

**Economic and Social Council**Distr.: General  
2 July 2013

Original: English

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**Economic Commission for Europe****Inland Transport Committee****Working Party on Transport Trends and Economics****Twenty-sixth session**

Geneva, 10–12 September 2013

Item 8 (b) of the provisional agenda

**Review of the transport situation, transport trends and economics in ECE region — Transport Trends and Economics 2013–2014: Financing Transport Infrastructure****Transport Trends and Economics 2013–2014: Financing Transport Infrastructure****Note by the secretariat\*****I. Introduction**

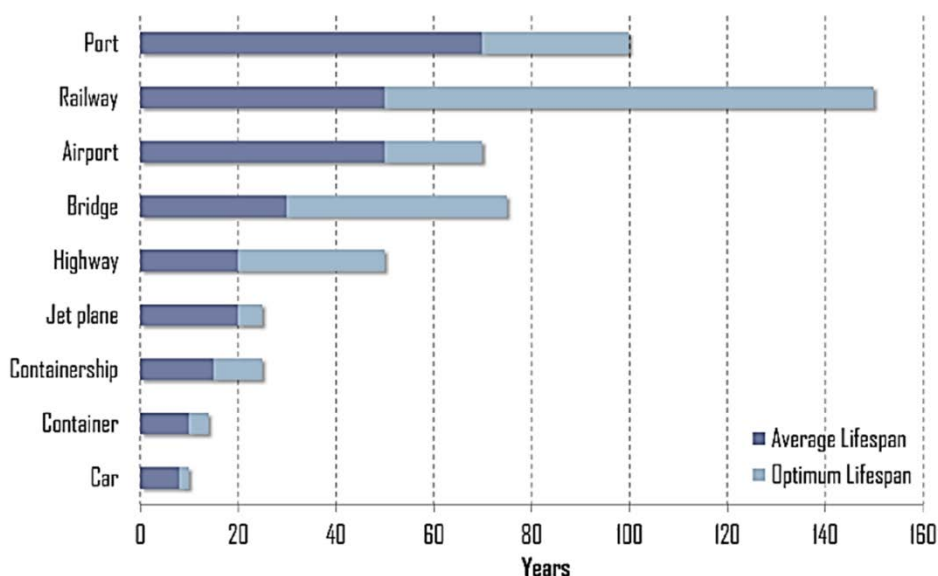
1. The lifespan of a transport asset is the approximate number of years in which it is expected to perform under normal operating conditions while receiving regular maintenance (average lifespan). Because of the various construction materials, the techniques used and operating conditions, the lifespan is an approximate figure since higher engineering requirements may extend the lifespan further (optimum lifespan). For complex transport infrastructure, such as a seaport or an airport, lifespan considerations are nuanced by the respective lifespans of components such as piers, runways, crane equipment and individual buildings (e.g. terminals, warehouses). All of these facilities can be maintained and upgraded separately. Among the major transport assets, the automobile has the shortest lifespan in the range of 8 to 10 years depending on the level of usage and the operating environment. There is, however, evidence that the lifespan of cars is increasing due to

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\* The Working party on Transport Trends and Economics at its twenty-fourth session approved the proposal of the secretariat on transforming the Report on the review of the transport situation in UNECE member countries and of emerging development trends to an annual publication on transport trends and economics in the ECE region with annual themes. The Inland Transport Committee at its seventy-fourth session took note of the draft publication, and endorsed the decision by the Working Party on this transformation (ECE/TRANS/224, paras. 20 and 21). The following report outlines the working structure of the publication for 2013 and proposes a theme for consideration and approval of the Working Party.

technical improvements. A properly maintained jet plane can easily last 20 years, with some lasting beyond 30 years. Rail lines can last for decades, if not a century and a half (depending on the construction materials used), but require a constant and capital intensive maintenance. Transport investments must thus look closely at the expected lifespan of an infrastructure to insure a proper amortization and match the investment time range with the expected lifespan of the transport asset.

Figure 1  
**Lifespan (Life Cycle) of Main Transport Assets**



Source: Jean-Paul Rodrigue (2013) *The Geography of Transport Systems*, Living Planet Report, 2006 and Summary result of second Eurostat questionnaire on CFC on public infrastructure, DOC.CFC 15, Eurostat, 2003.

2. According to the Organization for Economic Cooperation and Development (OECD), cumulative investment needs in land transport infrastructure are projected to reach 45 trillion United States dollars by 2050 (or US \$ 3 trillion per year on average), under current policies. Avoid or reduce the need to travel, by improving transport system efficiency through integrated land-use planning and transport demand management, e.g. through compact, mixed-use urban development or traffic restrictions. Shift to (or maintain) sustainable transport modes to improve trip efficiency, e.g. through dedicated bus lanes. “Avoid” and “Shift” policies could achieve net savings on rail, high speed rail and bus rapid transit infrastructure, through savings in travel times and reduced investment and maintenance costs for roads and parking lots. Such savings could offset additional investment in low-carbon vehicles.

3. The growth of global transport demand and the challenge of reducing greenhouse gas (GHG) reductions in the transport sector will require:

(a) scaling-up investment in renovated or new transport infrastructure to meet development goals and increased mobility needs, particularly in emerging economies; and

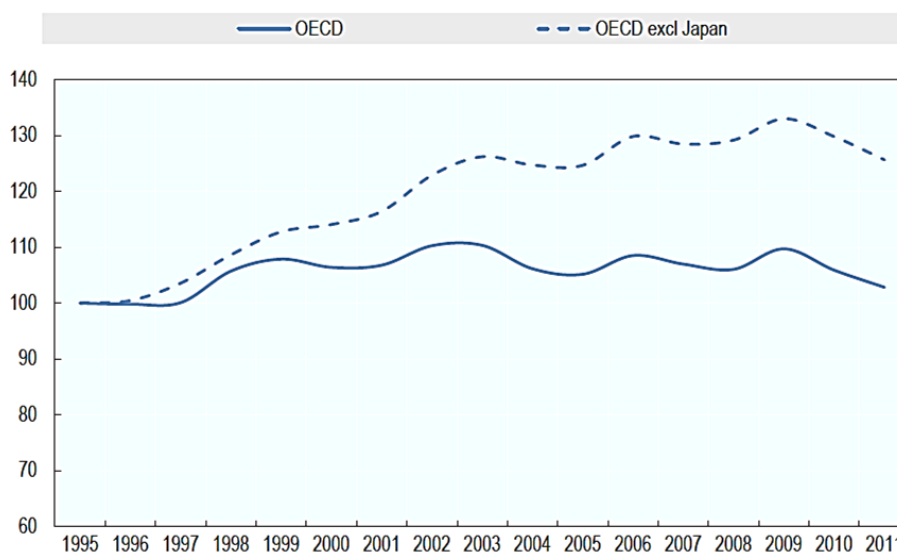
(b) shifting investment away from carbon-intensive road transport and toward sustainable transport modes, to avoid locking-in carbon intensive and climate-vulnerable development pathways.<sup>1</sup>

4. The volume of investment (expenditure in real terms) in the OECD total (excluding Japan) has grown around 30 per cent in the last 15 years. If data for Japan are included, the volume of investment in the OECD peaked in 2003 after which it has remained fairly stable slightly above the 1995 level. The latest data show a 6 per cent fall in investment since 2009 as volume declines close to the 1995 level.

5. In Western European countries, the volume of investment started growing in 2002, and was nearly 30 per cent above the 1995 level in 2006 after which the volume declined. The latest data for 2011 show volume only 10 per cent higher than the 1995 level. The volume of inland infrastructure investment in North America grew by around 30 per cent from 1995 to 2001. International Transport Forum (ITF) estimates suggests a slow decline in investment volume that continued all the way through 2008. Recent data indicates growth in the volume of investment in North America, returning to the 2001 level in real terms in 2011.<sup>2</sup>

Figure 2

**Volume of investment in inland transport infrastructure 1995–2011 (at constant 2005 prices, 1995=100)**



Source: International Transport Forum.

6. In 2012, the European Commission announced projects selected to receive over 160 million euros in European Union (EU) through co-financing from the trans-European transport network (TEN-T) programme to continue improving transport infrastructure across the EU. The 26 selected projects would use the EU's financial support to speed up the implementation of important priorities of the TEN-T Programme in order to contribute to delivering a safe, competitive and efficient transport infrastructure network.

7. The 2011 Multi-Annual Programme Call granted €161.3 million in total funding and aimed to finance the highest priorities of the TEN-T network, focusing on three fields:

<sup>1</sup> OECD work on Mobilising private investment in sustainable transport infrastructure (2013).

<sup>2</sup> International Transport Forum, Spending on Transport Infrastructure 1995-2011 (2013).

(a) Motorways of the Sea (MoS – TEN-T Priority Project 21), providing viable alternatives for congested roads by shifting freight to sea routes – 7 projects selected, €47.8 million in funding;

(b) River Information Services (RIS), involving traffic management infrastructure on the inland waterway network – 4 projects selected, € 10.2 million in funding;

(c) European Rail Traffic Management System (ERTMS) – 15 projects selected, €103.3 million in funding.

8. The TEN-T Executive Agency, which is entrusted with the financial and project management of the TEN-T programme, received 47 eligible proposals. Twenty-six of these were selected, after a meticulous selection procedure, as the ones best meeting the criteria set out in the 2011 Multi-Annual Call.

## II. Financing transport infrastructure: types and challenges

9. Causes and forms of public divestiture result from facing the growing inability of governments to manage and fund transport infrastructure. The last decades have seen deregulation and more active private participation. Many factors have placed pressures on public officials to consider the privatization of transport infrastructure, including terminals:

(a) Fiscal problems: The level of government expenses in a variety of social welfare practices is a growing burden on public finances, leaving limited options but divestiture. Since transport infrastructures are assets of substantial value, they are commonly a target for privatization. This is also known as “monetization” where a government seeks a large lump sum by selling or leasing an infrastructure for budgetary relief.

(b) High operating costs: Mainly due to managerial and labour costs issues, the operating costs of public transport infrastructure, including maintenance, tend to be higher than their private counterparts. Private interests tend to have a better control of technical and financial risks; they are able to meet construction and operational guidelines as well as providing a higher quality of services to users.

(c) Cross-subsidies: Several transport infrastructures are subsidized by revenues from other streams since their operating costs cannot be compensated by existing revenue. For instance, public transport systems are subsidized in part by revenues coming from fuel taxes or tolls. Privatization can thus be a strategy to end cross-subsidizing by tapping private capital markets instead of relying on public debt. The subsidies can either be reallocated to fund other projects (or pay existing debt) or removed altogether, thus reducing taxation levels.

(d) Equalization: Since public investments are often the result of political pressures from different constituents to receive their “fair share”, many investments come with “strings attached” in terms of budget allocation. An infrastructure investment in one region must often be compensated with a comparable investment in another region or project, even if this investment may not be necessary. Thus, privatization removes the equalization process for capital allocation as private enterprises are less bound to such a forced and often wasteful redistribution.<sup>3</sup>

10. Road pricing has been discussed by economists since Adam Smith in the eighteenth Century but it was not until 1920 that serious work was conducted to apply road pricing as

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<sup>3</sup> Jean-Paul Rodrigue, *The Geography of Transport Systems* (2013).

a method for reducing traffic flows. In 1975, Singapore introduced their Area Licensing scheme to manage traffic flows. This was superseded in 1998 by Electronic Road Pricing.

11. In the United Kingdom of Great Britain and Northern Ireland, congestion charging was successfully introduced with a small scheme in Durham in 2002 and the much bigger Central London Congestion Charging Scheme in 2003.

12. In the United States of America, high occupancy toll lanes have been introduced where single occupant vehicles can access the lane by paying a toll which increases according to increases in the amount of traffic utilizing the lane thus keeping the lanes free-flowing.

13. Road pricing makes motorists consider the external costs of their behaviour and can reduce car use and even reduce journeys or encourage greater use of public transport where a high quality suitable alternative is provided but road pricing is not an efficient form of raising money.

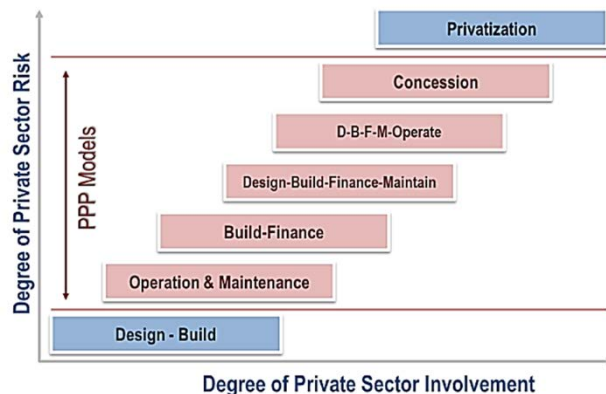
14. Usually where good roads are provided, local land values appreciate as a direct result. When one considers that land is actually a free gift of nature, this increase in location values represents an unearned income for landowners who can justifiably be taxed to not only finance the provision of roads but also be used to fund other public services and thus reduce taxes that fall on producers and traders. The annual taxation of land values – Land Value Taxation (LVT) not only raises much needed funds for public expenditure but is also reducing the need for taxes on wages and trade. It gives an incentive for landowners to put idle sites and empty buildings to use so that towns or cities become more dense, urban sprawl is avoided, homes and business premises become cheaper, more customers, unemployment falls and the whole economy benefits.<sup>4</sup>

15. Another way to finance transport infrastructure is the Public-Private Partnerships (PPP) and private sector's involvement in public investments. The type of governance structure of a transportation infrastructure project is often a function of the level of risk the private sector is willing to assume. If the private sector is only given the task of designing and building an infrastructure, then there is little risk involved since the public sector assumes the financing and operations of the infrastructure. A public-private partnership involves a level of transfer of risk from the public to the private sector, which can take many forms depending upon the degree of private sector involvement. Concessions tend to be the privileged form of PPP for many infrastructure projects, particularly port terminals, since the public sector simply becomes a landlord while the private sector assumes most of the risks, but also rewards in the case that the investment is profitable.

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<sup>4</sup> Dave Wetzel FCIT, Chair, The International Union for Land Value Tax (UN NGO).

Figure 3  
**Risk Transfer and Private Sector Involvement in Public-Private Partnerships**



Source: International Transport Forum.

### III. UNECE Transport Infrastructure Projects

#### A. The Euro-Asian Transport Linkages project

16. The Euro-Asian Transport Links (EATL) routes in Phase II of the project were extended to seven newly involved countries, thus covering 27 countries. As a result of this phase, 9 EATL road routes, 9 EATL rail routes, 17 water transport links, 52 inland river ports and 70 maritime ports were identified. The final list included 311 transport infrastructure priority projects with a total cost of US \$ 215 billion, out of which 188 were identified as high priority, with a total cost of US \$ 78 billion.

17. Transport infrastructure projects proposed for inclusion in the updated EATL Investment Plan consisted of the non-completed EATL Phase I projects as well as projects added in Phase II. The Plan includes an extensive inventory of specific road, rail, inland waterway projects and maritime/inland terminal development projects at a country level for each of the 27 participating countries. The prioritization exercise was also carried out at route level, for each of the identified Road and Rail routes, for the purpose of establishing the investment cost that has already been secured at the route level. The project inventory is based on updated data provided by 23 countries. For the four other countries, the original data provided in EATL Phase I was used. It contains estimated investment costs and a realistic implementation timetable.

#### B. TEM and TER projects

18. The changes in the backbone network and traffic forecast results have been reflected in the revised Trans-European Motorway (TEM) and Trans-European Railway (TER) Master Plan list of road and rail projects, comprising 294 motorway/road construction and/or rehabilitation and 191 rail projects with a total cost of approximately €188 billion. The average cost of a project (approximately €388 million) increased almost twofold in comparison with the average project cost in the original Master Plan. This increase was partly due to inflation, but extensively due to the larger and more demanding construction projects (e.g. high-speed rail lines in some countries) which frequently focus on densely populated agglomerations. More stringent environmental protection measures also contributed to the increase.

19. In comparison with the original TEM and TER Master Plan of 2005, this final report further considers the links between the road and rail backbone networks, and between them and the other transshipment points such as terminals, ferry links and sea, river and lake ports of importance for international combined transport.

20. The TEM and TER projects are unique pan-European transport infrastructure projects bringing together countries of the EU, EU candidate countries as well as other member States of the United Nations Economic Commission for Europe (UNECE) in Central, Eastern and South-Eastern Europe and the Caucasus. UNECE is the executing agency for both projects.

#### **IV. UNECE, Financing Transport Infrastructure**

21. So far, UNECE's analysis of financing transport infrastructure has been through the two above-mentioned and very important projects and through the organization of different workshops such as the pre-ITC conference on Road and Rail financing ([www.unece.org/trans/events/2013/itc75\\_2013/road\\_rail\\_conference.html](http://www.unece.org/trans/events/2013/itc75_2013/road_rail_conference.html)), the workshop on PPP schemes and Railways financing ([www.unece.org/trans/main/sc2/sc2\\_events/2012-11\\_ppp\\_railways\\_financing.html](http://www.unece.org/trans/main/sc2/sc2_events/2012-11_ppp_railways_financing.html)) or the workshop organized in 2009 by the TEM and TER projects ([www.unece.org/trans/main/ter/workshop\\_2009.html](http://www.unece.org/trans/main/ter/workshop_2009.html)). The Working Party on Transport Trends and Economics (ECE/TRANS/WP.5/50, paras. 30–32) approved the secretariat's proposal to transform the report which reviewed the transport situation in UNECE member States and the emerging development trends into an annual publication on transport trends and economics in the ECE region. In addition, at its last session, WP.5 (ECE/TRANS/WP.5/50, para. 42) adopted its terms of reference and rules of procedures whereby WP.5 should review general transport policy and development trends and analyse specific transport economic issues. It should encourage the exchange of data between member States on transport policy developments, particularly relating to inland transport.

22. Transport Trends and Economics 2014: Financing Transport Infrastructure<sup>5</sup> will include data, analysis and presentations of pre-feasibility or feasibility studies of priority infrastructure projects received from the member Governments of the EATL and TEM and TER projects and UNECE member States and will focus, inter alia, on:

- (a) Presentation of best practices or innovative models regarding financing of transport infrastructure;
- (b) Presentation of best practices regarding medium and long-term scheduling, management and delivery of such projects;
- (c) Presentation of specific national experiences regarding financing of their transport infrastructure including illustration of specific studies for such projects, types of financing and data provided by the Governments;
- (d) Presentation of International Financial Institutions and other donors' investment portfolios regarding investments or lending in transport infrastructure.

#### **V. Guidance by WP.5**

23. WP.5 may wish to consider the above proposal and provide guidance to the secretariat on further action in this field.

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<sup>5</sup> forthcoming