safety continues to be one of major policy concerns throughout the ECE region. The road-safety performance (measured by traffic fatalities per vehicle) is uneven across the region, ranging from good in North America and Western Europe and medium in the new EU member States and candidate countries to poor in CIS and SEE countries. There seems to be no easy shortcut to excellent road-safety performance.

24. The introduction of tougher penalties, including a strict demerit point system, in the summer of 2006 in the Czech Republic was followed at first by spectacular reductions in road traffic deaths. However, the momentum has not been sustained and the preliminary data for 2007 indicate a significant year-on-year increase in fatalities. Following a reversal in the positive road-safety trend in 2007, Russian authorities introduced tougher penalties for road traffic infractions in January 2008. While initial results appear to be promising, it remains to be seen whether the new incentives improve the behaviour of drivers in the longer term.

25. On the regulatory front, a number of road-safety directives were adopted by the European Commission in 2007: 'Front protection of vulnerable users', 'Generalization of the use of seat belts and child restraint systems', "blind spot" mirror (new trucks). The EU Driving License (3rd Directive) Legislation adopted on 20 December 2006 will be in force by 2012, replacing the 110 types of driving licenses in use in EU member States by a single model.

26. The First United Nations Global Road Safety Week in April 2007 played an important role in increasing the awareness of road users in numerous countries throughout the world. In the ECE region, according to a survey carried out, it had positive effects in 12 countries (in particular in Belarus, Bulgaria, Latvia, Italy, Russian Federation and Spain) and provided an opportunity in several countries to set up new organizational structures on road safety or to strengthen existing ones.

## **F. Vehicle Construction**

27. Major innovations in vehicle construction during 2007 enhance vehicle safety and fuel efficiency while reducing harmful emissions. Among the Intelligent Transport Systems (ITS), lane departure warning system (LDW) and forward collision warning (FCW) systems, also known as front collision warning systems (CWS), and rear end collision warning systems have been introduced worldwide in cars as the latest technological innovations for crash prevention. Lack of attention by the driver is identified as the cause of 91% of driver related accidents. In North America at the end of 2006 the Governments and major car industry firms initiated the "Advanced Crash Avoidance Technology" program (ACAT) to determine the safety and feasibility impact of emerging technologies that are intended to assist drivers in avoiding crashes. These systems include a broad range of capability, from simple audible and visual warnings, to more advanced tactile and kinesthetic warnings that alert drivers to situations by touch or motion, to systems that prepare for a crash event by adjusting seatbelts or other safety equipment, and even those that can take intervening control of a vehicle system, such as automated braking. Thanks also to the ACAT program these technologies had a greater diffusion in the North American, Japanese and European markets since 2007.

28. Following an agreement between the European Union and vehicle manufacturers, Antilock Braking Systems (ABS) is now installed in new vehicles. ABS and Electronic Vehicle Stability



Control (EVSC) represent some of the major achievements of the last year in the field of vehicle safety. The two systems feature an increased stability of the vehicle in emergency situation, self protecting the vehicle occupants and other road users. Their regulatory implementation will make these technologies applicable on a worldwide scale.

29. The increasing use of low sulphur diesel (0.25% max) and unleaded petrol, which are being supplied also to the developing countries, has had outstanding effects in reducing harmful emissions from vehicles. Vehicle manufacturers requested in 2007 the development of fuel quality standards, needed for further reduction of emissions through more stringent emission regulations. More advanced emission control technologies require that appropriate fuel be available to consumers. Lack of harmonized fuel quality standards could hamper the development of new vehicle technologies to reduce vehicle emission. Other possible actions to improve the energy efficiency of vehicles include eco-driving (campaigns and driver training), intelligent traffic systems to avoid road congestion and fiscal measures for a quicker introduction of Environmentally Friendly Vehicles (EFVs).

30. The car industry is also developing vehicles using alternative energies and sources to power vehicles. This could reduce dependence on fossil fuels and improve air quality, especially in urban areas. Hybrid passenger vehicles production, matching both goals of air pollution reduction and fuel efficiency, were introduced in the most developed markets. While hybrid engines have demonstrated their effectiveness in vehicles up to a certain size, technological innovation has provided cleaner diesel engines for bigger vehicles. Diesel vehicles generally achieve about 30% better fuel economy than comparable gasoline-powered cars. The new generation of diesel engines, unveiled at the end of 2006, will emit fewer particulates than previous models. Other new clean technologies such as hydrogen and fuel cells vehicles will contribute to the reduction of pollutants and CO<sub>2</sub> emissions.

## **F. Congestion and Traffic Management**

31. Throughout the ECE region, investment in transport infrastructure picked up since the early 2000s. Nevertheless, traffic bottlenecks, resulting partly from a suboptimal use of the existing infrastructure, have persisted in some areas.

32. In Canada and the United States, traffic congestion in and around major ports has eased due to supply chain improvements and slower growth of container traffic.<sup>16</sup> In contrast, congestion in major European ports has apparently increased, reflecting slower capacity adjustments and robust container traffic levels.

33. Chronic road congestion has persisted in all major American urban areas, reflecting the impact of the comparatively low prices of motor vehicles and fuel, as well as secondary factors such as physical bottlenecks, suboptimal signalling, etc.<sup>17</sup> Road congestion levels in some European countries have been more manageable due to higher costs of automobile travel (steep registration fees and excise taxes on fuel as well as the increasing use of tolls on motorways and congestion charges in urban areas) and relatively well-developed passenger rail networks.

34. A key component of the customer approach to congestion management in Europe centres on the need to ensure travel time reliability. As in the United States, non-recurrent congestion

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<sup>16</sup> For additional information, see < <http://www.scdigest.com/assets/newsViews/07-08-23-2.php?cid=1196> >.

<sup>17</sup> For details, see U.S. Department of Transportation, National Strategy to Reduce Congestion on America's Transportation Network, 2007.



accounts for 40-60% of all congestion on urban motorways, a significant portion of which is a result of incidents. European policymakers acknowledge that swift response to incidents is critical to managing congestion, reducing the occurrence of secondary incidents, and focusing on the needs of roadway network users. Moreover, they recognize that reducing speeds under congested conditions not only improves overall performance but reduces the likelihood of primary incidents.

35. Congestion keeps spreading to all parts of the ECE region due to the explosive growth of car ownership in Central, Eastern and South-Eastern Europe as well as the Caucasus and Central Asia. In many transition economies the expansion of motorization in the first 10 years of transition equalled or exceeded the 30 year growth rate observed earlier in Western Europe. Traffic management in major cities continues to be a challenge. Several large cities in the ECE region have launched investment programmes to improve traffic management while a number of municipalities continued to reform their parking policies. Other cities that have already exhausted the potential of traditional management have introduced congestion charges, following the lead of London and Stockholm (e.g. Milan in January 2008). These charges started to change traffic management and modal split in favour of public transport; however, the share of motorbikes in urban traffic grew significantly. This has led to new traffic safety challenges.

## **H. Global Warming**

36. Adverse health effects result from the air pollution generated by transport activity. It is estimated that about 100,000 deaths a year are linked to ambient air pollution in cities in the ECE region, shortening life expectancy by an average of one year. In addition to accounting for the bulk of ambient air pollution in cities, the transport sector keeps contributing to climate change. Although the energy sector has continued to be responsible for more than one half of man-made CO<sub>2</sub> emissions, the transport sector's share has continued to increase, approaching 30% of the total. The largest part of this amount (almost 85%) came from road vehicles.

37. In the road sector, charges for the use of infrastructure seem to have influenced noticeably traffic flows. According to the German Federal Ministry of Transport, the heavy goods vehicle (HGV) tolls on motorways (introduced in 2005) have helped to reduce the proportion of empty long-distance journeys and contributed to the growth of intermodal transport and sales of cleaner HGVs.<sup>18</sup> Similar motorway charges were introduced in Austria (2004), Switzerland (2005), Czech Republic (2007) and other ECE countries, while several EU member States plan to use electronic tolls soon.<sup>19</sup> Tolls should contribute to the efficiency of road management and might encourage the modal shift from road to rail. The effectiveness of infrastructure charges would greatly depend on the relationship between the source and the use of revenues on the one hand, and on the cross-country interoperability of electronic tolling. Although an interconnection of the existing electronic tolling systems in European countries is technically feasible and some national authorities discuss cooperation in this area, international trucking businesses seem to be worried by the transaction costs resulting from the lack of harmonization of on-board units and payment procedures. Non-harmonized regulatory approaches can also divert some international commercial traffic to countries that have not yet introduced electronic tolls, increasing congestion and environmental pollution along toll-free motorways.

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<sup>18</sup> Aside from tolls, other relevant factors included the improving service quality of rail transport, high fuel prices, shortage of competent truck drivers and temporary subsidies for the purchase of cleaner HGVs.

<sup>19</sup> In five EU countries (France, Italy, Portugal, Spain and Slovenia) electronic motorway tolls are used for both heavy vehicles and passenger cars.

38. In Western Europe and North America, the achievement of a more sustainable mobility in the medium term requires, inter alia, major efforts to reduce CO<sub>2</sub> emissions of transport. In the United States, it will be difficult to ameliorate chronic bottlenecks on the interstate highway network without addressing the major underlying factor, i.e. the vast discrepancy between the price of highway travel and the cost of congestion. In Western Europe, the rapid implementation of full interoperability in the liberalized rail sector and efficient infrastructure charging in the road sector present major challenges over the medium term.

#### **IV. CONCLUSIONS**

39. Strong infrastructure investment is expected to continue and boost the economies in many parts of the UNECE region while improving transport capacity to serve the growing trade between Europe and Asia. Land transport links between Europe and Asia are still characterized by low competitiveness, strong market concentration and highly imperfect competition. Market liberalization and structural reforms need to be intensified in CIS and SEE countries in order to reduce the relatively high costs of trade. This is a necessary precondition for sustaining the rapid pace of the income and productivity catch up in medium-income economies and enabling the landlocked low-income ECE economies to participate in the globalization process while reaping benefits of trade.

40. Continued road traffic growth in the ECE region may aggravate the existing congestion and global warming. However, in Western Europe the ongoing vehicle fleet renewal and relative price adjustments, reflecting steep increases in fuel prices and high excise taxes as well as charges for the use of transport infrastructure, could compensate partly for the quantity effect. In SEE, the modernization of transport legislation and regulations, driven by accession negotiations with the EU, as well as the ongoing improvement of infrastructure should help reduce the environmental pressures and perhaps contribute to a decline in road traffic accidents. In CIS countries, without the adoption of radical measures we are likely to witness ever increasing road congestion problems, particularly in urban areas. Congestion will increasingly affect other areas as well with the increase in motorization and the start-up of domestic production of a new generation of affordable passenger cars.

41. Following the unexpected reversal of the downward trend in road traffic injuries in 2007, the road safety outcome may well improve again in 2008 and following years, provided that policy priorities are rebalanced in the light of new evidence and stricter enforcement of traffic rules adopted. The technology embodied in new vehicles should also help reduce the number and severity of road-traffic accidents.

**Table 1. Real GDP Growth**

Annual rates of change, %

<b>Country</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
Albania	5.7	5.9	5.5	5.0	6.0	6.0
Bosnia and Herzegovina	3.5	6.1	5.0	6.0	5.8	6.5
Croatia	5.3	4.3	4.3	4.8	5.6	4.7
Macedonia, Former Yugoslav Republic of	2.8	4.1	4.1	3.0	5.0	5.0
Montenegro	2.4	4.2	4.0	6.5	6.0	5.0
Serbia	2.5	8.4	6.2	5.7	6.0	5.0
Turkey	5.8	8.9	7.4	6.1	5.1	4.9
<b>SEE</b>	<b>5.4</b>	<b>8.2</b>	<b>6.9</b>	<b>5.9</b>	<b>5.3</b>	<b>5.0</b>
Armenia	14.0	10.5	14.0	13.3	11.1	10.0
Azerbaijan	10.5	10.4	24.3	31.0	29.3	23.2
Belarus	7.0	11.4	9.3	9.9	7.8	6.4
Georgia	11.1	5.9	9.6	9.4	11.0	9.0
Kazakhstan	9.3	9.6	9.7	10.7	8.7	7.8
Kyrgyz Republic	7.0	7.0	-0.2	2.7	7.5	7.0
Moldova	6.6	7.4	7.5	4.0	5.0	5.0
Russian Federation	7.3	7.2	6.4	6.7	7.0	6.5
Tajikistan	10.0	10.1	7.3	6.8	7.2	8.2
Turkmenistan	17.1	14.7	9.0	9.0	10.0	10.0
Ukraine	9.6	12.1	2.7	7.1	6.7	5.4
Uzbekistan	4.2	7.7	7.0	7.3	8.8	7.5
<b>CIS</b>	<b>7.9</b>	<b>8.4</b>	<b>6.5</b>	<b>7.6</b>	<b>7.7</b>	<b>7.0</b>
Austria	1.2	2.3	2.0	3.3	3.3	2.5
Belgium	1.0	2.8	1.4	3.0	2.6	1.9
Finland	1.8	3.7	2.9	5.0	4.3	3.0
France	1.1	2.5	1.7	2.1	1.9	2.0
Germany	-0.3	1.1	0.8	3.0	2.4	2.0
Greece	4.9	4.7	3.7	4.3	3.9	3.6
Ireland	4.3	4.3	5.9	5.7	4.6	3.0
Italy	0.0	1.2	0.1	1.9	1.7	1.3
Luxembourg	1.3	3.6	4.0	6.2	5.4	4.2
Netherlands	0.3	2.2	1.5	3.0	2.6	2.5
Portugal	-0.7	1.5	0.5	1.3	1.8	1.8
Spain	3.1	3.3	3.6	3.9	3.7	2.7
Slovenia	2.8	4.4	4.1	5.7	5.4	3.8
<b>Euro Area</b>	<b>0.8</b>	<b>2.0</b>	<b>1.5</b>	<b>2.8</b>	<b>2.5</b>	<b>2.1</b>
Denmark	0.4	2.1	3.1	3.5	1.9	1.5
Sweden	1.7	4.1	2.9	4.7	3.6	2.8
United Kingdom	2.8	3.3	1.8	2.8	3.1	2.3
<b>EU-16</b>	<b>1.2</b>	<b>2.3</b>	<b>1.6</b>	<b>2.9</b>	<b>2.6</b>	<b>2.2</b>
Bulgaria	5.0	6.7	6.2	6.1	6.0	5.9
Cyprus	1.8	4.2	3.9	3.8	3.8	3.7
Czech Republic	3.6	4.6	6.5	6.4	5.6	4.6
Estonia	7.2	8.3	10.2	11.2	8.0	6.0
Hungary	4.2	4.8	4.2	3.9	2.1	2.7
Latvia	7.2	8.7	10.6	11.9	10.5	6.2
Lithuania	10.3	7.3	7.6	7.5	8.0	6.5
Malta	-0.3	0.1	3.3	3.3	3.3	2.6
Poland	3.9	5.3	3.6	6.1	6.6	5.3
Romania	5.2	8.5	4.1	7.7	6.3	6.0
Slovakia	4.2	5.4	6.0	8.3	8.8	7.3
<b>EU-11</b>	<b>4.4</b>	<b>5.8</b>	<b>4.8</b>	<b>6.4</b>	<b>6.0</b>	<b>5.1</b>
<b>EU-27</b>	<b>1.5</b>	<b>2.7</b>	<b>2.0</b>	<b>3.3</b>	<b>3.0</b>	<b>2.5</b>
Iceland	2.7	7.6	7.2	2.6	2.1	-0.1
Norway	1.0	3.9	2.7	2.8	3.5	3.8
Switzerland	-0.2	2.5	2.4	3.2	2.4	1.6
Israel	2.3	5.2	5.3	5.2	5.1	3.8
<b>Europe-31</b>	<b>1.5</b>	<b>2.7</b>	<b>2.0</b>	<b>3.3</b>	<b>3.0</b>	<b>2.5</b>
Canada	1.9	3.1	3.1	2.8	2.5	2.3
United States	2.5	3.6	3.1	2.9	1.9	1.9
<b>North America</b>	<b>2.5</b>	<b>3.6</b>	<b>3.1</b>	<b>2.9</b>	<b>2.0</b>	<b>2.0</b>
<b>ECE-52</b>	<b>2.4</b>	<b>3.6</b>	<b>2.9</b>	<b>3.5</b>	<b>3.0</b>	<b>2.7</b>

Source: IMF World Economic Outlook Database (Oct. 2007) and UNECE calculations.

Note: Subregional and regional aggregates are based on PPP exchange rates.

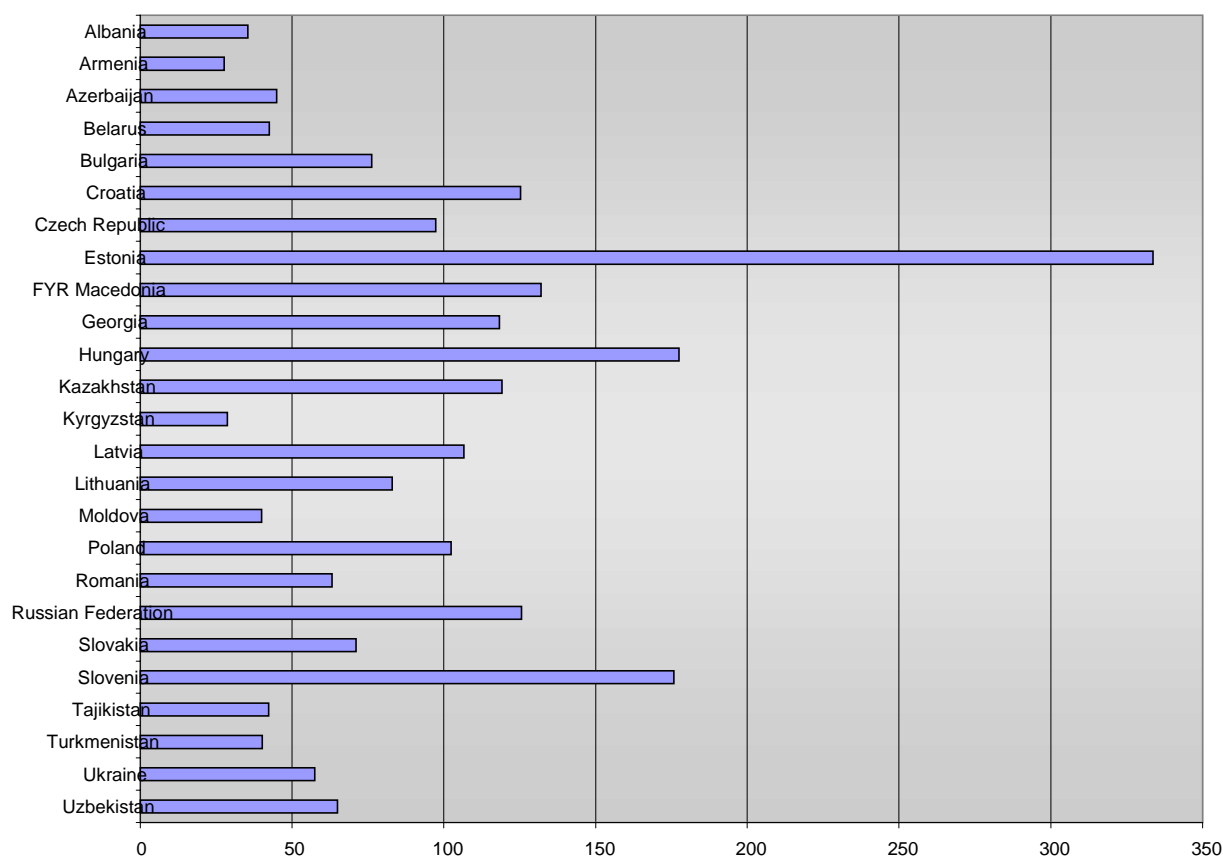
**Table 2. Inland Freight Transport Performance by Mode**

Sub-region	Tonne-km, rates of change, %			Modal shares, %		
	2005	2006	2007	2005	2006	2007
<b>EU-27</b>						
All modes	2.4	4.6	..	100.0	100.0	100.0
Rail	0.1	5.2	..	17.6	17.7	..
Roads	3.0	4.9	..	76.6	76.7	..
Inland waterways	1.4	0.0	..	5.9	5.6	..
<b>EECCA</b>						
All modes	2.9	5.2	6.3	100.0	100.0	100.0
Rail	2.7	5.8	7.1	85.5	85.9	86.5
Roads	7.9	7.3	3.5	10.5	10.7	10.4
Inland waterways	-4.1	-11.7	-4.3	4.1	3.4	3.1
<b>SEE</b>						
All modes	6.4	6.8	6.0	100.0	100.0	100.0
Rail	2.2	11.4	5.9	8.0	8.3	8.3
Roads	6.6	6.5	5.4	91.2	91.0	90.4
Inland waterways	30.8	-9.9	80.3	0.9	0.7	1.3

Source: Statistical authorities of Belarus, Kazakhstan, Russian Federation, Ukraine, Turkey, European Commission, International Transport Forum and UNECE estimates.

Note: EECCA = Azerbaijan, Belarus, Kazakhstan, Russian Federation, Ukraine; SEE = Croatia, Montenegro, Serbia, Turkey.

**Figure 1. Railway labour productivity, 2006  
1989 = 100**



Source: EBRD, Structural and institutional change indicators, 2007.  
<<http://www.ebrd.com/country/sector/econo/stats/sci.xls>>.

## Annex

### SUMMARIES OF COUNTRY REPORTS

#### **Belgium**

1. Passenger traffic by all modes of public transport kept growing steadily, reflecting the impact of investment in extra capacity. Nevertheless, traffic congestion and air pollution in cities remain a serious problem, reflecting the high level of car ownership and utilization as well as the gradual switch to diesel-powered vehicles. Overall freight traffic volumes are up in 2007 and expected to continue to grow in all modes. Major obstacles to a rapid growth of transport services are posed by a number of factors, including road congestion, environmental pressures, bottlenecks on some heavily-used rail routes, lack of interoperability in international rail traffic, low profitability of inland navigation and insufficient integration of transport, environment and fiscal policies.

2. Authorities strive to improve the modal split by subsidizing public transit fares, creating a supportive environment for cycling, enforcing better road safety regulations, implementing the EU rules on the liberalization of the use of rail infrastructure, and providing fiscal incentives to stimulate purchases of low-polluting cars. Recent infrastructure investment plans aim to improve the road and inland waterway hinterland connections of major ports. Multi-modal hub and spoke networks are being created around the inland navigation ports and the main logistic centres. A number of rail projects have been selected as TEN priority projects by the EU.

#### **Croatia**

3. Over the first nine months of 2007, freight transport by rail, road and inland waterways increased by 3.1%, 7.8% and 2%, respectively. The number of coach passengers decreased by 1.4% over the same time period. Inadequate infrastructure continued to hinder the development of transport. In the road sector, the pattern of infrastructure investment in recent years favoured motorways at the expense of State, county and local roads whose quality remained unsatisfactory. A number of sections in the E-road network have been completed or upgraded in 2007. Poor infrastructure and inadequate rolling stock have continued to impact negatively the rail sector's performance. The infrastructure of ports on the Danube and Sava rivers has remained inadequate for the provision of quality services.

4. Regulatory developments in 2007 have included the new Railway Transport Safety Act, aligned with the *acquis communautaire*, and partial liberalization of the inland waterways sector. However, transport between national ports (cabotage) remains restricted until the country's accession to the EU.

#### **Germany**

5. Projections of the Federal Statistical Office indicate that freight traffic growth would slow down from 7.5% in 2007 to 4.9% in 2008. Road and rail modes are expected to outperform the inland navigation sector. In contrast, passenger traffic is to increase only marginally by 1% per annum. It will continue to be dominated by private car transportation. Obstacles to



international road traffic persist at the border with Switzerland, where long waiting times result from the closure of customs facilities during the night. In the rail sector, international traffic continues to be hindered by lack of interoperability as well as the absence of a harmonized homologation procedure for locomotives.

6. The Federal Government is developing a comprehensive package of technical and regulatory measures to promote environmentally-friendly and resource-saving personal and freight mobility. A pilot concession project started in May 2007, aiming to pave the way for public-private partnerships in the construction of federal trunk roads.

### **Hungary**

7. Freight transport expanded dynamically during the first three-quarters of 2007. Interurban passenger transport by rail and bus was characterized by a decline in the number of passengers while passenger-kilometres increased slightly. The number of passenger cars kept increasing over the first three-quarters of 2007 while the number of new registrations continued to fall. Road traffic fatalities as well as non-lethal injuries continued to increase in 2007.

8. Both infrastructure investment and regulatory innovation have been used to reduce obstacles to the development of transport. In recent years, the annual transport infrastructure investment exceeded 1% of GDP. The development of motorways has been financed mainly by the State budget. The development of rail infrastructure has been financed by the State budget and EU funds. The authorities aim to reverse the upward trend in road-traffic injuries with the aid of a new demerit point system and stricter enforcement.

### **Ireland**

9. Over the 2002-2006 period, road transport of cargoes increased rapidly while freight became the fastest growing transport sector in terms of fuel consumption. Rapid growth of population and employment in recent years resulted in changing modal shares, with car transport satisfying the bulk of extra demand for passenger travel.

10. Road transport infrastructure has become a limiting development factor as a result of past underinvestment and rapid economic growth over the last 15 years. The Government responded with a series of strategic initiatives that include massive public spending on roads infrastructure, amounting to €16 billion over the period 2006-2015. In 2007 the Government introduced primary legislation strengthening the position of the National Roads Authority that is responsible for the delivery of the national road programme.

### **Poland**

11. In 2006 the volume of cargo (in tonnes) transported by all modes increased by 4.1% over 2005 while the corresponding performance (in tonne-km) jumped 9.1%. In the rail sector, the volume of freight transport increased by 8.1% in 2006 while the performance rose by 7.3%. The number of passengers transported by rail increased by 2.8%, in contrast to the decline experienced for a number of years. Road freight transport continued to predominate, accounting

for over 60% of tonne-kilometres in 2006. The number of coach passengers declined in 2006 by 3.9% while the number of private cars continued to grow.

12. Infrastructure investment and regulatory measures have been used to reduce obstacles to the development of transport. For instance, 127 km of new E-roads were built and another 323 km rebuilt in 2007. At the same time, the National Roads Administration started to implement its road-safety programme.

## **Switzerland**

13. In 2006 rail freight traffic (in tonne-km) of CFF Cargo, the principal operator, grew by 6.5% in Switzerland. BLS, the second largest freight operator registered a 15% increase in traffic. Trans-Alpine freight transport by rail increased in 2006 by over 6%, combined transport by 11%, while the tonnage transported by road stagnated and the number of trucks fell by 2%. Over the first 8 months of 2007, Trans-Alpine rail freight traffic grew by 3% while combined transport and road transport expanded more rapidly. The number of rail passenger-kilometres increased by 3% in 2006.

14. The work on major infrastructure projects continued, resulting, inter alia, in the opening of the 34 km long Loetschberg tunnel that should significantly improve the quality and speed of Trans-Alpine rail services within the country and between Switzerland and Italy. Federal spending on transport amounted to 1.5% of GDP in 2006. The breakdown of federal expenditure was as follows: public transport – 61.8%; road transport – 36.9%; civil aviation – 1.4%.

## **Turkey**

15. Road has continued to play a dominant role in both passenger and freight transportation. Major obstacles were posed by restrictive quotas, increasingly cumbersome and expensive visa regulations for professional drivers and long waiting times at borders. Rail traffic continued to be obstructed by a number of infrastructure shortcomings. Combined transport operations have developed successfully in a number of ports with container depots.

16. Regulatory reforms are under way in the road sector, aiming to improve its efficiency and safety in line with the EU *acquis*, international agreements and regulations. The rail sector has benefited from large public investment projects that reflect its priority in the Government's transport strategy. Combined transport is to be further developed by merging a number of container terminals into new logistic villages that are under construction.

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