ECONOMIC COMMISSION FOR EUROPE

TEM and TER revised Master Plan

Final Report

Volume II: Annexes

Trans-European Motorway (TEM)
Trans-European Railway (TER)
Projects

2011

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Trans-European Motorway (TEM) project

Trans-European Railway (TER) project

TEM and TER revised Master Plan

Final report

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EXECUTIVE SUMMARY

The objectives of the Master Plan revision were (a) to analyse the results of the road and rail infrastructure development in 25 participating countries of Central, Eastern and South-Eastern Europe and the Caucasus in the period 2005 to 2010, (b) to describe the existing status of road and rail networks, and (c) to set out the road and rail networks development programme until the year 2020.

Five years ago, the United Nations Economic Commission for Europe (UNECE) published the original Trans-European North-South Motorway (TEM) and Trans-European Railway (TER) projects Master Plan, presenting a reliable and pragmatic short-, medium- and long-term investment strategy for developing road, rail and combined transport backbone networks in the participating countries. The original Master Plan proved to be an important step towards improving the transport sector performance in the study region. Many targeted investments — for example, about 45 % of the 491 road and rail projects contained in the original Master Plan — have been completed.

Since the creation of the original Master Plan, important political, economic and technological changes have taken place and new challenges have emerged. Four additional countries — Albania, Armenia, Azerbaijan and Montenegro — have joined the revision process.

The slower than expected economic growth in some participating countries unfortunately has resulted in a minimal growth of their passenger and freight transport sectors. Budgetary constraints in many of the countries have limited transport infrastructure development. However, the original Master Plan had already acknowledged that the range of possible investments would greatly exceed the immediate and foreseeable capacities of national and international bodies to fund all the identified projects. The original Master Plan did not foresee the global crisis of 2008 and 2009, the consequences of which further deepened the imbalances between the investment needs and the funding sources.

The revised Master Plan endeavours to take the recent and expected future developments into account. First of all, it addresses the modifications of the TEM and TER Master Plan backbone networks identified in 2005. Furthermore, it reflects changes in traffic flows, political changes in the region, the needs of new participating countries, the desire to harmonize TEM and TER networks with other international transport networks, changes in priorities, as well as the need to connect these networks in the best way with important international combined transport routes and with transhipment points and nodes. During this work, the road and rail missing links identified in the original report were also considered and the great majority of them have been included in the revised networks.

Three scenarios for road and rail traffic growth on backbone networks up to 2020 have been developed. These scenarios are based on the results of the 2005 UNECE Censuses of Motor Traffic on Main International Traffic Arteries and of E Rail Traffic in Europe, results of recent national traffic censuses, the TEM and TER databases, national forecasts of traffic development in 2015 and 2020, and recent international studies. The basic scenario reflects, as far as possible, uncertainties inevitably linked with such projections. The other two scenarios take into account the consequences of the global economic crisis, with its impacts on the development of road

and rail traffic in the participating countries in 2008 and 2009. These impacts were identified by a special enquiry carried out in the framework of the Master Plan revision work. As far as it is known, this is a first attempt to reflect the impact of the global crisis on the road and rail traffic developments in the forthcoming years. The forecast traffic flows on particular sections of the TEM (motorway/road) and TER (rail) backbone networks are also illustrated on the respective maps.

The changes in the backbone network, traffic forecast results as well as the above additional requirements have been reflected in the new 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 EUR 188 x 10^9. The average cost of a project (approximately EUR 388 x 10^6) 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.

Special attention was paid to project funding considerations in light of the present budgetary funding limitations in almost all participating countries. Annexes III to VI of Volume II focus on the financing of road and rail Master Plan projects and recommendations for their implementation.

The expected status of the backbone road and rail networks in the region in the years 2015 and 2020 is shown on the respective maps. This status was based on the assumption that identified infrastructure projects would be completed in accordance with the timetables indicated in this final report and also on other available sources as follows: the national master plans of participating countries and their data provided through the revision questionnaires; the TEM and TER projects databases; data from other relevant studies, and documentation and information from other sources. It should be noted, nevertheless, that the 2020 status maps in particular include a rather considerable degree of uncertainty and represent the most probable option based on the latest information available. The status data were also of importance for other topics dealt with in this final report, e.g. border crossing issues and intermodal relationships.

Different types of road and rail bottleneck were subsequently analysed, distinguishing between the condition bottlenecks, i.e. links in poor condition, and the capacity bottlenecks, i.e. congested road and rail links in the backbone networks. Both types of bottleneck are listed in the final report and are indicated on the corresponding maps.

The final report also includes detailed considerations on indicated barriers and on border crossing problems in the region, broken down according to their origin (i.e. infrastructure, procedures and staff), which are particularly frequent on borders between Schengen and non-Schengen countries.

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 transhipment points such as terminals, ferry links and sea, river and lake ports of importance for international combined transport.

The original Master Plan did not deal with Intelligent Transport Systems (ITS). ITS applications would improve overall service levels by improving transport management and the use of infrastructure. This final report underlines that the wider application of ITS could be increased by their integration. ITS integration is also a necessary precondition for interoperability of ITS at the European level.

Finally, the revised Master Plan focuses on the most important transport impacts on the environment, i.e. carbon dioxide emissions and noise pollution, as well as on road safety and transport security issues. These issues, at present, are basic elements of the definition of transport service quality — provided that there is a balance between operational needs and security requirements.

This final report, including the maps, was prepared in close cooperation with the TEM and TER National Coordinators and focal points/contact persons in participating countries. The report recommends that the next revision of the Master Plan be prepared in the years 2015 to 2016.

Successful implementation of the revised TEM and TER Master Plan will be a long-term process, requiring political will and commitment from the participating countries as well as close cooperation between participating countries, UNECE and the TEM and TER projects Central Offices. The necessary follow-up work will require the actions identified in the conclusions of the final report and in its annexes, the most important of which are summarized below.

- *Each participating country needs a clear transport policy and strategy, indicating objectives and measures/instruments for investment funding. Such a strategy should include an implementation schedule and a manageable financial plan, and should only include infrastructure projects which clearly demonstrate a significant cost–benefit ratio.*
- *National transport master plans, comprising infrastructure and transport policy for all modes, with clear objectives for a sustainable transport policy, should be established and regularly updated.*
- *A long-term "strategic" development plan for transport networks should be established based on the results of feasibility studies. The development plan should determine an implementation schedule and a tentative investment plan.*
- *The investment plan of the revised Master Plan should be updated regularly, and a monitoring system for implementing identified road and rail projects must be established.*
- *The updating of both national and international transport infrastructure development plans should be carefully and simultaneously considered with the aim of moving towards plans that acknowledge shared international needs and goals, recognizing at the same time the importance of specific national needs.*
- *National laws on tender and construction need appropriate harmonization with the emerging European good practices so as not to restrict interest in undertaking infrastructure works which, in turn, could likely lead to undermining cost-effectiveness and technical innovation in construction.*
- A *new planning culture is needed to prevent erroneous decisions and to ensure efficient allocation of the limited financial resources. The planning process and preparatory decisions need to be executed more carefully and the results should be made more visible by public decision-makers.*
- *The political, legal, institutional, financial and economic framework conditions which influence the transport sector should be carefully considered and the organizational structure revised if necessary.*
- *Efforts aimed at simplifying the bureaucratic and lengthy procedures for project approval should be intensified and appropriate legislative and administrative measures established, thus preventing substantial interference with or modification of the already approved medium-term financing plans during the annual budget allocation procedures.*

- *An appropriate project management system should be established to avoid systematically biased underestimation of project costs and overestimation of travel and transport demand, and to ensure appropriate risk assessment, quality of management as well as approbation of economically efficient projects.*
- *The preparation of appropriate feasibility studies for each project in the pipeline should be organized as soon as possible, even if their implementation is not expected in a near future.*
- *New assessment instruments (such as Sustainable Development Analysis) should be introduced to ensure sustainable transport development.*
- *European standardization procedures on national construction and operation guidelines should be enabled and supported as quickly as possible since it is proven that their application significantly reduces the costs of infrastructure construction, maintenance and operation.*
- *Efficient completion of priority transport infrastructure networks needs to be pursued. The currently established practice in many countries is to extend the completion time of several infrastructure projects running in parallel because of underfunding; such a practice minimizes the economic benefits and should be avoided.*
- *Data on road and rail traffic flows will need to be regularly provided in the forthcoming years for verifying and updating road and rail traffic forecasts for the years 2015 and 2020.*
- *The provision of information on the location of new or extended transhipment points, sea and major river ports, freight villages and logistics centres would make it possible to adjust connections to the TEM and TER revised backbone networks.*
- *The deeper involvement of both the TEM and the TER project in the activities aimed at possible technical interoperability of the ITS at the European level should be considered.*
- *A special follow-up programme should be established to monitor regularly the progress achieved in implementing the revised Master Plan and to bring the TEM and TER backbone networks up to the standards set by the relevant UNECE International Agreements as well as by the "Standards and Recommended Practices for Projects".*

The possibilities for funding identified projects for which financing has not been fully secured at present should be seriously considered by respective countries, exploiting the ways and means identified and recommended in Annexes III to VI of Volume II as summarized below.

- *Efforts should be intensified to develop and/or rearrange the system of institutions dealing with the transport sector when opting for the renewal and reorganization of financial practices.*
- *There is a strong need to have a dedicated unit within the competent Ministry of a country, which will integrate the critical links between the involved Ministries, EU bodies (if applicable), international financial institutions and other relevant public and private stakeholders. This unit may have a specific role to follow transport infrastructure projects.*
- *Governments should consider establishing transport funds. This will make additional funding available for investments in transport projects.*
- *All the advantages and disadvantages of public–private partnership (PPP) models for financing transport infrastructure should be discussed and made transparent before making decisions; experience indicates that some advantages of PPP models can be achieved also by changing organizational models and/or tendering procedures.*
- *Different organizational models for planning and financing activities should be considered; whether a public or a private corporation is the more successful model will depend on which entity*

has the lower interest rate and better credit rating, etc. More effective planning and construction management can be achieved also with the new method of "functionally oriented bidding".

- *The legal, financial, banking and economic environment should be ready when preparing PPP projects and appropriate rules should be set to streamline administrative procedures which could pose time limits on approval processes and the establishment of "special project vehicles" (SPVs).*
- *A special PPP unit or a programme in the government may address the capacity problem of the public sector effectively and promote private participation in a planned and coordinated manner taking into account the overall sector needs. Such an administrative arrangement can also help to enhance the social acceptability and transparency of private projects by institutionalizing the project identification and approval processes.*
- *Further efforts should be aimed at establishing fair cost sharing between taxpayers and transport users, since the current distribution of external costs may contribute to the future unsustainability of a transport system as a whole.*
- *For roads, opportunities for cost sharing of road infrastructure and road transport services in a fair and equitable manner should be considered, introducing and/or gradually developing appropriate toll collection systems.*
- *For railways, the long-term goal should be that contributions of railway users cover, at least, all operation costs and, as much as possible, the infrastructure costs with the exception of the share of the costs which are summarized under the terms non-profit and social costs.*

ANNEX I

TEM Master Plan revision questionnaires — Summary of national road foretcasts

Data on backbone network traffic, in accordance with national road forecasts for the years 2015 and 2020, were requested in the revision questionnaire and were provided by Albania, Azerbaijan, Bosnia and Herzegovina, the Czech Republic, Georgia, Lithuania, Poland, Romania, Slovakia and Turkey. For individual sections of the TEM backbone network, the following AADT (Annual Average Daily Traffic) data were provided.

Albania (ALB)

Road section	AADT 2015	AADT 2020
Hani i Hotit – Shkoder	1,828	2,000
Shkoder – Lezhe	11,333	14,342
Lezhe – Lac	10,210	12,921
Lac – Fushe Kruja	25,525	32,303
Fushe Kruja – Tirana	27,700	33,400
Perrenjas crossing /Pogradec – Elbasan	7,216	9,131
Elbasan – Rrogozhine	10,319	13,058
Rrogozhine – Durres	30,909	40,690
Durres – Vore	43,983	55,660
Vore – Tirana	52,780	66,792
Kapshtica – Korce	1,932	2,391
Korce – Pogradec	9,509	12,033
Kakavija – Gjirokaster	5,420	6,859
Gjirokaster – Tepelene	8,337	11,779
Tepelene – Fier	4,446	5,874
Fier – Lushnje	18,818	24,017
Lushnje – Rrogozhine	27,635	34,972

Azerbaijan (AZE)

Road section (border)	AADT 2015	AADT 2020
Baku – Sumgayit	58,000	78,000
Sumgayit – G.Z.Tagiyev	20,400	27,300
G.Z.Tagiyev – Siyazan	16,900	22,600
Siyazan – Devechi	14,800	19,800

Road section (border)	AADT 2015	AADT 2020
Devechi – Gendob	12,200	16,300
Gendob – Khachmaz	9,500	12,700
Khachmaz – (RUS	8,200	11,000
Baku – Alat	26,100	34,800
Alat – Hadjigabul	13,960	18,600
Hadjigabul – Kurdamir	7,500	14,400
Kurdamir – Ujar	7,200	9,800
Ujar – Yevlakh	6,800	9,300
Yevlakh – Ganja	9,090	12,500
Ganja – Gazakh	7,960	10,900
Gazakh – Red bridge	5,280	7,300
Alat – Salyan	8,000	11,200
Salyan – Bilasuvar	7,600	10,600
Bilasuvar – Jalilabad	9,400	11,700
Jalilabad – Masalli	11,800	16,600
Masalli – Lenkaran	7,000	9,800
Lenkaran – Astara	5,800	8,100

Bosnia and Herzegovina (BIH)

Road section	AADT 2015	AADT 2020
Svilaj – Doboj	10,000	13,000
Doboj – Zenica	15,000	20,000
Zenica – Sarajevo	20,000	25,000
Sarajevo – Mostar	-	15,000
Mostar – Bijaca	10,000	14,000

The Czech Republic (CZE)

AADT data for the year 2005 and growth coefficients for 2015 and 2020 were provided for the following TEM backbone network sections.

Road section (border)	AADT 2005	Growth 2015/2005	Growth 2020/2005
Praha – Ricany	70,900 to 93,500	1.34	1.46
Ricany – Mirosovice	59,200 to 65,500	1.34	1.46
Mirosovice – Humpolec	35,200 to 42,200	1.34	1.46
Humpolec – Velke Mezirici	38,100 to 39,600	1.34	1.46
Velke Mezirici – Brno zapad	40,900 to 48,400	1.34	1.46

Road section (border)	AADT 2005	Growth 2015/2005	Growth 2020/2005
Brno zapad – Brno vychod	33,300 to 58,500	1.34	1.46
Brno vychod – Holubice	45,200	1.34	1.46
Holubice – Vyskov	29,900 to 34,800	1.34	1.46
Vyskov – Prostějov	22,575 to 32,235	1.32	1.43
Prostějov – Olomouc	23,084 to 32,192	1.32	1.43
Olomouc bypass	18,200 to 21,700	1.32	1.43
Olomouc – Lipnik nad Becvou	19,870 to 25,300	1.32	1.43
Lipnik nad Becvou – Belotin	23,300 to 30,019	1.34	1.46
Belotin – Pribor	16,986 to 28,747	1.32	1.43
Pribor – Frydek-Mistek	15,558 to 18,363	1.32	1.43
Frydek-Mistek – Cesky Tesin	6,744 to 12,948	1.32	1.43
Cesky Tesin – (POL)	9,314	1.32	1.43
Brno – Blucina	23,100 to 37,600	1.34	1.46
Blucina – Breclav	17,600 to 19,400	1.34	1.46
Breclav – (SVK)	12,600	1.34	1.46
Brno – Rajhrad	32,250 to 42,429	1.32	1.43
Rajhrad – Pohorelice	17,374 to 18,449	1.32	1.43
Pohorelice – Mikulov	9,139 to 10,212	1.32	1.43
Mikulov – (AUT)	6,185	1.32	1.43
Mirosovice – Benesov	20,100 to 24,630	1.34	1.46
Benesov – Votice	16,935 to 17,644	1.34	1.46
Votice – Mezno	11,809 to 12,069	1.34	1.46
Mezno – Tabor	10,931 to 13,659	1.34	1.46
Tabor – Sobeslav	12,918 to 30,483	1.34	1.46
Sobeslav – Veseli	11,310 to 15,466	1.34	1.46
Veseli – Sevetin	8,919 to 9,727	1.34	1.46
Sevetin – Ceske Budejovice	10,819 to 19,774	1.34	1.46
Ceske Budejovice – Kamenny Ujezd	15,467 to 23,024	1.34	1.46
Kamenny Ujezd – Kaplice	7,881 to 11,589	1.32	1.43
Kaplice – Dolni Dvoriste	6,357 to 7,402	1.32	1.43
Dolni Dvoriste – (AUT)	3,749	1.32	1.43
Praha – Nova Ves	23,899 to 30,300	1.34	1.46
Nova Ves – Lovosice	16,300 to 20,500	1.34	1.46
Lovosice – Teplice	10,257 to 18,762	1.34	1.46
Teplice – (DEU)	8,048 to 16,786	1.34	1.46

Georgia (GEO)

Road section (border)	AADT 2005	AADT 2010	AADT 2015	AADT 2020
Tbilisi – Mtskheta	13,543	15,796	20,740	25,233
Mtskheta – Natakhtari	16,223	18,923	24,845	30,226
Natakhtari – Igoeti	11,896	13,875	18,218	22,165
Igoeti – Gori	9,237	10,774	14,147	17,211
Gori – Osiauri	9,160	10,684	14,028	17,067
Osiauri – Rikoti	5,831	6,802	8,930	10,865
Rikoti – Zestaponi	5,081	5,926	7,781	9,467
Zestaponi – Kutaisi	5,949	6,939	9,111	11,085
Kutaisi – Samtredia	5,413	6,314	8,290	10,086
Samtredia – Senaki	2,169	2,530	3,321	4,041
Senaki – Khobi	1,990	2,321	3,047	3,707
Khobi – Zugdidi	2,431	2,836	3,723	4,530
Senaki – Poti	3,173	3,701	4,860	5,913
Poti – Kobuleti	4,282	4,995	6,558	7,978
Kobuleti – Batumi	10,163	11,854	15,564	18,936
Batumi – Sarpi (TUR)	4,849	5,655	7,426	9,034
Mtskheta – Pasanauri	1,072	1,251	1,642	1,998
Pasanauri – Larsi (RUS)	208	242	318	387
Tbilisi – Rustavi	14,896	17,374	22,812	27,754
Rustavi – Red bridge	2,117	2,470	3,243	3,945
Tbilisi – Marneuli	7,035	8,206	10,774	13,10[9]
Marneuli – Bolnisi	2,631	3,069	4,029	4,902
Bolnisi – Guguti (ARM)	526	614	806	981
Marneuli – Sadakhlo (ARM)	1,645	1,919	2,519	3,065
Khashuri – Borjomi	4,571	5,331	7,000	8,516
Borjomi – Akhaltsikhe	1,588	1,852	2,431	2,958
Akhaltsikhe – Vale (TUR)	261	304	399	486
Zagesi – Lochini	932	1,087	1,427	1,737
Lochini – Rustavi	5,297	6,178	8,112	9,869
Samtredia – Lanchkhuti	2,195	2,561	3,362	4,090
Lanchkhuti – Grogoleti	3,463	4,040	5,304	6,453

Lithuania (LTU)

Road section (border)	AADT 2015	AADT 2020
Klaipeda – road crossing No.166	31,314	36,838
road crossing No. 166 – road crossing No. 197	13,866	16,194
road crossing No. 197 – road crossing No. 164	11,939	13,775
road crossing No. 164 – road crossing No. 162	11,918	13,751
road crossing No. 162 – road crossing No. A12	12,652	14,598
road crossing No. A12 – road crossing No. 146	14,457	16,680
road crossing No. 146 – road crossing No. 196	17,175	20,058
road crossing No. 196 – road crossing No. 229	16,315	18,641
road crossing No. 229 – road crossing No. A8	19,216	21,690
road crossing No. A8 – road crossing No. A5	33,739	38,739
road crossing No. A5 – road crossing No. A6	66,783	80,485
road crossing No. A6 – Kaunas/Palemonas	42,458	50,190
Kaunas/Palemonas – road crossing No. 188	35,927	42,470
road crossing No. 188 – road crossing No. 129	31,029	36,679
road crossing No. 129 – Elektrenai	28,654	33,465
Elektrenai – road crossing No. 108	32,507	38,427
road crossing No. 108 – Grigiskes	29,421	35,117
Grigiskes – road crossing No. A4	48,658	58,642
Vilnius – road crossing No. 10[6]	14,126	16,220
road crossing No. 10[6] – road crossing No. 5235	4,673	5,300
Kaunas – road crossing No. 140	45,164	53,389
road crossing No. 140 – road crossing No. 130	25,288	29,893
road crossing No. 130 – road crossing No. 189	21,306	24,763
road crossing No. 189 – road crossing No. 230	11,011	12,797
road crossing No. 230 – Marijampole	21,535	24,427
Marijampole – road crossing No. A7	10,692	12,128
road crossing No. A7 – road crossing No. 201	7,804	8,852
road crossing No. 201 – road crossing No. 2615	10,214	11,445
road crossing No. 2615 – Sangruda (POL)	10,581	11,856
Salociai (LVA) – road crossing No. 1303	4,603	5,157
road crossing No. 1303 – road crossing No. 125	5,030	5,636
road crossing No. 125 – road crossing No. 205	8,711	9,760
road crossing No. 205 – road crossing No. 2904	8,301	9,301
road crossing No. 2904 – road crossing No. A17	10,488	11,896

Road section (border)	AADT 2015	AADT 2020
road crossing No. A10 – road crossing No. A9	5,274	5,924
road crossing No. A9 – road crossing No. A2	8,948	10,810
road crossing No. A2 – Ramygala	8,494	9,541
Ramygala – road crossing No. 2001	6,895	7,744
road crossing No. 2001 – road crossing No. 229	7,602	8,538
road crossing No. 229 – road crossing No. 144	6,863	7,709
road crossing No. 144 – Sitkunai	8,441	9,482

Poland (POL)

Road section	AADT 2015	AADT 2020
junction Olszyna – junction Golnice	12,300	14,200
Nowe Marzy – Torun (Lubicz)	16,500	21,100
Lubicz – Czerniewice	15,200	24,600
Torun (Czerniewice) – Strykow	15,300	19,600
Strykow – Tuszyn	42,100	53,700
Tuszyn – Rzasawa	34,700	42,800
Rzasawa – Pyrzowice	32,600	46,300
Pyrzowice – Sosnica	17,700	22,600
Sosnica – Swierklany	13,400	16,500
Swiecko – Nowy Tomysl	17,000	21,000
Strykow – Warszawa	42,000	65,200
Warszawa (Lubelska) – Siedlce	15,400	22,400
Zgorzelec – Krzyzowa	15,900	17,200
Krakow – Szare – (Tarnow)	28,500	38,100
Kosztowy – Bielsko Biala	35,400	49,000
Szczecin – junction Mysliborz	16,400	17,900
Jordanowo – Sulechow	17,300	18,900
Nowa Sol – Potoczek	15,800	17,100
bypass Legnica, 6.2 km length	10,400	16,250
junction Krakowska – junction Zywiecka	23,000	25,100
junction Wilkowice – Zywiec	12,500	13,600
Marki – Radzymin	46,600	65,200
Radzymin – Niegow	33,300	36,300
Wyszkow – Ostrow Mazowiecka	21,500	26,800
Ostrow Mazowiecka – Zambrow	14,200	18,300

Romania (ROU)

Road section (border)	AADT 2005	AADT 2010	AADT 2015	AADT 2020
Nadlac – Arad	7,200	9,300	11,400	12,600
Arad – Timisoara	11,200	14,400	17,700	19,600
Timisoara – Lugoj	15,900	20,600	25,300	27,900
Lugoj – Deva	6,900	9,000	11,000	12,200
Deva – Sebes	15,200	19,600	24,000	26,600
Sebes – Sibiu	12,400	16,000	19,500	21,700
Sibiu – Cornetu	13,800	17,900	21,900	24,200
Cornetu – Ramnicu Valcea	9,800	12,700	15,600	17,200
Ramnicu Valcea – Pitesti North	10,300	13,400	16,500	18,100
Pitesti North – Pitesti South	14,700	17,300	24,900	29,300
Pitesti South – Bucuresti West	25,200	32,400	39,800	44,200
Bucuresti West – Bucuresti South West	13,800	18,000	21,400	24,200
Bucuresti South West – Bucuresti South	9,900	12,800	15,300	17,300
Bucuresti South – Bucuresti East	9,900	12,800	15,300	17,300
Bucuresti East – Lehliu	8,400	10,900	13,500	14,800
Lehliu – Drajna	6,900	9,000	11,100	12,100
Drajna – Fetesti	12,900	16,300	19,800	22,300
Fetesti – Cernavoda	7,400	9,600	11,700	12,900
Cernavoda – Constanta West	14,200	18,500	22,700	25,000
Constanta West – Agigea C. South Port	29,700	38,600	47,500	52,300
Bucuresti South – Giurgiu	16,800	21,500	26,300	29,200
Lugoj West – Drobeta Turnu Severin	4,900	6,400	7,800	8,600
Drobeta Turnu Severin – Craiova	9,600	12,400	15,200	16,800
Craiova – Calafat	6,700	8,900	8,000	11,900
Craiova – Bucuresti South West	16,500	17,300	21,200	23,400
Zalau – Cluj Napoca West	6,900	9,400	11,600	12,800
Cluj Napoca West – Turda	15,300	19,900	24,500	26,900
Turda – Sebes	10,400	13,500	16,600	18,300
Timisoara – Moravita	7,500	9,800	12,000	13,200
Albita – Crasna	3,400	4,400	5,400	5,900
Crasna – Tecuci	6,900	8,800	10,800	11,800
Tecuci – Tisita	4,900	6,300	7,700	8,500
Tisita – Ramnicu Sarat	12,500	16,300	20,100	22,000
Ramnicu Sarat – Buzau	11,700	15,200	18,700	20,600

Road section (border)	AADT 2005	AADT 2010	AADT 2015	AADT 2020
Buzau – Ploiesti	13,300	17,000	20,800	23,300
Siret – Suceava	5,800	7,500	9,200	10,100
Suceava – Sabaoani	7,300	9,500	11,600	12,800
Sabaoani – Bacau	9,300	12,000	14,700	16,300
Bacau – Tisita	10,700	13,800	16,900	18,700
Halmeu – Livada	2,400	3,200	3,900	4,200
Livada – Baia Mare	3,400	4,400	5,400	5,900
Baia Mare – Rastoci	9,000	11,500	13,900	17,400
Rastoci – Zalau North	2,700	2,800	3,300	4,100
Zalau North – Zalau South	3,200	4,100	5,000	5,400
Zalau South – Cluj Napoca	7,300	9,400	11,600	12,800
Turda – Ogra	11,700	15,200	18,600	20,500
Ogra – Targu Mures	10,100	13,000	15,900	17,600
Targu Mures – Sighisoara	6,900	8,900	10,900	12,000
Sighisoara – Rupea	6,100	7,800	9,600	10,500
Rupea – Brasov	7,600	9,800	12,000	13,300
Brasov – Predeal	10,000	12,900	15,900	17,500
Predeal – Campina	17,600	22,900	28,200	31,000
Campina – Ploiesti North	22,600	29,400	36,200	39,800
Ploiesti North – Ploiesti South West	24,800	31,900	39,200	43,600
Ploiesti South West – Bucuresti North	51,900	67,700	83,500	91,500
Bucuresti North – Bucuresti East	19,500	25,400	30,200	34,200
Bucuresti North – Bucuresti West	17,800	23,100	27,400	31,000

Slovakia (SVK)

Road section (border)	AADT 2015	AADT 2020
Hricovske Podhradie – Dubna Skala	16,700	20,040
Dubna Skala – Turany	16,100	19,320
Turany – Hubova	16,100	19,320
Hubova – Ivachnova	16,400	19,680
Janovce – Jablonov	16,400	18,620
Fricovce – Svinia	14,800	16,800
Presov west – Presov south	14,800	16,800
Budimir – Bidovce	9,500	11,000
Bidovce – Dargov	9,500	11,000
Dargov – Pozdisovce	8,400	9,700

Road section (border)	AADT 2015	AADT 2020
Pozdisovce – (UKR)	7,000	8,100
Cadca, Bukov – Svrcinovec	7,000	8,500
Svrcinovec – Skalite	7,000	8,500
Kosice – Milhost	8,100	9,100

Turkey (TUR)

Road section (border)	AADT 2008	AADT 2010	AADT 2015	AADT 2020
Kapikule (BGR/TUR) – Edirne Batı	5,468	6,028	7,694	9,820
Edirne Dogu – Havsa	5,290	5,832	7,444	9,500
Havsa – Babaeski	4,984	5,495	7,013	8,951
Babaeski – Luleburgaz	6,396	7,052	9,000	1,486
Luleburgaz – Saray	7,832	8,635	11,020	4,065
Saray – Corlu	9,081	10,012	12,778	16,308
Corlu – Cerkezkoy	11,249	12,402	15,828	20,202
Cerkezkoy – Kinali	17,794	19,618	25,038	31,955
Kinali – Selimpasa	29,104	32,087	40,952	52,267
Selimpasa – Catalca	36,490	40,230	51,345	65,531
Catalca – Hadimkoy	43,653	48,127	61,424	78,395
Hadimkoy – Avcilar	67,108	73,987	94,428	20,516
Avcilar K16 – Mahmutbey Bati	124,891	37,692	175,734	224,286
Mahmutbey Bati – Anadolu	223,358	246,252	314,287	401,119
Anadolu – Kurtkoy	106,947	117,909	150,485	192,061
Kurtkoy – Sekerpinari	75,741	83,504	106,575	136,020
Sekerpinari – Gebze	52,735	58,140	74,203	94,704
Gebze – Izmit Dogu	56,318	62,091	79,245	101,139
Izmit Dogu – Adapazari	37,174	40,984	52,308	66,759
Adapazari – Duzce	23,919	26,371	33,656	42,955
Duzce – Kaynasli	19,564	21,569	27,529	35,134
Kaynasli – Abant	18,105	19,961	25,476	32,514
Abant – Caydurt	18,304	20,184	25,756	32,871
Caydurt – Gerede	19,180	21,146	26,988	34,445
Polatli – Sivrihisar	10,960	12,083	15,422	19,683
Ankara Eskisehir junction – Polatli	19,699	21,718	27,718	35,377
Eskisehir junction – Konya Yolu junction	9,369	10,329	13,183	16,825
Pozanti – Tarsus Dogu	13,720	15,126	19,305	24,639

Road section (border)	AADT 2008	AADT 2010	AADT 2015	AADT 2020
Tarsus Dogu – Adana Kuzey	20,782	22,912	29,242	37,321
Adana – Iskenderun junction Bati	15,817	17,438	22,256	28,405
Iskenderun junction Bati – junction Dogu	8,556	9,433	12,039	15,365
Iskenderun junction Dogu – Bahce	10,973	12,098	15,440	19,706
Bahce – Komurler	9,917	10,933	13,954	17,810
Komurler – Gaziantep	8,477	9,346	11,928	15,223
Gaziantep – Birecik	4,715	5,198	6,634	8,467
Birecik – Suruc	3,428	3,779	4,824	6,156
Suruc – Sanliurfa	3,493	3,851	4,915	6,273
Ankara K1 junction – Eskisehir junction	21,242	23,419	29,890	38,148
Izmir – Cesme	9,595	10,578	13,501	17,231
Tarsus Dogu – Tarsus Bati	14,423	15,901	20,295	25,902
Tarsus Bati – Mersin	11,679	12,876	16,434	20,974
Samsun passage	50,159	55,300	70,579	90,078
Samsun – Carsamba	23,345	25,738	32,849	41,924
Carsamba – Ordu	11,357	12,521	15,980	20,396
Ordu passage	11,065	12,199	15,570	19,871
Ordu – Carsibasi	10,001	11,026	14,072	17,960
Carsibasi – Trabzon	22,946	25,298	32,287	41,208
Trabzon – Rize	10,202	11,248	14,355	18,321
Rize – Hopa	6,050	6,670	8,513	10,865
Hopa – Sarp (GEO)	3,009	3,317	4,234	5,404
Iskenderun junction Dogu –Gozeneler	1,983	2,186	2,790	3,561
Iskenderun junction Bati – Gozeneler	6,437	7,097	9,058	11,560
Gozeneler – Payas	7,198	7,936	10,128	12,927
Payas – Iskenderun	6,190	6,824	8,710	11,116
Gerede – Ilgaz	6,335	6,984	8,914	11,377
Ilgaz – Suluova	6,212	6,849	8,741	11,156
Suluova – Amasya	6,176	6,809	8,690	11,091
Amasya – Niksar	3,566	3,932	5,018	6,404
Niksar – Refahiye	2,276	2,509	3,203	4,087
Refahiye – Erzincan	3,264	3,599	4,593	5,862
Erzincan – Askale	2,761	3,044	3,885	4,958
Askale – Erzurum peripheral road	3,864	4,403	5,620	7,173
Erzurum peripheral road	5,668	6,249	7,975	10,179
Erzurum peripheral road – Pasinler	5,684	6,267	7,998	10,208

Road section (border)	AADT 2008	AADT 2010	AADT 2015	AADT 2020
Pasinler – Horasan	3,776	4,163	5,313	6,781
Horasan – Dogubayazit	2,105	2,321	2,962	3,780
Dogubayazit – Gurbulak (IRN)	1,844	2,033	2,595	3,312
Bursa – Yenisehir junction	26,125	28,803	36,760	46,917
Yenisehir junction – Bozuyuk	9,216	10,161	12,968	16,551
Bozuyuk – Eskisehir	16,356	18,032	23,015	29,373
Eskisehir – Sivrihisar junction	9,509	10,484	13,380	17,077
Konya Yolu junction – 260 State Road junction	22,940	25,291	32,279	41,197
260 state road junction – 715 state road junction	12,345	13,610	17,371	22,170
715 state road junction – Sereflikochisar	7,929	8,742	11,157	14,239
Sereflikochisar – Aksaray	8,729	9,624	12,283	15,676
Aksaray – Eregli junction	7,229	7,970	10,172	12,982
Eregli junction – Pozanti	13,763	15,174	19,366	24,716
Urfa – Kiziltepe	4,656	5,133	6,551	8,362
Kiziltepe – Nusaybin	3,317	3,657	4,667	5,957
Nusaybin – Cizre	3,464	3,819	4,874	6,221
Cizre – Silopi	4,764	5,252	6,703	8,555
Silopi – Habur (IRQ)	6,860	7,563	9,653	12,320
Ankara Samsun junction – Kirikkale	21,816	24,052	30,697	39,178
Kirikkale – Baliseyh	8,820	9,724	12,411	15,839
Baliseyh – Delice junction	8,820	9,724	12,411	15,839
Delice junction – Yildizeli	3,888	3,735	4,767	6,084
Yildizeli – Sivas	4,890	5,391	6,881	8,782
Sivas – Refahiye	1,978	2,181	2,783	3,552
Izmir passage	65,000	71,663	91,462	116,731
Izmir – Salihli	17,471	19,262	24,583	31,375
Salihli – Usak	9,305	10,259	13,093	16,710
Usak – Afyon	8,880	9,790	12,495	15,947
Afyon passage	9,227	10,173	12,983	16,570
Afyon – Sivrihisar	5,851	6,451	8,233	10,508
Aydin – Denizli	11,372	12,538	16,002	20,422
Denizli – Antalya	6,694	7,380	9,419	12,021
Antalya passage	34,203	37,709	48,127	61,424
Iskenderun – Topbogazi	10,486	11,561	14,755	18,831
Topbogazi – Antakya	10,421	11,489	14,663	18,715

Road section (border)	AADT 2008	AADT 2010	AADT 2015	AADT 2020
Antakya – Yayladagi	2,207	2,433	3,105	3,963
Askale – Trabzon	2,223	2,451	3,128	3,992
Urfa – Diyarbakir	5,675	6,257	7,985	10,191
Diyarbakir – Tatvan	3,539	3,902	4,980	6,356
Tatvan – Muradiye	2,538	2,798	3,571	4,558
Muradiye – Dogubayazit	2,149	2,369	3,024	3,859
Afyon – Aksehir	6,823	7,522	9,601	12,253
Aksehir – Sarayonu junction	7,050	7,773	9,920	12,661
Sarayonu junction – Konya	16,508	18,200	23,228	29,646
Konya peripheral road	27,585	30,412	38,815	49,539
Konya – Karapinar	5,331	5,877	7,501	9,574
Karapinar – Eregli	4,814	5,307	6,774	8,645
Eregli – Ulukisla junction	5,255	5,794	7,394	9,437
Izmir – Manisa	24,041	26,505	33,828	43,174
Manisa – Balikesir	14,472	15,955	20,364	25,990
Balikesir peripheral road	10,979	12,104	15,449	19,717
Balikesir – Karacabey junction	15,072	16,617	21,208	27,067
Karacabey junction – Bursa	28,279	31,178	39,791	50,785
Bursa – Orhangazi	34,068	37,560	47,937	61,181
Orhangazi – Yalova	23,190	25,567	32,631	41,646
Suluova – E80 junction – Kavak junction	9,930	10,948	13,973	17,833
Kavak junction – Samsun	14,167	15,619	19,934	25,442
Horasan – Karakurt	1,325	1,461	1,864	2,380
Karakurt – Kars-Selim junction	1,252	1,380	1,762	2,248
Kars-Selim junction – Susuz junction	2,203	2,429	3,100	3,956
Susuz junction – Ardahan junction	762	840	1,072	1,368
Ardahan – Turkgozu (GEO)	525	579	739	943

ANNEX II

TER Master Plan revision questionnaires – Summary of national rail forecasts

Data on backbone network traffic, in accordance with national rail forecasts for the years 2015 and 2020, were requested in the revision questionnaire and were provided by Austria, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Hungary, Romania, the Russian Federation, Serbia, Slovakia, Slovenia and Turkey.

Austria (AUT)

The following data on daily passengers/net tonne in 2015 were provided for the individual sections of the TER backbone network.

Rail section (border)	2015 Passengers/day	2015 Net tonne /day
(Freilassing) – Salzburg	8,800	31,200
Kufstein – Worgl	10,600	65,200
Worgl – Innsbruck	13,500	86,900
(Passau) – Wels	3,600	68,900
Linz – Salzburg	15,400	51,600
Salzburg – Schwarzach/St. Veit	9,000	49,300
Schwarzach/St. Veit – Villach	2,500	37,800
Villach – Arnoldstein	1,700	34,100
Summerau – Linz	100	21,400
Linz – Selzthal	480	17,800
Selzthal – St. Michael	1,900	35,100
Bernhardsthal – Wien	2,500	38,500
Wien – Semmering	5,100	66,700
St. Michael – Klagenfurt	3,000	34,700
Villach – Rosenbach	1,000	18,000
Graz – Spielfeld – (Sentilj)	300	19,100
Buchs – Innsbruck	5,100	20,200
Linz – St. Polten	20,500	54,800
St. Polten – Wien	30,600	72,200
Wien – Bratislava	1,000	24,200

Azerbaijan (AZE)

The following data on the annual average number of trains in 2015 and 2020 were provided for the individual sections of the TER backbone network.

Rail section (border)	2015 Annual average No. trains	2020 Annual average No. trains
Baku – Boyuk-Kesik (GEO)	8,395	≥ 9,000
Baku – Yalama (RUS)	5,110	≥ 60,00
Baku – Aktau (Kazakhstan – ferry)	≥ 2,000 wagons	≥ 2,000 wagons
Baku – Turkmenbashi (ferry)	20,000 wagons	≥ 20,000 wagons
Culfa – Tabriz (IRN)	≥ 400	≥ 400

Bosnia and Herzegovina (BIH)

The following data were provided for individual sections of the TER backbone network.

Rail section (border)	2006 x 10^3 tonnes	2015 No. trains/day	2030 No. trains/day (medium scenario)
Bosanski Samac – Doboj (HRV)	1,232	61	
Doboj – Zenica	1,745	54	78
Zenica – Sarajevo	2,050	49	72
Sarajevo – Konjic	1,415	46	66
Konjic – Mostar	1,415	42	62
Mostar – Capljina (HRV)	1,593	38	50

Bulgaria (BGR)

The following data were provided for the individual sections of the TER backbone network.

Rail section (border)	Mode	2015 No. trains/day			2020 No. trains/day		
		(pessimistic scenario)	(realistic scenario)	(optimistic scenario)	(pessimistic scenario)	(realistic scenario)	(optimistic scenario)
Sofia – Kalotina	Passenger	41	50	52	49	59	62
	Freight	82	94	100	87	102	108
Sofia – Plovdiv	Passenger	66	81	83	78	95	97
	Freight	45	52	55	51	60	63
Plovdiv – Svilengrad	Passenger	42	52	53	50	61	62
	Freight	38	44	47	43	50	53
Sofia – Kulata	Passenger	48	60	61	58	70	71
	Freight	33	41	44	36	48	51
Sofia – Mezdra	Passenger	56	69	70	66	81	82
	Freight	23	28	30	25	32	34
Mezdra – Vidin	Passenger	24	29	30	28	34	35

Rail section (border)	Mode	2015 No. trains/day			2020 No. trains/day		
		(pessimistic scenario)	(realistic scenario)	(optimistic scenario)	(pessimistic scenario)	(realistic scenario)	(optimistic scenario)
	Freight	23	29	31	26	34	36
Sofia – Zimnica	Passenger	26	32	33	31	38	38
	Freight	38	47	50	38	51	54
Plovdiv – Burgas	Passenger	41	50	51	49	59	60
	Freight	37	47	50	37	52	55
Karnobat – Varna	Passenger	27	34	35	32	39	41
	Freight	29	34	36	33	39	41
Mezdra – Gorna Oriahovica	Passenger	35	43	44	41	50	51
	Freight	15	17	18	18	21	22
Radomir – Giueshevo	Passenger	30	37	37	35	43	44
	Freight	6	8	9	6	9	10

Croatia (HRV)

The following data on passenger and freight trains on individual sections of the TER backbone network in 2007, 2015 and 2020 were provided.

Rail section (border)	2007		2015		2020	
	No. passenger trains/ day	No. freight trains/ day	No. passenger trains/ day	No. freight trains/ day	No. passenger trains/ day	No. freight trains/ day
Savski Marof – Zapresic	72	14	82		86	38
Zapresic – Podsused	136	19	165		178	
Podsused – Zagreb Zapadni Kolodvor	136	19	213		228	
Zagreb Zapadni Kolodvor – Zagreb Glavni Kolodvor	136	19	213		228	
Zagreb Glavni Kolodvor – Sesvete	166	4	212			
Sesvete – Dugo Selo	163	37	212			
Dugo Selo – Novska	46	15			110	76
Zagreb Gk – Zagreb Klara	29	10	52		78	25
Zagreb Klara – Velika Gorica	29	10	52		78	25
Velika Gorica – Lekenik	29	10	44		64	25
Lekenik – Sisak	29	10	44		64	25
Sisak – Sunja	21	6			42	17
Sunja – Hrvatska Dubica	8	0			24	6

Rail section (border)	2007		2015		2020	
	No. passenger trains/ day	No. freight trains/ day	No. passenger trains/ day	No. freight trains/ day	No. passenger trains/ day	No. freight trains/ day
Hrvatska Dubica – Jasenovac	8	0			24	6
Jasenovac – Novska	8	0			24	6
Sunja – Volinja						
Novska – Strizivojna-Vrpolje	46	15			96	53
Strizivojna-Vrpolje – Ivankovo	47	21			78	51
Ivankovo – Vinkovci	43	21			78	51
Vinkovci – Tovarnik (border)	22	10			68	26
Dugo Selo – Botovo (border)	41	19				
Zagreb Glavni Kolodvor – Karlovac	36	22				
Karlovac – Ostarije	31	24				
Ostarije – Moravice	26	16				
Moravice – Rijeka	18	22				
Beli Manastir (border) – Osijek	16	3				
Osijek – Vladislavci	17	6				
Vladislavci – Dakovo	17	6				
Dakovo – Strizivojna-Vrpolje	17	6				
Strizivojna-Vrpolje – Slavonski Samac	10	5				
Metkovic (border) –Rogotin	5	7				
Rogotin – Ploce	5	7				
Rijeka – Sapjane (border) a	9	6				
Rijeka – Sapjane (border) b	NA	NA				
Ostarije – Knin	9	14	18	18	18	23
Knin – Perkovic	16	13	18	16	18	21
Perkovic – Split Predgrade	18	8	26	9	32	11
Perkovic – Sibenik	0.2	0.6	22	7	22	9
Knin – Zadar	11	3	14	5	17	6
Horvati – Goljak	NA	NA				
Goljak – Dreznica	NA	NA				
Dreznica – Krasica	NA	NA				

[a] Passenger traffic on existing line.
[b] Passenger traffic to Istria and Trieste through new Ucka tunnel.

The Czech Republic (CZE)

The following data for the years 2008 and 2010 were provided for the TER backbone network sections to be reconstructed in the framework of the proposed Master Plan revision.

Rail section (border)	2008			
	No. passenger trains/ day	No. freight trains/ day	No. passenger trains/ day	No. freight trains/ day
Benesov – Ceske Budejovice	54	13	70	54
Ceske Budejovice – Horni Dvoriste	24	29	26	42
Cheb (border) – Plzen	38	21	52	38
Detmarovice – Mosty u Jablunkova	62	29	82	72
Kadan – Karlovy Vary	45	20	46	24
Letohrad – Lichkov	36	12	36	18
Plzen – Praha	72	19	94	56
Praha – Benesov	93	14	105	54

Hungary (HUN)

The following summary growth rates related to 2008 traffic flows on the TER backbone network links were provided for the years 2015 and 2020.

Rail section (border)	2015	2020
	Growth rate relative to 2008	
(AUT/SVK) – Budapest – Szolnok – Lokoshaza (border)	+10 %	+15 %
Szob (border) – Budapest – Kelebia (border)	+20 %	+30 %
Murakeresztur (border) – Szekesfehervar – Budapest	+10 %	+15 %
Gyekenyes (border) – Budapest – Szolnok – Debrecen – (UKR)	+10 %	+15 %
Budapest – Szolnok – Biharkeresztes (border)	+10 %	+15 %
Zalalovo (border) – Kormend – Porpac – Csorna	+10 %	+15 %
Zalalovo – Boba – Celldomolk – Papa – Gyor	+10 %	+15 %
Celldomolk – Porpac and Boba – Szekesfehervar	+10 %	+15 %
Budapest – Hatvan – Miskolc – Hidasnemeti (border)	+10 %	+15 %
Miskolc – Nyiregyhaza	+10 %	+15 %

Romania (ROU)

The following data regarding the number of passenger and freight trains per day on the TER backbone network sections in 2008 were provided.

It is understood that the completion of works related to rehabilitation and modernization of this network will increase traffic by 4 % to 5 % each year.

Rail section (border)	2008 No. passenger trains/day	2008 No. freight trains/day
Craiova – Calafat	16	1
Bucuresti – Videle	56	41
Videle – Giurgiu	33	49
Bucuresti Nord – Baneasa	9	0
Baneasa – Fundulea	27	20
Fundulea – Lehliu	23	18
Lehliu – Fetesti	16	18
Fetesti – Constanta	26	57
Predeal – Cimpina	40	34
Predeal – Brasov	42	43
Sibot – Coslariu	78	31
Coslariu – Sighisoara	62	29
Sighisoara – Brasov	42	36
Curtici – Simeria	72	36
Simeria – Sibot	45	15

The Russian Federation (RUS)

The following freight traffic data, expressed in 10^6 tonne-km/km, on the TER lines listed below were provided for the years 2015 and 2020.

Rail section (border)	2015		2020	
	x 10^6 tonne-km/ km outgoing	x 10^6 tonne-km/ km incoming	x 10^6 tonne-km/ km outgoing	x 10^6 tonne-km/ km incoming
Kurgan – Ekaterinburg	75.8	14.6	89.0	16.6
Omsk – Tyumen	59.7	25.0	75.4	28.6
Tyumen – Ekaterinburg	89.0	63.8	10^6.7	73.8
Ekaterinburg – Perm	70.8	28.3	83.4	25.1
Perm – Kirov	102.4	114.7	19.2	21.2
Kirov – Kotelnich	97.5	112.1	14.8	17.8
Kotelnich – Vologda	72.0	81.0	9.8	11.7
Vologda – Volkhovstroi	81.2	29.6	93.4	34.3
Volkhovstroi – Mga	60.5	11.7	68.8	12.2

Rail section (border)	2015		2020	
	x 10^6 tonne-km/ km outgoing	x 10^6 tonne-km/ km incoming	x 10^6 tonne-km/ km outgoing	x 10^6 tonne-km/ km incoming
Mga – Veimarn	61.6	6.3	86.6	12.8
Veimarn – Ust – Luga	56.2	6.4	81.8	12.9
Volkhovstroi – Petrozavodsk	25.5	42.3	41.3	56.3
Petrozavodsk – Belomorsk	21.6	21.7	35.7	30.4
Belomorsk – Murmansk	42.0	19.7	60.8	25.6
Vologda – Obozerskaya	27.7	32.5	30.2	40.9
Obozerskaya – Belomorsk	25.4	19.1	31.5	19.4
Kurgan – Chelyabinsk	85.0	23.9	93.8	26.8
Chelyabinsk – Ufa	65.7	39.1	66.1	43.9
Ufa – Samara	73.5	32.8	67.3	36.5
Samara – Sizran	80.4	31.6	74.1	36.1
Sizran – Saratov	53.1	12.0	56.4	13.4
Saratov – Volgograd	67.1	25.6	74.2	31.3
Volgograd – Tikhoretskaya	72.1	8.3	85.0	9.2
Tikhoretskaya – Krasnodar	33.2	3.9	39.2	4.5
Krasnodar – Tuapse	4.7	1.9	4.7	2.0
Krasnodar – Krimskaya	8.8	5.6	9.0	5.9
Krimskaya – Kavkaz	27.3	1.4	34.9	1.6
Krimskaya – Novorossiisk	40.0	9.6	41.7	11.7
Buslovskaya – St. Petersburg	1.6	2.5	1.9	2.6
St. Petersburg – Volkhovstroi	11.7	60.5	12.2	68.8
Volkhovstroi – Vologda	29.6	81.2	34.3	93.4
Vologda – Yaroslavl	46.0	37.1	54.5	41.5
Yaroslavl – Moskva (Alexandrov)	57.4	64.6	56.3	68.5
Moskva (Voskresensk) – Ryazan	27.6	83.8	32.8	98.2
Ryazan – Kochetovka	24.7	43.7	28.2	53.5
Kochetovka – Rtishevo	15.7	31.9	18.3	38.5
Rtishevo – Saratov	13.1	33.6	14.1	43.2
Saratov – Volgograd	67.1	25.6	74.2	31.3
Volgograd – Astrakhan	14.0	31.8	14.8	42.2
Astrakhan – Makhachkala	8.9	2.8	9.4	3.2
Makhachkala – Samur	8.7	1.2	9.6	1.2
Kochetovka – Voronezh	33.8	30.4	36.4	34.6

Rail section (border)	2015		2020	
	x 10^6 tonne-km/ km outgoing	x 10^6 tonne-km/ km incoming	x 10^6 tonne-km/ km outgoing	x 10^6 tonne-km/ km incoming
Voronezh – Liski	31.4	26.4	33.4	29.6
Liski – Likhaya	37.9	17.7	39.8	20.3
Likhaya – Rostov	56.1	14.5	58.3	16.4
Rostov – Tikhoretskaya	15.1	12.1	16.4	14.9
Ekaterinburg – Agryiz	87.3	21.8	95.0	24.5
Agryiz – Kazan	88.7	24.1	96.7	27.0
Kazan – Arzamas	81.5	22.5	88.1	25.8
Arzamas – Murom	81.9	21.0	86.8	25.0
Murom – Moskva (Kurovskaya)	76.8	20.4	80.8	24.5
Kotelnich – Gorkiy	27.3	7.0	31.5	8.3
Gorkiy – Kovrov	38.9	10.4	44.7	12.5
Kovrov – Moskva (Orekhovo – Zuevo)	32.4	8.7	37.4	10.3
Samara – Syizran	80.4	31.6	74.1	36.1
Syizran – Ruzaevka	45.9	9.9	50.9	11.6
Ruzaevka – Ryazan	51.4	9.9	57.6	11.5
Ryazan – Moskva (Voskresensk)	83.8	27.6	98.2	32.8
Moskva (Kubinka) – Vyazma	34.5	11.5	35.1	11.3
Vyazma – Smolensk	33.8	7.0	34.2	7.2
Smolensk – Krasnoe	30.1	7.1	31.4	7.5
Moskva (Becasovo) – Bryansk	15.7	18.8	17.0	16.0
Bryansk – Suzemka	18.7	16.1	19.3	13.4
Moskva (Povarovo) – Bologoe	5.2	4.4	9.8	9.3
Bologoe – St. Petersburg	4.6	3.5	9.0	8.0
St. Petersburg (Gatchina) – Pskov	1.0	1.0	1.1	1.1
Pskov – Dno	0.9	3.6	0.9	5.1
Dno – Zaverejie	4.7	6.3	6.4	8.3

Serbia (SRB)

The following data on the annual number of trains in 2001, 2005 and 2006 at the TER backbone network border stations (international traffic) were provided.

Rail section (border)	Mode	2001 No. trains/year	2005 No. trains/year	2006 No. trains/year
Sid	Passenger	6,174	6,122	6,678
	Freight	1,770	3,643	4,330
Subotica	Passenger	5,110	4,745	4,015
	Freight	3,825	6,544	8,552
Dimitrovgrad	Passenger	3,150	2,386	2,166
	Freight	2,426	3,795	5,156
Presevo	Passenger	3,024	2,641	2,322
Ristovac	Freight	3,284	4,522	4,522

Slovakia (SVK)

The following data regarding the number of trains/day in the years 2015 and 2020 for individual sections of the TER backbone network were provided.

Rail section (border)	2015 No. trains/day	2020 No. trains/day
Kuty (border)	148	159
Kuty – Bratislava	175	195
Bratislava – Nove Zamky	102	114
Nove Zamky – Sturovo	48	54
Sturovo (border)	37	42
Bratislava main station – Bratislava Petrzalka	134	146
Bratislava Petrzalka – (HUN)	42	47
Bratislava Petrzalka – (AUT)	88	98
Bratislava – Leopoldov	110	122
Leopoldov – Puchov	10[6]	118
Puchov – Zilina	110	122
Zilina – Cadca	97	108
Cadca – Skalite	70	78
Skalite (border)	72	80
Zilina – Vrutky	173	193
Vrutky – Strba	121	134
Strba – Poprad	121	134
Poprad – Margecany	121	134

Rail section (border)	2015 No. trains/day	2020 No. trains/day
Margecany – Kysak	113	126
Kysak – Kosice	178	198
Kosice – Cierna nad Tisou	93	104
Cierna nad Tisou (border)	35	39

Slovenia (SVN)

The following data concerning the average number of passenger and freight trains per day on individual sections of the TER backbone network in the years 2015 and 2020 (separately for the realistic and optimistic scenarios) were provided.

Rail section (border)	Mode	2015 No. trains/day (realistic scenario)	2015 No. trains/day (optimistic scenario)	2020 No. trains/day (realistic scenario)	2020 No. trains/day (optimistic scenario)
Ljubljana – Jesenice	Passenger	38	40	39	43
	Freight	37	43	39	50
Ljubljana – Zidani Most	Passenger	89	95	93	103
	Freight	73	83	77	99
Ljubljana – Sezana	Passenger	43	47	45	54
	Freight	80	92	86	10[9]
Divaca – Koper	Passenger	12	12	12	12
	Freight	54	58	63	73
Zidani Most – Maribor – Sentilj	Passenger	86	92	90	98
	Freight	69	80	74	94
Pragersko – Ormoz – state border	Passenger	28	29	28	30
	Freight	19	20	21	24
Ormoz – Hodos border station	Passenger	18	19	18	19
	Freight	13	14	14	16
Zidani Most – Dobova	Passenger	50	53	52	55
	Freight	25	29	26	34

In addition to this, the following data on the annual number of trains at the TER backbone network border crossings in 2008 were provided.

Rail border crossing	2008 No. passenger trains/year	2008 No. freight trains/year
Jesenice – Rosenbach	5,236	9,945
Sentilj – Spielfeld Strass	4,923	8,900

Rail border crossing	2008 No. passenger trains/year	2008 No. freight trains/year
Hodos – Oriszentpeter	4,949	4,233
Dobova – Savski Marof	9,213	6,183
Sezana – Villa Opicina	6,024	6,963

Turkey (TUR)

Data for passenger and freight transport modes for the TER backbone network lines in the year 2020 were provided on the basis of the following ranges:

No. passengers x 10^6/year: ≤ 0.5; 0.5 to 1; 1 to 1.5; 1.5 to 3; 3 to 5; ≥ 5

freight x 10^6 tonnes/year: ≤ 0.2; 0.2 to 0.5; 0.5 to 1; 1 to 2; 2 to 5; ≥ 5

The following TER backbone network sections would carry more than 0.5 x 10^6 passengers/year in 2020. All the other TER backbone network sections would carry less than 0.5 x 10^6 passengers/year.

Rail section (border)	2020 No. passengers x 10^6/year
Eskisehir – Istanbul	> 5
Ankara – Eskisehir	> 5
Polatli – Konya	3 to 5
Ankara – Irmak	3 to 5
Istanbul – Halkali	1.5 to 3
Bilecik – Bursa – Balikesir	1.5 to 3
Balikesir – Izmir	1.5 to 3
Irmak – Sivas	1.5 to 3
Polatli – Afyon	1 to 1.5
Eskisehir – Alayunt	1 to 1.5
Mersin – Toprakkale	1 to 1.5
Toprakkale – Narli	0.5 to 1
Halkali – Pehlivankoy	0.5 to 1
Alayunt – Afyon – Manisa	0.5 to 1
Kayseri – Bogazkopru	0.5 to 1
Yerkoy – Bogazkopru	0.5 to 1
Bogazkopru – Yenice	0.5 to 1
Toprakkale – Iskenderun	0.5 to 1
Sivas – Malatya	0.5 to 1

The following TER backbone network sections would carry more than 0.2 x 10^6 tonnes/year in 2020. All the other TER backbone network sections would carry less than 0.2 x 10^6 tonnes/year.

Rail section (border)	2020 No. tonnes x 10^6/year
Mandira – Muratli	> 5
Eskisehir – Ankara	> 5
Balikesir – Akhisar	> 5
Yenice – Toprakkale – Narli	> 5
Toprakkale – Iskenderun	> 5
Zonguldak – Irmak – Bogazkopru	> 5
Bogazkopru – Yenice	> 5
Kapikule – Mandira	2 to 5
Muratli – Istanbul – Izmit	2 to 5
Izmit – Eskisehir	2 to 5
Ankara – Irmak	2 to 5
Akhisar – Manisa – Izmir	2 to 5
Eskisehir – Alayunt – Balikesir	2 to 5
Bogazkopru – Hanli	2 to 5
Samsun – Kalin	2 to 5
Bostankaya – Cetinkaya – Malatya – Narli	2 to 5
Narli – Karkamis	2 to 5
Afyon – Konya – Ulukisla	2 to 5
Arifye – Zonguldak	2 to 5
Balikesir – Bandirma	2 to 5
Muratli – Tekirdag	2 to 5
Kalin – Sivas – Bostankaya	1 to 2
Kalin – Hanli – Bostankaya	1 to 2
Cetinkaya – Erzurum	1 to 2
Alayunt – Afyon – Manisa	1 to 2
Izmir – Aydin	1 to 2
Aydin – Afyon	0.5 to 1
Malatya – Van – Kapikoy (border)	0.5 to 1
Karkamis – Cobanbey	0.5 to 1
Erzurum – Kars	0.2 to 0.5

ANNEX III

How to ensure financing for road projects in the Master Plan[1]

The scope of this work was to update the calculation of the amounts needed to finance the TEM Master Plan projects, to investigate the ways of securing the funds, to analyse the eligibility of new and updated projects for funding, as well as to provide recommendations for future steps to be taken in order to secure the missing funding sources. More specifically, the work carried out entailed the following 10 specific tasks:

1. Updating of the figures on the financing of the projects in the revised Master Plan on the basis of the results of the original Master Plan and the results of its implementation; reasons of underfunding of the TEM Master Plan projects.
2. Summary of the selection of eligible and relevant criteria.
3. Overview and assessment of the methodology used for identification of projects with respect to their readiness and viability.
4. Assessment of the application of the criteria for project evaluation (based on socio-economic return on investment) and prioritization (based on the financial feasibility of the projects, with special attention to the missing data).
5. Analysis and comparison of unit costs of construction for which financing is not yet assured (country-by-country).
6. Analysis of the total number and cost of projects in relation to their size, and the GDP and national budget of the participating countries.
7. Analysis of ways to secure financing of the projects according to their category/score/class (country-by-country).
8. Summary of findings.
9. Analysis of the eligibility of new and updated projects for financing from the national budgets, the EU, banks and public–private funding.
10. Recommendations for future steps to be taken in order to secure the missing sources of funding.

[1] This Annex was drafted in December 2009.

1. UPDATING THE MASTER PLAN FIGURES

1.1 Introduction

The main difficulty when presenting the entire TEM backbone network in the different time horizons of 2015 and 2020, was the lack of adequate information on the current status and the planned progress in certain parts of the respective networks. The general problems encountered in the (recent) data collection varied from data that did not exist to data that was confidential. There were also cases where reluctance by authorities or local experts was encountered.

In order to update the figures on financing of the projects in the revised Master Plan, and in accordance with the monitoring methodology of the TEM Master Plan projects, each participating country was asked to update the information for the list of projects already included in the original TEM Master Plan and, if necessary, to provide respective information for newly proposed TEM projects.

1.2 Data collection process

The data collection process carried out for the original TEM Master Plan was based on the list of TEM projects included in the original TEM and TER Master Plan. For the purpose of the update, each participating country was provided with Template A (which included the data from the original TEM Master Plan) and was asked to complete it in accordance with the guidelines specified below.

Template A - TEM projects existing in the original TEM Master Plan

Network	Project ID	Project name	Time plan		Total cost (EUR x10⁶)	% funding secured from the following source			
			Start year	End year		National	Bank	Grant	Private
					Total				

Thus, each participating country was asked to fulfil the following three tasks:

1. to confirm the validity of the data provided in Template A;
2. to update the data in Template A and to provide any additional data by completing Template B (which was also provided and partially pre-filled) (see below);
3. to complete Template B for newly proposed TEM projects should any exist.

Additional data were requested for the list of TEM projects, and each participating country was asked to provide information on the following:

- the project location (the start and end nodes) and the total length in kilometres;
- the road type (motorway, expressway or national road);
- the traffic volumes in Average Annual Daily Traffic (AADT) (existing and forecast);
- the project's current status (i.e. programming, planning, design or construction);
- any expenses outlaid so far as a percentage of the total cost of the project;
- the percentage of funding secured and its possible source (national funds, EU funds, bank loans, grants, private funds)
- the Internal Rate of Return (IRR), or the Return on Equity (ROE) in the case of public–private partnership (PPP) funding;
- the percentage budget of public works allocated.

Finally, for those projects for which funding was not yet secured, the participating countries were asked to provide recommendations with regards to the potential funding sources to cover the amounts for which funds had not been secured.

Of the 25 countries participating in this project, 16 countries submitted data on the projects under evaluation.

Countries that submitted updated data by December 2009:

Austria, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, the former Yugoslav Republic of Macedonia, Greece, Hungary, Lithuania, Poland, Romania, Serbia, Slovakia, Slovenia, Turkey and Ukraine. (It should be noted that in certain cases, insufficient data were provided.)

Countries that did not submit updated data:

Albania, Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova, Montenegro and the Russian Federation.

Countries that were not requested to submit updated data:

Italy

The next step entailed development of the methodology for the identification of eligible projects and their grouping into one of the defined implementation time periods.

Template B - Update figures of TEM projects existing in the TEM and TER Master Plan (cost in 2007 prices) and add new TEM projects

Network	Project ID	Description (project and section names)	Project location			Road type	Traffic volume Average Annual Daily Traffic (AADT)		Current status
			Start point/ node/city	End point/ node/city	Total length (km)	Motorway, expressway, national road (please select one)	Existing	Forecast	Programming, PLANNING, DESIGN, CONSTRUCTION (please select one)

Time plan		Total cost (EUR x10⁶)	Expenses so far (% of total cost)	% funding secured (or possible) from					IRR / (ROE if PPP)	GDP in 2007 (EUR x10⁶)
Start year	End year			National funds	EU funds	Bank loans	Grants	Private funds		
										% budget of public works allocated

2. METHODOLOGY USED IN THE ORIGINAL TEM MASTER PLAN FOR IDENTIFICATION AND ANALYSIS OF PROJECTS

2.1 Overview of the methodology

In the assessment of transport projects, the tendency today is to deviate from the conventional evaluation methods that focus on a relatively limited set of impacts, i.e. Cost–Benefit Analysis (CBA). It was made clear since the elaboration of the original TEM and TER Master Plan that decision-makers in participating TEM and TER countries and European funding institutions, such as the European Investment Bank (EIB), require more information than just construction costs and traffic performance. They need information on long-term and indirect impacts on mobility, i.e. on the wider social and political impacts of transport infrastructure projects.

Therefore, the evaluation process for selecting a portfolio of TEM projects should reflect social and political issues in addition to purely technical criteria, which in some cases are not considered critical in the selection process.

In addition, transport infrastructure projects included in the TEM Master Plan have several goals because of their international/global character. Transport infrastructure development can benefit all regions involved if an appropriate evaluation method is employed to incorporate all the diverse objectives and interests across the regions. To this end, formalistic evaluation methods might not be appropriate.

Finally, the difficulty encountered because of limited data availability indicated that detailed information might be difficult to collect.

Because of the reasons described above, a simplified evaluation method was developed, using the principles of the Multi-Criteria Analysis (MCA) which establishes preferences between options by reference to an explicit set of objectives that the decision-making body has identified. For these objectives, measurable criteria are established to assess the extent to which the objectives have been achieved. These criteria are defined through observation, discussion, experimentation and trial-and-error processes. Although there is an inherent subjectivity associated with this method, it is believed that it can bring a degree of structure, analysis and openness to decision-making. The application of this method identifies those projects that are likely to be implemented in selected time periods (short term, medium term and long term) and at the same time addresses specific objectives of the countries and the international character of the projects.

A methodological framework, structured in three phases (identification, analysis and time period classification), was developed in order to ensure the inclusion of all proposed TEM projects, by employing a set of criteria reflecting the societal values, the priorities and the available resources of the participating countries, as well as the viability of the projects and their international character.

Phase A — Identification

The identification phase entailed the selection of prospective projects on the basis of their funding possibilities and the commonly-shared objectives of the national or international authority responsible, as well as the collection of readily available information/data regarding these projects.

Phase B — Analysis

Analysis was carried out through the application of multi-criteria approaches, namely the direct analysis of criteria performance, Pair Comparison Matrix the Delphi method and MAUT (Multi-Attribute Utility Theory). MAUT employs a limited but sufficient set of criteria reflecting, amongst other things, the transport policy priorities of the countries, the available financial resources, the financial and economic viability of the projects and their international dimension. The Pair Comparison Matrix, in combination with the Delphi method, contributes to overcome subjectivity in deriving the criteria priorities, by using pairwise comparisons carried out by various policy makers, and thus discouraging open bias towards specific criteria. Direct analysis of criteria performance is employed for deriving criteria scores; this can work relatively well in the case of limited data availability.

Phase C — Time period classification

In the final phase, on the basis of their "performance" score, the projects were classified into four time period classes (1, 2, 3 and 4), each related to a specified time horizon.

2.2 Phases of the methodology

2.2.1. Phase A — Identification

As mentioned previously, the identification phase involved the selection of prospective projects primarily on the basis of their funding possibilities and secondly on the basis of the commonly-shared objectives of the national or international authority responsible.

In this phase, the TEM projects were initially classified into two major categories: those with and those without committed funding, based on the updated data collected in Template B.

Obviously, projects with secured funding can be considered to be viable and there is a high possibility that they will be completed in the near future.

For projects without committed funding or for which funding is only partly committed, further evaluation was carried out in order to set their implementation priorities against commonly shared objectives of the national and international authorities (see chapter 2.2.2 on the "Analysis" phase).

It should be noted that the identification, as well as the analysis, was based on data collected from the participating countries, and thus projects for which no data were provided were automatically classified as lowest priority in terms of their implementation.

2.2.2. Phase B — Analysis

In this phase, the MCA method was used for the analysis of the projects identified for which funding was not committed or only partly committed. The MCA was selected owing to a number of factors such as the very preliminary level of definition of most unfunded or partly funded projects, the lack of specific and reliable information on their current status, the limited knowledge about future transport demand and the wide variety in the types of project.

Such a method allowed the available information on a project to be taken into account, even at its very preliminary level of definition, as well as (to a certain extent) any background data. At the same time, some specific elements of particular interest to the decision-makers could be introduced.

The objective of this phase was to derive scores (degrees of performance) for the unfunded and partly funded projects which could be used as an indicator for the application of Phase C "Time period classification" of the proposed methodology. Phase B included the following components:

- definition of criteria;
- measurement of criteria;
- weighting/hierarchy of criteria;
- derivation of total score per project.

Definition of criteria

Since the assessment of a group of projects in terms of their social impact was a key objective (the projects will be mainly financed using public funds, national or international), the criteria were defined according to two basic principles: a) the functionality and coherence of the transport network to be developed, taking into consideration the strategic/political concerns of the national and international authorities in the case of co-financing (e.g. the EU, the EIB, the World Bank) and b) the socio-economic efficiency and stability. Therefore, the following criteria, grouped in two clusters, were used as the basis of these two fundamental orientations/principles.

Cluster A — *Horizontal dimension: Functionality/coherence criteria* (C_A)

- serves international connectivity (reaches a border crossing point or provides a connection with a link that crosses a border) (C_{A1})
- promotes solutions to the particular transit transport needs of landlocked developing countries (C_{A2});
- connects low-income and/or least-developed countries to major European and Asian markets (C_{A3});
- crosses natural barriers, removes bottlenecks, raises substandard sections to meet international standards, or fills missing links in the TEM network (C_{A4}).
- Cluster B — *Vertical dimension: Socio-economic efficiency and sustainability criteria* (C_B)
- has a high degree of urgency due to importance attributed by the national authorities and/or social interest (C_{B1});
- passes the economic viability test (C_{B2});
- has a high degree of maturity, such that it can be carried out quickly (i.e. project stage) (C_{B3});
- financing feasibility (C_{B4});
- has environmental and social impacts (C_{B5}).

In most cases, funding is sought from external rather than from national sources, and thus the projects proposed by the participating countries have to be prioritized for funding by the national authorities on the basis of the same principles. Consequently, the proposed criteria are the same for all countries in order to guarantee the consistency in the method, regardless of the country in which the project is located.

Meanwhile, the criteria weights can differ between countries (as will be explained in the respective section on the weighting/hierarchy of criteria) to reflect the priorities within each specific country, and this influences the final project scores.

Measurement of criteria

Criteria were measured firstly using a "physical scale", either by direct classification according to available data/measurable characteristics and/or by quality attributes, provided by preference judgment from the national authorities involved. This was performed through the completion of Template C below (see also Appendix III.3) for all the projects in each country, following as guidance an evaluation questionnaire.

Template C - **Measurement of criteria**

Project ID	Criteria Cluster A				Criteria Cluster B				
	C_{A1}	C_{A2}	C_{A3}	C_{A4}	C_{B1}	C_{B2}	C_{B3}	C_{B4}	C_{B5}

The physical scale was chosen to be a simple five-point one with threshold values based mainly on the nature of the criterion. As an example, the physical scale/measurement of the criterion "serves international connectivity (reaches a border crossing point or provides a connection with a link that crosses a border) (C_{A1})" is presented below.

Criterion C_{A1}: Is the project serving international connectivity?

Physical scale/possible answers:

A: Greatly improves connectivity

B: Significantly improves connectivity

C: Somewhat improves connectivity

D: Slightly improves connectivity

E: Does not improve connectivity

In order to make the various criterion scores compatible, it was necessary to transform them into a common measurement unit, or in other words to transform the "physical scale" measurement into a common "artificial scale" measurement. The criteria quantification was not based on a sophisticated utility function, but on a simple linear function which connects threshold values of an artificial scale with threshold values of a physical scale.

The artificial scale chosen was A = 5, B = 4, C = 3, D = 2 and E = 1, with 5 being the highest value. Therefore

$$C_{ji} \in [1,5] \qquad (1)$$

where

$J = A$ or B (representing the criteria dimensions);

$i = 1, ..., 5$ (representing the number of criteria in each dimension).

Weighting/hierarchy of criteria

The weighting of the criteria was carried out using the Pair Comparison Matrix in combination with the Delphi method.

The Pair Comparison Matrix was chosen because it is a simple, transparent and widely accepted procedure for providing weights quickly, i.e. the time necessary for its application is short.

The Delphi method was chosen because it provides reliable weights, i.e. minimizing the subjectivity of the weight values. The interviewed experts were the consultants, the UNECE representative and the TEM project Central Offices representative.

The resulting criteria weights add up to unity, as shown in equations (2) and (3) below.

$$W_{ji} \in [0,1] \qquad (2)$$

$$\sum W_{ji} = 1 \qquad (3)$$

where

$J = A$ or B (representing the criteria dimensions);

$i = 1, ..., 5$ (representing the number of criteria in each dimension).

It should be noted that countries were asked, if they so wished, to provide their own weights, with appropriate justification.

Derivation of total score per project

In order to classify the projects into the appropriate time period, their final/total performance score Stotal,project/country was estimated. The total score of each transportation project was calculated by applying equation (4), which is based on the Multi-Attribute Utility Theory (MAUT):

$$S_{\text{total, project/country}} = \sum_{J=A}^{B} \sum_{i=1}^{5} C_{Ji} * W_{Ji} \qquad (4)$$

where

$C_{ji} \in [1,5]$;

$W_{ji} \in [0,1]$;

$J = A$ or B;

$i = 1, ..., 5$.

Therefore

$S_{total,\ project/country} \in [1,5]$

2.2.3. Phase C — Time period classification

In the final phase of the proposed methodology, the combination of the criteria, scores and priorities of each project was used to classify it in one of the following four classes:

- Class 1 — the project already has committed funding;
- Class 2 — the project scores between 4 and 5;
- Class 3 — the project scores between 3 and 4;
- Class 4 — the project scores between 1 and 3 or there are insufficient project data.
- From the perspective of time, the classes have the following meanings.
- **Class 1** — projects which have funding secured and are ongoing, and are expected to be completed before 2011.
- **Class 2** — projects which are expected to be funded or their plans approved, and are expected to be implemented in a short time period (up to 2015, unless specified otherwise by the implementation plan as submitted by the country).
- **Class 3** — projects requiring some additional investigation and final definition before financing and implementation are likely (up to 2020).
- **Class 4** — projects requiring further investigation and final definition and scheduling before financing likely, including projects which are expected to start after 2020 and projects for which there are insufficient data.

3. REVISED FINANCIAL FEASIBILITY ANALYSIS

3.1 Introduction

The methodology described in chapter 2 was applied in the original TEM Master Plan. For the purpose of this analysis for the Master Plan revision, the methodology was revised in order to take into account potential changes that might have occurred since the creation of the original TEM Master Plan, as well as the effects of any missing data.

It should be noted that the analysis was based on the updated data received from each participating country. In the case where no new data were received, either the missing information was collected from other sources or the analysis was based on a number of assumptions that are explicitly stated and justified in the final report.

The results are presented in the same way as in the original TEM Master Plan: first, results are presented per participating country, and then some aggregated figures are presented for all proposed projects. The analysis of the results, based on the application of the methodology, is presented in detail in Appendix III.3.

3.2 Results per country

Austria

In accordance with the implementation/investment timetable, 100 % of the proposed projects for the Austrian TEM network will be completed.

Bosnia and Herzegovina

In accordance with the implementation/investment timetable

- 40 % of the proposed projects in the TEM network of Bosnia and Herzegovina are expected to be completed between 2011 and 2015,
- 20 % of the proposed projects in the TEM network of Bosnia and Herzegovina are expected to be completed between 2015 and 2020, and
- for the remaining 40 % of the proposed projects in the TEM network of Bosnia and Herzegovina, further investigation is required before final definition, scheduling and possible financing can be carried out.

Funding is secured for 26 % of the total cost of the proposed projects.

Bulgaria

In accordance with the implementation/investment timetable

- 54 % of the proposed projects for the Bulgarian TEM network are expected to be completed between 2011 and 2015, and
- for the remaining 46 % of the proposed projects for the Bulgarian TEM network, further investigation is required before final definition, scheduling and possible financing can be carried out, and thus their implementation is expected after 2020.

Funding is secured for 48 % of the total cost of the proposed projects.

Croatia

In accordance with the implementation/investment timetable

- 77 % of the proposed projects for the Croatian TEM network are expected to be completed between 2011 and 2015,
- 19 % of the proposed projects for the Croatian TEM network are expected to be completed between 2015 and 2020, and
- 4 % of the proposed projects for the Croatian TEM network are expected to be completed after 2020.

Funding is secured for all proposed projects.

The Czech Republic

In accordance with the implementation/investment timetable, all proposed projects for the Czech Republic TEM network are expected to be completed between 2011 and 2015.

Funding is secured for all proposed projects.

The former Yugoslav Republic of Macedonia

In accordance with the implementation/investment timetable, all of the proposed projects for the former Yugoslav Republic of Macedonia are expected to be completed between 2011 and 2015.

Funding is secured for all proposed projects.

Georgia

No revised data were received from Georgia for the purpose of this analysis. Therefore, no conclusions regarding the implementation timetable and percentage of secure funding can be drawn.

Greece

In accordance with the implementation/investment timetable, completion of the projects contained in the original TEM Master Plan was extended beyond 2010.

Hungary

In accordance with the implementation/investment timetable, completion of the projects contained in the original TEM Master Plan was extended beyond 2010.

Italy

No data were requested from Italy since the Italian TEM network is considered to be complete, and hence would not affect the outcome of the analysis.

Lithuania

In accordance with the implementation/investment timetable

- 30 % of the proposed projects for the Lithuanian TEM network were expected to be completed by 2010,
- 30 % of the proposed projects for the Lithuanian TEM network are expected to be completed before 2020, and

- for the remaining 40 % of the proposed projects for the Lithuanian TEM network, further investigation is required before final definition, scheduling and possible financing can be carried out.

Since limited data were provided with regards to the implementation costs of the projects, no estimate can be made concerning the percentage of secured funding.

The Republic of Moldova

No revised data were received from the Republic of Moldova for the purpose of this analysis. Therefore, no conclusions regarding the implementation timetable and percentage of secure funding can be drawn.

Montenegro

In accordance with the implementation/investment timetable, completion of the projects contained in the original TEM Master Plan was extended beyond 2010.

No updated information was received for the purpose of this analysis.

Poland

In accordance with the implementation/investment timetable

- 36 % of the proposed projects for the Polish TEM network were expected to be completed by 2010,
- 60 % of the proposed projects for the Polish TEM network are expected to be completed between 2011 and 2015, and
- 4 % of the proposed projects for the Polish TEM network are expected to be completed between 2015 and 2020.

Funding is secured for 99 % of the total cost of the proposed projects.

Romania

In accordance with the implementation/investment timetable

- 7 % of the proposed projects for the Romanian TEM network were expected to be completed by 2011,
- 50 % of the proposed projects for the Romanian TEM network are expected to be completed between 2010 and 2015,
- 25 % of the proposed projects for the Romanian TEM network are expected to be completed between 2015 and 2020,
- for the remaining 18 % of the proposed projects for the Romanian TEM network, further investigation is required before final definition, scheduling and possible financing can be carried out.

Funding is secured for 62 % of the total cost of the proposed projects.

The Russian Federation

In accordance with the implementation/investment timetable (based on information from the original TEM Master Plan) all proposed projects for the Russian TEM network were expected to be completed by 2011.

No revised data were received from the Russian Federation for the purpose of this analysis. Thus, no updated conclusions for the implementation timetable and percentage of secure funding can be drawn.

Serbia

In accordance with the implementation/investment timetable (based also on information from the original Master Plan)

- 71.5 % of the proposed projects for the Serbian TEM network were expected to be completed by 2011, and
- 28.5 % of the proposed projects for the Serbian TEM network are expected to be completed between 2011 and 2015.

Funding is secured for 94 % of the total cost of the proposed projects.

Slovakia

In accordance with the implementation/investment timetable

- 26 % of the proposed projects for the Slovakian TEM network were expected to be completed before 2011,
- 58 % of the proposed projects for the Slovakian TEM network are expected to be completed between 2011 and 2015, and
- 16 % of the proposed projects for the Slovakian TEM network will be completed between 2015 and 2020.

Funding is secured for all proposed projects.

Slovenia

In accordance with the implementation/investment timetable:

- 72 % of the proposed projects for the Slovenian TEM network were expected to be completed before 2011,
- 14 % of the proposed projects for the Slovenian TEM network are expected to be completed between 2011 and 2015, and
- 14 % of the proposed projects for the Slovenian TEM network will possibly be completed between 2015 and 2020.

Funding is not secured for 28 % of the proposed project costs.

Turkey

In accordance with the implementation/investment timetable

- 7 % of the proposed projects for the Turkish TEM network were completed before 2011, and
- 93 % of the proposed projects for the Turkish TEM network are expected to be completed between 2011 and 2015.

Funding is not secured for all proposed projects.

Ukraine

In accordance with the implementation/investment timetable,

- 50 % of the proposed projects for the Ukrainian TEM network are expected to be completed between 2011 and 2015, and
- 50 % of the proposed projects for the Ukrainian TEM network are expected to be completed between 2015 and 2020.

Funding is secured for all projects.

3.3 Total analysis results

The analysis of the implementation plans of the proposed TEM projects revealed the following:

- 39 % of the proposed projects for the TEM network will be completed by the end of 2011;
- 45 % of the proposed projects are expected to be completed by the end of 2015;
- 10 % of the proposed projects will possibly be completed by the end of 2020;
- for 6 % of the proposed projects for the TEM network, it is unknown when they are likely to be completed since further investigation is necessary before definition, scheduling and possible financing can be carried out.

The above time plan for all proposed projects constitutes the evolution of the TEM network implementation.

4. ANALYSIS OF UNIT CONSTRUCTION COSTS OF THE PROJECTS, FOR WHICH FINANCING HAS NOT YET BEEN ASSURED

4.1 Introduction

This chapter describes the analysis and comparison of unit construction costs[2] of the projects for which financing has not yet been assured. The participating countries that have proposed such projects are Bosnia and Herzegovina, Bulgaria, Lithuania, Poland, Romania, Serbia, Slovenia and Turkey. The analysis was carried out on a country-by-country basis.

4.2 Bosnia and Herzegovina

Table III.1 - Unit construction cost for projects of Bosnia and Herzegovina

Project ID	Description	Total length (km)	Total cost (EUR x10⁶)	Unit cost/km (EUR x10⁶)
BH-M-2	Construction of Tuzia – Orasja expressway	61	400	6.6
BH-M-5	Construction of Mostar bypass (E-73 road)	13.90	20	1.4
BH-M-6	Improvement of Lasva – Travnik road (M5/E-761)	54	200	3.7
BH-M-7	Improvement of Stolac – Neum road (M17-3)	32	–	–
BH-M-9	Reconstruction of section Tuzla – Sarajevo	120	135	1.1
BH-M-10	Construction of Renovica – Mesići road (E-761)	20	47.5	2.4

Project BH-M-2 involves the construction of an expressway. The average unit cost per kilometre for similar projects in Bosnia and Herzegovina is EUR 9.1 x 10^6 which is significantly higher, and hence it is assumed that this project will be implemented in the future with a budget higher than that estimated.

4.3 Bulgaria

Table III.2 - Unit construction cost for Bulgarian projects

Project ID	Description	Total length (km)	Total cost (EUR x10⁶)	Unit cost/km (EUR x10⁶)
BG-M-1	Reconstruction of road E85	–	113	NA

[2] Unit construction costs are based on 2003 prices and reflect the situation as of 2008.

Project ID	Description	Total length (km)	Total cost (EUR x10⁶)	Unit cost/km (EUR x10⁶)
BG-M-5	Kalotina – Sofia motorway, section: Dragoman – Slivnitza – Sofia	36.50	123	3.4
BG-M-6	Kalotina – Sofia motorway, section: Kalotina – Dragoman	12.50	26	2.1
BG-M-8	Kalotina – Sofia motorway, section: Sofia ring road – North Arc	21.60	137	6.3
BG-M-9	Hemus motorway, Section 1	58.8	178	3.0
BG-M-10	Hemus motorway, Section 2	85.1	191	2.2
Average				3.4

On the basis of the data in table III.2, the average unit construction cost per kilometre for five of the six TEM projects of Bulgaria, for which funding has not yet been secured, is EUR 3.4 x 10^6. The Project BG-M-1 was excluded from this calculation since there are no data on the length of the road, and also because this project involves the reconstruction of a national road as opposed to a motorway.

For purposes of comparison, the average unit construction cost per kilometre was estimated for similar projects (i.e. motorway construction) in Bulgaria that have committed funding. The average unit construction cost per kilometre for these projects was found to be EUR 3.1 x 10^6. Since the two estimates are similar, it can be safely assumed that there is a high possibility that the projects listed in table III.2, provided that they receive funding, will be implemented with no cost overrun.

4.4 Lithuania

Table III.3 - Unit construction cost for Lithuanian projects

Project ID	Description	Total length (km)	Total cost (EUR x10⁶)	Unit cost/km (EUR x10⁶)
LT-M-4	Widening of bridge on motorway A1 across Neris river in Kaunas city	0.40	29	72.5
LT-M-5	Widening of motorway A1 (6 traffic lanes)	9.00	36	4
LT-M-6	Widening of motorway A1 (6 traffic lanes)	78.00	NA	–
LT-M-7	Motorway A5 Kaunas – Marijampolė – Suvalkai (construction of second driving direction)	35.00	76	2.2
LT-M-8	Motorway A5 Kaunas – Marijampolė – Suvalkai (construction of second driving direction)	36.00	NA	–
LT-M-9	Motorway A8 Panevėžys – Aristava – Sitkūnai (construction of second driving direction)	33.90	NA	–
LT-M-10	Motorway A8 Panevėžys – Aristava – Sitkūnai (construction of second driving direction)	46.50	NA	–

Limited information is available with regards to the TEM projects in Lithuania that have not secured funding. Implementation costs are known only for three projects which differ in their characteristics. The LT-M-4 project involves the construction of a bridge, while the other two projects (LT-M-5 and LT-M-7) involve the widening of a motorway and the construction of a new motorway driving direction respectively. To this end, a realistic average value for the unit construction cost per kilometre cannot be estimated.

Nevertheless, in order to obtain some indication of the unit construction cost per kilometre in Lithuania, the unit construction cost per kilometre of project LT-M-7 (EUR 2.2 x 10^6) was compared to that of the LT-M-2 project that is currently under construction and involves the development of an expressway (EUR 1.5 x 10^6). It can be seen that the unit construction cost per kilometre of the project that has not received funding (LT-M-7) is higher than that for the one that is currently under construction. Hence there is a possibility that the projects listed in table III.3 will be implemented with a budget higher than that estimated.

4.5 Poland

Table III.4 - Unit construction cost for Polish projects

Project ID	Description	Total length (km)	Total cost (EUR x10^6)	Unit cost/km (EUR x10^6)
PL-M-31	A2-X motorway: Siedlce – Terespol	95	500	5.3

According to the data received, there was only one project in Poland, for which funding is not secured, and for which the unit construction cost per kilometre is EUR 5.3 x 10^6. The average unit construction cost per kilometre for similar projects (i.e. construction of a motorway) that have secured funding in Poland was found to be EUR 11.8 x 10^6, which is significantly higher. Hence, there is a high probability that project PL-M-31 will be implemented with no cost overrun.

4.6 Romania

Table III.5 - Unit construction cost for Romanian projects

Project ID	Description	Total length (km)	Total cost (EUR x10^6)	Unit cost/km (EUR x10^6)
RO-M-13	Bucharest – Giurgiu	60.000	258.500	4.3
RO-M-17	Timişoara – Stamora Moraviţa	30.100	401.5	13.34
RO-M-18	Oradea – Zalău Section 1: Bors – Suplacu de Barcau Section 2: Suplacu de Barcau – Mihailesti	140	805.617	5.75
RO-M-19	Halmeu – Satu Mare	18.716	214.5	11.46
RO-M-21	Zalău – Cluj Napoca	24	148.98	6.20

Project ID	Description	Total length (km)	Total cost (EUR x10⁶)	Unit cost/km (EUR x10⁶)
RO-M-31	Albița – Crasna	47.2	2,849	8.5
RO-M-32	Crasna – Tecuci	85.617		
RO-M-33	Tecuci – Mărășești	19.453		
RO-M-34	Mărășești – Râmnicu Sărat – Buzău	89.11		
RO-M-35	Buzau – Bucharest N/E (section of motorway Ploiesti – Bucharest is already included in project RO-M-30)	93.55		
RO-M-36	Siret – Suceava	42.43	220	5.19
RO-M-42a	Târgu Frumos – Săbăoani	27.4	165	6.02
RO-M-42b	Sibiu – Fagaras	72.537	614.426	8.47
RO-M-44	Arad – Oradea	134.628	6,352	10.07
RO-M-45	Petea – Satu Mare – Baia Mare	82.335	1,356	26.81
RO-M-46	Craiova – Pitesti	121.185	2,207.354	8.79
RO-M-47	Sebes – Turda	74.1	1,066.003	12.42

The average unit construction cost per kilometre for motorway projects in Romania (RO-M-13, 17, 18, 21, 31, 32, 33, 34, 35, 36, 42a) is EUR 6.1 x 10^6. The average construction cost per kilometre of similar projects in Romania that have either been completed or have received funding is approximately EUR 8 x 10^6, which is higher. Hence, there is a probability that these projects will be implemented with no cost overrun.

The average unit construction cost per kilometre for expressway projects (RO-M-19, 42b, 44, 45, 46 and 47) is EUR 13 x 10^6. The average construction cost per kilometre of similar projects was EUR 12 x 10^6, and hence there is a probability that these projects will be implemented with a budget higher than that estimated.

4.7 Serbia

Table III.6 - Unit construction cost for Serbian projects

Project ID	Description	Total length (km)	Total cost (EUR x10⁶)	Unit cost/km (EUR x10⁶)
SR-H-12	Completion of Belgrade bypass	47.4	336	7.1

There is only one project in Serbia for which complete funding is not secured and for which the unit construction cost per kilometre is EUR 7.1 x 10^6. The average unit construction cost per kilometre for similar projects (i.e. construction of a motorway) that have secured funding in Serbia is EUR 6.62 x 10^6, which is directly comparable. Hence, there is a probability that project SM-H-12 will be completed with a budget higher than that estimated.

4.8 Slovenia

Table III.7 - **Unit construction cost for Slovenian projects**

Project ID	Description	Total length (km)	Total cost (EUR x10^6)	Unit cost/km (EUR x10^6)
SL-M-5	Koper – Dragonja	—	329	—
SL-M-7	Draženci – Gruškovje	—	196.36	—

There are no data available with regards to the total costs and lengths of road segments for the Slovenian projects for which funding has not been secured. Hence, an estimate of the unit construction cost per kilometre cannot be made. A unit construction cost per kilometre could only be estimated for project SL-M-1, which has already been completed, and was found to be EUR 7.8 x 10^6.

4.9 Turkey

Table III.8 - **Unit construction cost for Turkish projects**

Project ID	Description	Total length (km)	Total cost (EUR x10^6)	Unit cost/km (EUR x10^6)
TU-M-30	North Marmara motorway, Section 1: Kınalı – Izzettin	47	241.85	5.15
TU-M-31	North Marmara motorway, Section 2: Izzettin – Odayeri	28	157.73	5.63
TU-M-32	North Marmara motorway (including 3rd suspension bridge on Istanbul Strait), Section 3: Odayeri – Paşaköy	94.7	1,200.86	12.68
TU-M-33	North Marmara motorway, Section 4: Paşaköy – Gebze	43.6	178.76	4.10
TU-M-34	North Marmara motorway, Section 5: Gebze – İzmit	70.9	488.95	6.90
TU-M-35	North Marmara motorway, Section 6: İzmit – Akyazı	71.8	362.77	5.05
TU-M-36	North Marmara motorway, Section 7: İzzettin – Hasdal	57.8	320.71	5.55
Average				6.44

The average unit construction cost per kilometre for seven TEM projects in Turkey, for which funding has not yet been secured, is EUR 6.44 x 10^6. For purposes of comparison, the average unit construction cost per kilometre was estimated for similar projects (i.e. motorway construction) in Turkey that have committed funding. The average unit construction cost per kilometre for these projects was found to be EUR 6.39 x 10^6. Since the two estimates are similar, it can be safely assumed that there is a high probability for the projects presented in table III.8, if they receive funding, to be implemented with no cost overrun.

5. ANALYSIS WITH RESPECT TO GDP

5.1 Introduction

This chapter describes the analysis of the total number of projects and their cost related to the GDP of the countries.

In order to check against the rule that the **'total investment cost per year < 1,5 % GDP'**, a cost/investment plan was prepared for each country on a yearly basis for the proposed projects. This was carried out for the projects under consideration, and it does not take into consideration any other infrastructure investments in the country.

The analysis was carried out in accordance with the following assumptions.

- The period covered was from 2007 (where applicable) to 2020.
- Projects that had been completed have not been taken into account.
- Projects for which the implementation start year specified is after 2020 have not been considered.
- GDP values[3] of respective countries were obtained for the year 2007, and the assumed average annual growth was 1.5 %.
- Annual project costs were the same amount for every year of the total implementation time period, unless the annual amount already spent had been specified by the country concerned. In the latter case, the reference year was mid-2009, assuming that the information provided for the depleted funds covered the period until mid-2009 and the rest (those after mid-2009) are estimates.
- For the countries that did not provide updated data, 2003 cost values have been used.
- Where start dates and end dates for a project implementation were not given, these were estimated on the basis of the implementation plans of similar projects in the same country.

Finally, it should be noted that the analysis was carried out only with respect to GDP values, since data for the national budget of the countries was not submitted (nor was it in the original Master Plan).

5.2 Austria

The single proposed TEM project proposed has been completed, and thus no analysis was necessary.

5.3 Belarus

All TEM projects proposed for the original TEM Master Plan were completed prior to 2007.

5.4 Bosnia and Herzegovina

Table III.9 presents the total project cost and related percentage of the GDP of Bosnia and Herzegovina for the years 2007 to 2018.

[3] Sources: Eurostat http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat; CIA "The World FactBook" https://www.cia.gov/library/publications/the-world-factbook.

Table III.9 - **GDP percentage of Bosnia and Herzegovina**

Year	Project total cost (EUR x10⁶)	GDP (EUR x10⁶)	Total project cost with respect to GDP
2007	190.54	21,704	0.88 %
2008	190.54	32,555	0.59 %
2009	204.09	48,833	0.42 %
2010	384.31	73,250	0.52 %
2011	344.44	10⁹,875	0.31 %
2012	505.48	164,812	0.31 %
2013	418.81	247,218	0.17 %
2014	385.06	370,827	0.10 %
2015	327.06	556,241	0.06 %
2016	277.06	834,361	0.03 %
2017	277.06	1,251,542	0.02 %
2018	197.06	1,877,313	0.01 %

It can be seen from table III.9 that the TEM projects total annual cost for Bosnia and Herzegovina does not exceed 1.5 % of the country's GDP in any of the years of the time period under study.

5.5 Bulgaria

Table III.10 presents the total project cost and related percentage of the GDP of Bulgaria for the years 2008 to 2020.

Table III.10 - **GDP percentage of Bulgaria**

Year	Project total cost (EUR x10⁶)	GDP (EUR x10⁶)	Total project cost with respect to GDP
2008	42.40	43,350	0.10 %
2009	27.47	65,025	0.04 %
2010	139.87	97,538	0.14 %
2011	209.53	146,306	0.14 %
2012	209.53	219,459	0.10 %
2013	82.20	329,189	0.02 %
2014	10⁹.71	493,784	0.02 %
2015	10⁹.71	740,675	0.01 %
2016	10⁹.71	1,111,013	0.01 %
2017	10⁹.71	1,666,520	0.01 %
2018	10⁹.71	2,499,779	0.00 %
2019	10⁹.71	3,749,669	0.00 %
2020	10⁹.71	5,624,504	0.00 %

It can be seen from table III.10 that the TEM projects total annual cost for Bulgaria does not exceed 1.5 % of the country's GDP in any of the years of the time period under study.

5.6 Croatia

Table III.11 presents the total project cost and related percentage of the GDP of Croatia for the years 2011 to 2020.

Table III.11 - GDP percentage of Croatia

Year	Project total cost (EUR x10⁶)	GDP (EUR x10⁶)	Total project cost with respect to GDP
2011	238.40	216,795	0.11 %
2012	238.40	325,192	0.07 %
2013	296.40	487,789	0.06 %
2014	209.50	731,683	0.03 %
2015	269.50	1,097,525	0.02 %
2016	317.00	1,646,287	0.02 %
2017	230.00	2,469,430	0.01 %
2018	115.00	3,704,145	0.00 %
2019	115.00	5,556,218	0.00 %
2020	70.00	8,334,327	0.00 %

It can be seen from table III.11 that the TEM projects total annual cost for Croatia does not exceed 1.5 % of the country's GDP in any of the years of the time period under study.

5.7 The Czech Republic

Table III.12 presents the total project cost and related percentage of the GDP of the Czech Republic for the years 2007 to 2011.

Table III.12 - GDP percentage of the Czech Republic

Year	Project total cost (EUR x10⁶)	GDP (EUR x10⁶)	Total project cost with respect to GDP
2007	543.35	127,331	0.43 %
2008	403.74	190,996	0.21 %
2009	334.83	286,494	0.12 %
2010	232.71	429,740	0.05 %
2011	195.76	644,611	0.03 %

It can be seen from table III.12 that the TEM projects total annual cost for the Czech Republic does not exceed 1.5 % of the country's GDP in any of the years of the time period under study.

5.8 The former Yugoslav Republic of Macedonia

Table III.13 presents the total project cost and related percentage of the GDP of the former Yugoslav Republic of Macedonia for the years 2008 to 2015.

Table III.13 - GDP percentage of the former Yugoslav Republic of Macedonia

Year	Project total cost (EUR x10⁶)	GDP (EUR x10⁶)	Total project cost with respect to GDP
2008	92.05714	8,686.8	1.06 %
2009	89.62857	13,030.2	0.69 %
2010	87.2	19,545.3	0.45 %
2011	126.84	293,17.95	0.43 %
2012	126.84	439,76.93	0.29 %
2013	126.84	659,65.39	0.19 %
2014	126.84	989,48.08	0.13 %
2015	83.3	148,422.1	0.06 %

It can be seen from table III.13 that the TEM projects total annual cost for the former Yugoslav Republic of Macedonia does not exceed 1.5 % of the country's GDP in any of the years of the time period under study.

5.9 Georgia

All the TEM projects proposed in the original Master Plan by Georgia have been completed.

5.10 Greece

Table III.14 presents the total project cost and related percentage of the GDP of Greece for the years 2007 to 2010.

Table III.14 - GDP percentage of Greece

Year	Project total cost (EUR x10⁶)	GDP (EUR x10⁶)	Total project cost with respect to GDP
2007	25	226,437	0.01 %
2008	25	339,656	0.01 %
2009	25	509,483	0.00 %
2010	25	764,225	0.00 %

It can be seen from table III.14 that the TEM projects total annual cost for Greece does not exceed 1.5 % of the country's GDP in any of the years of the time period under study.

5.11 Hungary

No data with regards to project implementation costs and end year of implementation were submitted for Hungary.

5.12 Lithuania

Table III.15 presents the total project cost and related percentage of the GDP of Lithuania for the years 2007 to 2017.

Table III.15 - GDP percentage of Lithuania

Year	Project total cost (EUR x10⁶)	GDP (EUR x10⁶)	Total project cost with respect to GDP
2007	9.5	28,400	0.03 %
2008	9.5	42,600	0.02 %
2009	7.1	63,900	0.01 %
2010	4.8	95,850	0.00 %
2011	0.0	143,775	0.00 %
2012	0.0	215,663	0.00 %
2013	0.0	323,494	0.00 %
2014	25.3	485,241	0.01 %
2015	47.0	727,861	0.01 %
2016	47.0	1,091,791	0.00 %
2017	21.7	1,637,687	0.00 %

It can be seen from table III.15 that the TEM projects total annual cost for Lithuania does not exceed 1.5 % of the country's GDP in any of the years of the time period under study.

5.13 The Republic of Moldova

All the TEM projects proposed for the original TEM Master Plan by the Republic of Moldova have been completed.

5.14 Poland

Table III.16 presents the total project cost and related percentage of the GDP of Poland for years 2007 to 2020.

Table III.16 - GDP percentage of Poland

Year	Project total cost (EUR x10⁶)	GDP (EUR x10⁶)	Total project cost with respect to GDP
2007	714.02	5,138	0.23 %
2008	1,390.38	7,707	0.30 %
2009	7,077.41	11,561	1.01 %
2010	8,676.16	17,342	0.83 %
2011	8,551.34	26,012	0.54 %
2012	4,509.02	39,018	0.19 %
2013	2,434.87	58,528	0.07 %
2014	1,041.36	87,792	0.02 %
2015	1,124.69	131,687	0.01 %

Year	Project total cost (EUR x10⁶)	GDP (EUR x10⁶)	Total project cost with respect to GDP
2016	601.23	197,531	0.01 %
2017	99.66	296,296	0.00 %
2018	99.66	444,444	0.00 %
2019	99.66	666,667	0.00 %
2020	99.66	1,000,000	0.00 %

It can be seen from Table III.16 that the TEM projects total annual cost for Poland does not exceed 1.5 % of the country's GDP in any of the years of the time period under study.

5.15 Romania

Table III.17 presents the total project cost and related percentage of the GDP of Romania for the years 2007 to 2020.

Table III.17 - **GDP percentage of Romania**

Year	Project total cost (EUR x10⁶)	GDP (EUR x10⁶)	Total project cost with respect to GDP
2007	566.77	311,001.7	0.18 %
2008	1,243.13	466,502.6	0.27 %
2009	6,930.16	699,753.8	0.99 %
2010	8,471.53	1,049,631	0.81 %
2011	8,346.71	1,574,446	0.53 %
2012	4,304.39	2,361,669	0.18 %
2013	2,377.49	3,542,504	0.07 %
2014	1,041.36	5,313,756	0.02 %
2015	1,124.69	7,970,633	0.01 %
2016	601.23	11,955,950	0.01 %
2017	99.66	17,933,925	0.00 %
2018	99.66	26,900,888	0.00 %
2019	99.66	40,351,332	0.00 %
2020	99.66	60,526,997	0.00 %

It can be seen from table III.17 that the TEM projects total annual cost for Romania does not exceed 1.5 % of the country's GDP in any of the years of the time period under study.

5.16 The Russian Federation

No data with regards to project implementation costs were submitted by the Russian Federation.

5.17 Serbia

Table III.18 presents the total project cost and related percentage of the GDP of Serbia for the years 2007 to 2012.

Table III.18 - GDP percentage of Serbia

Year	Project total cost (EUR x10⁶)	GDP (EUR x10⁶)	Total project cost with respect to GDP
2007	103.53	31,000	0.33 %
2008	464.61	46,500	1.00 %
2009	431.73	69,750	0.62 %
2010	398.86	104,625	0.38 %
2011	393.52	156,938	0.25 %
2012	37.77	235,406	0.02 %

It can be seen from table III.18 that the TEM projects total annual cost for Serbia does not exceed 1.5 % of the country's GDP in any of the years of the time period under study.

5.18 Slovakia

Table III.19 presents the total project cost and related percentage of the GDP of Slovakia for the years 2007 to 2017.

Table III.19 - GDP percentage of Slovakia

Year	Project total cost (EUR x10⁶)	GDP (EUR x10⁶)	Total project cost with respect to GDP
2007	10.42	57,868	0.02 %
2008	129.89	86,802	0.15 %
2009	1,082.89	130,203	0.83 %
2010	1,162.82	195,304.5	0.60 %
2011	1,180.47	292,956.8	0.40 %
2012	1,180.47	439,435.1	0.27 %
2013	294.18	659,152.7	0.04 %
2014	423.35	988,729	0.04 %
2015	214.49	1,483,094	0.01 %
2016	214.49	2,224,640	0.01 %
2017	214.49	3,336,960	0.01 %

It can be seen from table III.19 that the TEM projects total annual cost for Slovakia does not exceed 1.5 % of the country's GDP in any of the years of the time period under study.

5.19 Slovenia

Table III.20 presents the total project cost and related percentage of the GDP of Slovenia for the years 2007 to 2016.

Table III.20 - GDP percentage of Slovenia

Year	Project total cost (EUR x10⁶)	GDP (EUR x10⁶)	Total project cost with respect to GDP
2007	69	34,568	0.20 %
2008	69	51,852	0.13 %
2009	69	77,778	0.09 %
2010	69	116,668	0.06 %
2011	65.45333	175,002	0.04 %
2012	119.1013	262,502	0.05 %
2013	119.1013	393,753	0.03 %
2014	53.648	590,630	0.01 %
2015	53.648	885,945	0.01 %
2016	53.648	1,328,918	0.00 %

It can be seen from table III.20 that the TEM projects total annual cost for Slovenia does not exceed 1.5 % of the country's GDP in any of the years of the time period under study.

5.20 Turkey

Table III.21 presents the total project cost and related percentage of the GDP of Turkey for the years 2007 to 2015.

Table III.21 - GDP percentage of Turkey

Year	Project total cost (EUR x10⁶)	GDP (EUR x10⁶)	Total project cost with respect to GDP
2007	84.8	471,972.2	0,02 %
2008	109.38	707,958.3	0,02 %
2009	316.47	1,061,937	0,03 %
2010	1,395.88	1,592,906	0,09 %
2011	1,757.36	2,389,359	0,07 %
2012	1,757.36	3,584,039	0,05 %
2013	1,605.64	5,376,058	0,03 %
2014	1,581.05	8,064,088	0,02 %
2015	708.73	12,096,131	0,01 %
2016	422.44	18,144,197	0,00 %

It can be seen from table III.21 that the TEM projects total annual cost for Turkey does not exceed 1.5 % of the country's GDP in any of the years of the time period under study.

5.21 Ukraine

Table III.22 presents the total project cost and related percentage of the GDP of the Ukraine for the years 2011 to 2018.

Table III.22 - **GDP percentage of Ukraine**

Year	Project total cost (EUR x10^6)	GDP (EUR x10^6)	Total project cost with respect to GDP
2011	99.90	1,291,565	0.01 %
2012	99.90	1,937,347	0.01 %
2013	99.90	2,906,021	0.00 %
2014	99.90	4,359,031	0.00 %
2015	99.90	6,538,547	0.00 %
2016	99.90	9,807,820	0.00 %
2017	99.90	14,711,730	0.00 %
2018	99.90	22,067,594	0.00 %

It can be seen from table III.22 that the TEM projects total annual cost for the Ukraine does not exceed 1.5 % of the country's GDP in any of the years of the time period under study.

5.22 Conclusions

On the basis of the analysis carried out in this chapter, the total annual project cost of each country does not exceed 1.5 % of the country's GDP value in any year of the respective time period under study.

6. ANALYSIS OF PROJECTS ACCORDING TO SCORE/CLASS

6.1 Introduction

This chapter presents an analysis of the proposed projects with respect to their score and class (1 to 4) (in accordance with the project start date specified by the country concerned). For each participating country, the percentage of projects belonging to each class is specified.

Class 1 is the first investment/implementation class in the time horizon, and projects belonging to Class 1 were expected to start before 2011. Projects of Class 2 will start before 2015, projects of Class 3 will start before 2020 and projects of Class 4 will start after 2020. Projects for which insufficient data are available are also classified as Class 4.

Details of the score and class for each of the proposed projects in each country are given in Appendix III.3 and Appendix III.4 respectively.

6.2 Austria

Austria proposed 1 project which has been completed. This belonged to Class 1.

6.3 Belarus

Belarus proposed 3 projects which have been completed. These belonged to Class 1.

6.4 Bosnia and Herzegovina

Out of the 10 projects proposed by Bosnia and Herzegovina

- 3 belong to Class 1 (30 %),
- 3 belong to Class 2 (30 %) and
- 4 belong to Class 4 (40 %).

6.5 Bulgaria

Out of the 13 projects proposed by Bulgaria

- 5 belong to Class 1 (38 %), and
- 8 belong to Class 2 (62 %).

6.6 Croatia

Out of the 27 projects proposed by Croatia

- 9 belong to Class 1 (33 %),
- 15 belong to Class 2 (55 %), and
- 3 belong to Class 3 (11 %).

6.7 The Czech Republic

All 5 projects proposed by the Czech Republic belong to Class 1.

6.8 The former Yugoslav Republic of Macedonia

Out of the 3 projects proposed by the former Yugoslav Republic of Macedonia

- 2 belong to Class 1 (67 %), and
- 1 belongs to Class 2 (33 %).

6.9 Georgia

All 4 projects proposed by Georgia have been completed. These belonged to Class 1.

6.10 Greece

All 5 projects proposed by Greece belong to Class 1.

6.11 Hungary

All 20 projects proposed by Hungary belong to Class 1.

6.12 Lithuania

Out of the 10 projects proposed by Lithuania

- 3 belong to Class 1 (30 %),
- 3 belong to Class 2 (30 %), and
- 4 belong to Class 4 (40 %).

6.13 The Republic of Moldova

The Republic of Moldova proposed 1 project which has been completed. This belonged to Class 1.

6.14 Montenegro

Montenegro proposed 6 projects which have been completed. These belonged to Class 1.

6.15 Poland

Out of the 119 projects proposed by Poland

- 101 belong to Class 1 (85 %), and
- 18 belong to Class 2 (15 %).

6.16 Romania

Out of the 48 projects proposed by Romania

- 26 belong to Class 1 (54 %),
- 15 belong to Class 2 (31 %), and
- 7 belong to Class 4 (15 %).

6.17 The Russian Federation

All 12 projects proposed by The Russian Federation belong to Class 1.

6.18 Serbia

Out of the 21 projects proposed by Serbia

- 17 belong to Class 1 (85 %), and
- 4 belong to Class 4 (15 %).

6.19 Slovakia

Out of the 19 projects proposed by Slovakia
- 13 belong to Class 1 (68 %), and
- 6 belong to Class 2 (32 %).

6.20 Slovenia

Out of the 7 projects proposed by Slovenia
- 4 belong to Class 1 (57 %),
- 2 belong to Class 2 (29 %), and
- 1 belongs to Class 4 (14 %).

6.21 Turkey

Out of the 36 projects proposed by Turkey
- 27 belong to Class 1 (75 %), and
- 9 belong to Class 2 (25 %).

6.22 Ukraine

Out of the 4 projects proposed by Ukraine
- 1 belongs to Class 1 (25 %), and
- 3 belong to Class 2 (75 %).

6.23 Conclusion

On the basis of the results of this analysis, most projects belong to Class 1.

7. SUMMARY OF FINDINGS

A total of 294 TEM projects are being proposed in the revision of the TEM Master Plan and should be included in the updated TEM Master Plan.

The implementation of the TEM network as a whole will require an estimated[4] EUR 115,123 x 10^6. The implementation will follow the time plan presented in table III.3, which also shows the available/secured percentage of funding.

39 % of the network has been completed; an additional 45 % of the network is expected to be completed by the year 2015.

For each participating country, the total cost of projects under consideration was found to be significantly less than 1.5 % of the GDP for the respective year of implementation of the project.

Approximately 80 % of the funding for the proposed projects has been secured.

The majority of the projects belong to Class 1.

The majority of the projects (57 %) are of the *motorway* road type.

The majority of the projects are expected to have an increase in Average Annual Daily Traffic (AADT) of more than 15 %.

[4] This estimate is based on the data that were made available and does not include the projects for which data on implementation costs have not been submitted.

8. FUNDING CONSIDERATIONS AND RECOMMENDATIONS

8.1 Introduction

Securing the funds to be used for the implementation of the proposed projects is an important factor in the completion of the TEM network. According to the results of the analysis of the implementation of the proposed TEM projects (as outlined in chapter 3 of this annex), a certain proportion of the funds needed to cover the total implementation costs has not yet been secured.

The countries which proposed projects in 2008 for which financing has not yet been secured are Bosnia and Herzegovina, Bulgaria, Lithuania, Romania, Serbia, Slovenia and Turkey. Therefore, funding for these projects will need to be secured in the near future.

To this end, the eligibility criteria for receiving funds, as well as recommendations on the required procedures per funding institution/source, are presented in this chapter for such projects.

Initially, a brief description is provided on the available sources of financing and the respective eligibility criteria, followed by recommendations on a country-by-country basis.

8.2 Sources of financing of infrastructure investments

The main sources of funding are the following:

- national/regional funding;
- EU funding (co-funding from national governments is required);
  - Trans-European Transport Network (TEN-T) budget (for EU Member States);
  - European Regional Development Fund (ERDF), Structural Funds, Cohesion Funds [after 2007 according to the objectives' regions, following the National Strategic Reference Framework (NSRF)];
  - Instrument for Structural Policies for Pre-Accession (ISPA);
  - Cross-border cooperation (INTERREG);
- European Investment Bank (EIB) and European Bank for Reconstruction and Development (EBRD), for low-interest loans;
- World Bank, for low-interest loans;
- public–private partnership (PPP) projects, for the case of private funding through concessions [e.g. build-operate-transfer (BOT)].

A detailed description of the above sources of funding and the required procedures is provided in appendix III.5.

8.3 Eligibility criteria

Infrastructure investments are needed to address capacity constraints. The organization and management of the implementation of projects should be undertaken by the private sector, regardless of the source of financing (e.g. public, private, loans). The role of the Governments in the participating countries should be confined to the provision of a transparent and stable framework, including commercial incentives for private investors. Market dynamics will then determine the type of infrastructure that is needed and whether the risk–return ratio of a particular project justifies the necessary investments. For any infrastructure project, in order to secure financing it is necessary to provide the following information:

- type of traffic targeted;
- data related to ongoing and expected investment expenditures;

- maturity of the project (under construction, planning phase, study phase, etc.);
- start and end years;
- sources of funding already secured.

8.4 Bosnia and Herzegovin

Project ID	Status	Road type [a]	% increase in traffic	Start year	End year	% funding secured from following source				IRR (%)
						National	Bank	Grant	Private	
BH-M-2	Design	M	11	2013	2017	–	–	–	–	–
BH-M-5	Design	NR	3	–	–	–	–	–	–	–
BH-M-6	Design	E	50	2012	2015	–	–	–	–	–
BH-M-7	Design	NR	–	–	–	–	–	–	–	–
BH-M-9	Design	NR	–	–	–	–	–	–	–	–
BH-M-10	Planning	NR	17	–	–	–	–	–	–	–

[a] E = expressway; M = motorway; NR = national road.

With regard to project BH-M-2, this could explore the possibility of receiving funding from EU funds, the EIB or the World Bank since it involves a motorway and is at the design stage to be implemented in 2013, and thus it is of considerable maturity. It is proposed that a financial feasibility study be carried out to determine the Internal Rate of Return (IRR) of the project. The estimated percentage increase in traffic is considerable, which makes the project attractive for funding, especially under PPP projects, provided that the country agrees to a toll system.

With regards to the remaining projects that involve a national road or an expressway, these could only receive funding from either national or regional sources, with a low possibility of being implemented under a PPP project.

Since the total cost of the projects under consideration is significantly lower than 1,5 % of the country's GDP over the implementation period (as noted in chapter 5.4), it is assumed that these projects could receive financing from national or regional funds, provided that no additional projects are proposed.

8.5 Bulgaria

Project ID	Status	Road type [a]	% increase in traffic	Start year	End year	% funding secured from following source				IRR (%)
						National	Bank	Grant	Private	
BG-M-1	Planning	NR	–	after 2014	–	–	–	–	–	–
BG-M-5	Planning	M	–	after 2014	–	–	–	–	–	–
BG-M-6	Planning	M	–	after 2014	–	–	–	–	–	–
BG-M-8	Planning	M	–	after 2014	–	–	–	–	–	–
BG-M-9	Planning	M	–	after 2014	–	–	–	–	–	–
BG-M-10	Planning	M	–	after 2014	–	–	–	–	–	–

[a] M = motorway; NR = national road.

Project BG-M-1 could receive funding from national sources since it involves the construction of a national road, and the total cost of projects under consideration is significantly lower than 1,5 % of the country's GDP over the implementation period (as noted in chapter 5.5), provided that no additional projects are proposed.

With regards to the remaining projects, these are not yet at a mature stage, and no exact information was provided with regards to their implementation dates or impact on traffic. However, since they involve the construction of a motorway, these could in future receive funding from EU funds, the EIB or the World Bank.

8.6 Lithuania

Project ID	Status	Road type [a]	% increase in traffic	Start year	End year	% funding secured from following source				IRR (%)
						National	Bank	Grant	Private	
LT-M-4	Planning	M	40	2015	2017	–	–	–	–	15
LT-M-5	Planning	M	40	2015	2017	–	–	–	–	15
LT-M-6	Programming	M	72	after 2025	–	–	–	–	–	–
LT-M-7	Design	M	51	2014	2016	–	–	–	–	10
LT-M-8	Programming	E	63	after 2020	–	–	–	–	–	–
LT-M-9	Programming	M	73	after 2020	–	–	–	–	–	–
LT-M-10	Programming	M	76	after 2025	–	–	–	–	–	–

[a] E = expressway; M = motorway.

Projects LT-M-4, LT-M-5 and LT-M-7 could be eligible to receive funding from EU funds, the EIB or the World Bank since they are at a considerably mature stage, involve the construction of a motorway, and have a high impact on traffic and a very satisfactory IRR, thus indicating financial feasibility. These projects could also explore the option of a PPP model, provided that the country agrees to a tolling system.

With regards to the rest of the projects, these are not yet at a mature stage. Those that involve the construction of a motorway could in the future explore the options of EU funds, the EIB and the World Bank.

The project LT-M-8 could receive either national or regional funding (assuming that no other national projects are funded during the same implementation period) or, since it has a high impact on traffic, the option of a PPP model could be investigated.

Meanwhile, it is proposed that a financial feasibility study be carried out for those projects for which no IRR has been given, to determine their respective IRR and so assess their viability.

8.7 Poland

Project ID	Status	Road type [a]	% increase in traffic	Start year	End year	% funding secured from following source				IRR (%)
						National	Bank	Grant	Private	
PL-M-31	Planning	M	50	2015	2020	–	–	–	–	8

[a] M = motorway.

Project PL-M-31 could be eligible to receive funding from EU funds, the EIB or the World Bank since it is at a considerably mature stage, involves the construction of a motorway, and has a high impact on traffic and a very satisfactory IRR percentage, thus indicating financial feasibility.

8.8 Romania

Project ID	Status	Road type [a]	% increase in traffic	Start year	End year	% funding secured from following source				IRR (%)
						National	Bank	Grant	Private	
RO-M-13	Programming	M	27	2015	2020	–	–	–	–	–
RO-M-17	Programming	M	162	2015	2020	–	–	–	–	–
RO-M-18	Section 1: construction Section 2: design	M	37	Section 1: 2004 Section 2: 2010	Section 1: 2010 Section 2: 2012	–	–	–	–	–
RO-M-19	Programming	E	27	2015	2020	–	–	–	–	–
RO-M-21	Design	M	28	2011	2013	–	–	–	–	–
RO-M-31	Design	M	26	2010	2013	–	–	–	–	–
RO-M-32	Design	M	26	2010	2013	–	–	–	–	–
RO-M-33	Design	M	27	2010	2013	–	–	–	–	–
RO-M-34	Design	M	28	2010	2013	–	–	–	–	–
RO-M-35	Design	M	29	2010	2013	–	–	–	–	–
RO-M-36	Programming	M	27	2015	2019	–	–	–	–	–
RO-M-42a	Programming	M	28	2015	2019	–	–	–	–	–
RO-M-42b	Design	E	27	2015	2020	–	–	–	–	–
RO-M-44	Design	E	40	2015	2020	–	–	–	–	–
RO-M-45	Design	E	40	2015	2020	–	–	–	–	–
RO-M-46	Design	E	40	2015	2020	–	–	–	–	–
RO-M-47	Design	E	40	2015	2020	–	–	–	–	–

[a] E = expressway; M = motorway.

Projects that involve a motorway and are at the design stage could be eligible to receive funding from EU funds, the EIB or the World Bank since they are at a considerably mature stage, involve the construction of a motorway and are expected to have a high impact on traffic. However, since no IRR is provided, it is proposed that a financial feasibility study be carried out to determine the IRR of the projects.

With regards to the remaining projects that involve the construction of an expressway, these could receive either national or regional funds since the total cost of the proposed projects is significantly lower than 1,5 % of the country's GDP over the implementation period (as noted in chapter 5.16), provided that no additional projects are proposed. In addition, given the high impact on traffic, the PPP option could be explored, provided that the country agrees to a tolling system.

8.9 Serbia

Project ID	Status	Road type [a]	% increase in traffic	Start year	End year	% funding secured from following source				IRR (%)
						National	Bank	Grant	Private	
SM-H-12	Construction	M	—	1990	2012	30	—	34	—	—

[a] M = motorway.

Project SM-H-12 could be eligible to receive funding for the unsecured portion of the cost from EU funds, the EIB or the World Bank since it is currently under construction and is a motorway. In addition, it could receive national funds, provided that no additional national projects are implemented during the same period since the total cost of the projects under consideration is lower than 1,5 % of the country's GDP over the implementation period (as noted in chapter 5.18).

8.10 Slovenia

Project ID	Status	Road type [a]	% increase in traffic	Start year	End year	% funding secured from following source				IRR (%)
						National	Bank	Grant	Private	
SL-M-5	Design	M	—	2012	2015	—	—	—	—	—
SL-M-7	Design	M	—	2011	2013	—	—	—	—	—

[a] M = motorway.

The Slovenian projects could be eligible to receive funding from EU funds, the EIB or the World Bank since they are at a considerably mature stage and involve the construction of a motorway. They could also receive national funds, provided that no additional national projects are implemented during the same period since the total cost of projects under consideration is lower than 1,5 % of the country's GDP over the implementation period (as noted in chapter 5.20). In any case, it is proposed that a financial feasibility study be carried out to determine the IRR of the projects.

8.11 Turkey

According to data received from Turkey, the 7 projects that have not secured funding will be financed according to the build-operate-transfer (BOT) model.

9. THE WAY FORWARD

9.1 Introduction

The implementation of the TEM and TER Master Plan is a long-term process that requires first and foremost political will and commitment from the participating countries. To see it to fruition will also require continuous close cooperation amongst the TEM member countries, between them and their neighbours, the TEM project Central Office and the UNECE.

More specifically, certain actions in some key areas might be necessary in the future as outlined below.

9.2 Data collection

The general problems encountered in the data collection varied from data that do not exist to data that are confidential. The missing data represents valuable input for the decision-makers concerning the future development of a complete TEM network.

9.3 Monitoring

Monitoring is the process of continuous or periodic assessment of programme/project implementation, the identification of problems and the planning of remedial actions.

The implementation should be monitored, and in particular the following actions should be undertaken:

- observation, measurement, recording, collection and processing of information for necessary decisions/actions;
- provision of information on the state of the programme/project in comparison with the original plan and costs;
- identification of any constraints to implementation and of any suggested solutions;
- assurance of the involvement of all stakeholders;
- enhancement of an efficient management of resources, accountability and transparency;
- execution of impact assessment at project completion.

In the case of the proposed projects in the TEM Master Plan, offsite monitoring will be carried out through the collection and review of data. High quality monitoring requires

- robust definitions of the objectives and targets to be achieved, the indicators to measure the achievements (outcome, relevance, efficiency, impact and sustainability) and the data required to estimate those indicators,
- transparent systems for gathering and accessing information which minimize resource burdens and relate the costs to the benefits of the information provided,
- high quality and timely data collection and collation,
- suitable processes for aggregating information to enable clear overall patterns of performance to be established at various levels and spatial scales,
- accessibility of information to all those who need it, and
- an appropriate balance between subjective performance information (e.g. promotion of network interoperability) and quantitative data (e.g. traffic flows).

The above measures would enable the investment plan elaborated under the TEM Master Plan to be kept up-to-date and would also assist in the complementary definition and scheduling (or

rescheduling) of major projects. All inputs for monitoring the progress of the investment plan will come from the countries concerned, namely from the transport ministries and road, rail and other relevant authorities. Finally, to facilitate this process, countries which are not yet members of the TEM should consider full membership, since the TEM is an international cross-border project.

9.4 Geographic Information System (GIS) mapping update/maintenance

In addition to the above, maintenance/update of a Geographical Information System (GIS) and an Expert Network for the monitoring of developments on the TEM network should be incorporated.

9.5 Securing the funding

Completion of the funding possibilities for the projects on the TEM network, identification of the unfunded projects and examination of the possible sources of funding is required. In addition, the eligibility criteria for obtaining funds by the respective countries, as well as the analysis of the required procedures, should be pursued.

Funding sources to be examined include (non-exhaustive list)

- banks, such as the European Investment Bank (EIB), the European Bank for Reconstruction and Development (EBRD) and the World Bank,
- the EU, including the Cohesion Fund, Structural Funds, ISPA and INTERREG frameworks, and
- alternative funding schemes, such as public–private partnership (PPP) schemes (e.g. BOT).

9.6 Technical and institutional actions

The necessary technical and institutional actions for assisting the implementation of the proposed TEM Master Plan need to be established and pursued in the following manner.

- ***Careful and simultaneous consideration of both national and international perspectives.*** The consideration of both perspectives is necessary in order to move towards plans that acknowledge common international needs and goals, and at the same time recognize the reality that national needs are also important to the countries concerned.
- ***Secure technical standards for the road sector.*** The matters of concern for the road sector are the maximum vehicle dimensions and axle weight, the hours and working conditions for drivers, the maximum speeds, highway design, etc. Safety is a particular concern, and hence there is a need to integrate safety aspects into the design, construction and operation of road networks, as well as into the regulatory framework that governs the training and testing of drivers and the testing of vehicles. Finally there are also important needs for the coordination of standards and infrastructure design at border crossing and customs facilities owing to regulatory and legal constraints, as well as administrative and institutional restrictions. The latter entail the harmonization of policy and administrative interoperability at borders through, for example, standardization, technical and administrative interoperability, traffic management systems, cross-border and operational procedures, and cooperation in the area of the transport of dangerous goods.

- ***Ensuring interoperability amongst the identified road projects.*** All countries involved need to follow commonly accepted standards and practices recommended for use. The UNECE European Agreement on Main International Traffic Arteries (AGR), as well as the TEM standards and recommended practices, provide the technical and institutional framework for this. Assistance in the implementation of these standards by all countries concerned, as well as monitoring of the progress in bringing the TEM networks up to the required standards, could be among the permanent tasks of the TEM project in the future.
- ***Ensuring that state laws with respect to tendering and construction are appropriately harmonized with emerging European good practice.*** Failure to ensure that state laws with respect to tendering and construction are appropriately harmonized with emerging European good practice can restrict interest in undertaking the infrastructure works, which in turn is likely to lead to undermining cost-effectiveness and technical innovation in construction. Such legislation, if not already in place, can take some considerable time to be introduced and therefore needs to be set into motion some time ahead of any plans for implementation.

Appendix III.1 Paired comparison matrix

Paired comparison matrix is a scaling approach. In simple terms, in the use of this approach to derive criteria weights, the only question to be answered is "Is this criterion more important than the other?". This means that the paired comparison matrix (see Table III.1.1) can be filled with 0s and 1s, where 1 represents "Is more important". By summing these values, a measure is obtained for the degree to which one criterion is important in comparison with all other criteria. If these measures are then standardized, a set of criteria weights is created.

Table III.1.1 - **An example of a paired comparison matrix**

	W1	W2	...	WN
W1				
W2				
...				
WN				

Standardization formulae for this task are many, but for this project there is only one that suits us; it is a transformation of 'raw' scores to scores with a range from 0 to 1 with an additivity constraint[5]. The formula is as follows:

$$\text{Standardized score } w_i = \frac{\text{'raw' score...}w_i}{\sum \text{'raw' scores}} \qquad \text{(III.1.1)}$$

Basically each 'raw' score is divided by the sum of all 'raw' scores. This sort of transformation is especially appropriate in standardizing various sets of different criterion weights since the application of equation (III.1.1) implies that all the weights will then add up to unity.

[5] Final scores added should equal 1.

Appendix III.2 Criteria weights

Final weights Cluster A – Horizontal dimension: Functionality/coherence criteria

$W(C_{A1})$	15.63 %
$W(C_{A2})$	13.54 %
$W(C_{A3})$	13.54 %
$W(C_{A4})$	7.29 %

Final weights Cluster B – Vertical dimension: Socio-economic efficiency and sustainability criteria

$W(C_{B1})$	14.00 %
$W(C_{B2})$	14.00 %
$W(C_{B3})$	7.33 %
$W(C_{B4})$	7.33 %
$W(C_{B5})$	7.33 %

Note:

The projects that have committed funding are directly characterised as Priority Category I and as such, THEY ARE NOT EVALUATED. Therefore, the respective rows of these projects are left blank in Tables 1, 2 and 3

The weights are the same for all countries and were derived using paired comparison matrices, completed by a group of experts (DELPHI method) from UNECE, TEM and the consultants.

Appendix III.3 Criteria scores per country

Projects of Bosnia and Herzegovina

Evaluation

1. Answers (based on country's input)

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
BH-M-2	B	E	B	C	D	B	B	C	C
BH-M-6	A	E	A	A	B	B	B	B	A

2. Raw scores

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
BH-M-2	4	1	4	3	2	4	4	3	3
BH-M-6	5	1	5	5	4	4	4	4	5

Weights	Criteria A				Criteria B				
	WCA1	WCA2	WCA3	WCA4	WCB1	WCB2	WCB3	WCB4	WCB5
	15.63%	13.54%	13.54%	7.29%	14.00%	14.00%	7.33%	7.33%	7.33%

3. Weighted scores

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
BH-M-2	0.63	0.14	0.54	0.22	0.28	0.56	0.29	0.22	0.22
BH-M-6	0.78	0.14	0.68	0.36	0.56	0.56	0.29	0.29	0.37

Project ID	Project Total Scores	Evaluation Class
BH-M-2	3.09	3
BH-M-6	4.03	2

Projects of Bulgaria

Evaluation

1. Answers (based on country's input)

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
BG-M-1	A	E	E	A	E	A	C	E	B
BG-M-4	A	E	E	C	C	A	A	A	C
BG-M-5	A	E	A	A	C	A	A	E	C
BG-M-6	A	E	A	A	C	A	A	E	C
BG-M-8	A	E	A	A	C	A	A	E	C
BG-M-9	B	E	E	B	C	E	C	E	C
BG-M-10	B	E	E	B	C	E	C	E	C

2. Raw scores

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
BG-M-1	5	1	1	5	1	5	3	1	4
BG-M-4	5	1	1	3	3	5	5	5	3
BG-M-5	5	1	5	5	3	5	5	1	3
BG-M-6	5	1	5	5	3	5	5	1	3
BG-M-8	5	1	5	5	3	5	5	1	3
BG-M-9	4	1	1	4	3	1	3	1	3
BG-M-10	4	1	1	4	3	1	3	1	3

Weights	Criteria A				Criteria B				
	WCA1	WCA2	WCA3	WCA4	WCB1	WCB2	WCB3	WCB4	WCB5
	15.63%	13.54%	13.54%	7.29%	14.00%	14.00%	7.33%	7.33%	7.33%

3. Weighted scores

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
BG-M-1	0.78	0.14	0.14	0.36	0.14	0.70	0.22	0.07	0.29
BG-M-4	0.78	0.14	0.14	0.22	0.42	0.70	0.37	0.37	0.22
BG-M-5	0.78	0.14	0.68	0.36	0.42	0.70	0.37	0.07	0.22
BG-M-6	0.78	0.14	0.68	0.36	0.42	0.70	0.37	0.07	0.22
BG-M-8	0.78	0.14	0.68	0.36	0.42	0.70	0.37	0.07	0.22
BG-M-9	0.63	0.14	0.14	0.29	0.42	0.14	0.22	0.07	0.22
BG-M-10	0.63	0.14	0.14	0.29	0.42	0.14	0.22	0.07	0.22

Project ID	Project Total Scores	Evaluation Class
BG-M-1	2.84	IV
BG-M-4	3.34	III
BG-M-5	3.74	III
BG-M-6	3.74	III
BG-M-8	3.74	III
BG-M-9	2.26	IV
BG-M-10	2.26	IV

Projects of Romania

Evaluation

1. Answers (based on country's input)

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
RO-M-13	B	E	B	C	D	A	D	D	C
RO-M-17	B	E	B	C	D	A	D	D	C
RO-M-18	A	E	B	C	A	A	A	A	C
RO-M-19	B	E	B	C	D	A	D	D	C
RO-M-21	B	E	B	C	C	A	C	D	C
RO-M-31	B	E	B	C	C	A	A	C	C
RO-M-32	B	E	B	C	C	A	A	C	C
RO-M-33	B	E	B	C	C	A	A	C	C
RO-M-34	B	E	B	C	C	A	A	C	C
RO-M-35	B	E	B	C	C	A	A	C	C
RO-M-36	B	E	B	C	D	A	A	C	C
RO-M-42	B	E	B	C	D	A	D	C	C
RO-M-42	B	E	B	C	D	A	D	C	C
RO-M-44	B	E	B	C	D	A	D	C	C
RO-M-45	B	E	B	C	D	A	D	C	C
RO-M-46	B	E	B	C	D	A	D	C	C
RO-M-47	B	E	B	C	D	A	D	C	C

2. Raw scores

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
RO-M-13	4	1	4	3	2	5	2	2	3
RO-M-17	4	1	4	3	2	5	2	2	3
RO-M-18	5	1	4	3	5	5	5	5	3
RO-M-19	4	1	4	3	2	5	2	2	3
RO-M-21	4	1	4	3	3	5	3	2	3
RO-M-31	4	1	4	3	3	5	5	3	3
RO-M-32	4	1	4	3	3	5	5	3	3
RO-M-33	4	1	4	3	3	5	5	3	3
RO-M-34	4	1	4	3	3	5	5	3	3
RO-M-35	4	1	4	3	3	5	5	3	3
RO-M-36	4	1	4	3	2	5	5	3	3

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
RO-M-42	4	1	4	3	2	5	2	3	3
RO-M-42	4	1	4	3	2	5	2	3	3
RO-M-44	4	1	4	3	2	5	2	3	3
RO-M-45	4	1	4	3	2	5	2	3	3
RO-M-46	4	1	4	3	2	5	2	3	3
RO-M-47	4	1	4	3	2	5	2	3	3

Weights	Criteria A				Criteria B				
	WCA1	WCA2	WCA3	WCA4	WCB1	WCB2	WCB3	WCB4	WCB5
	15.63%	13.54%	13.54%	7.29%	14.00%	14.00%	7.33%	7.33%	7.33%

3. Weighted scores

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
RO-M-13	0.63	0.14	0.54	0.22	0.28	0.70	0.15	0.15	0.22
RO-M-17	0.63	0.14	0.54	0.22	0.28	0.70	0.15	0.15	0.22
RO-M-18	0.78	0.14	0.54	0.22	0.70	0.70	0.37	0.37	0.22
RO-M-19	0.63	0.14	0.54	0.22	0.28	0.70	0.15	0.15	0.22
RO-M-21	0.63	0.14	0.54	0.22	0.42	0.70	0.22	0.15	0.22
RO-M-31	0.63	0.14	0.54	0.22	0.42	0.70	0.37	0.22	0.22
RO-M-32	0.63	0.14	0.54	0.22	0.42	0.70	0.37	0.22	0.22
RO-M-33	0.63	0.14	0.54	0.22	0.42	0.70	0.37	0.22	0.22
RO-M-34	0.63	0.14	0.54	0.22	0.42	0.70	0.37	0.22	0.22
RO-M-35	0.63	0.14	0.54	0.22	0.42	0.70	0.37	0.22	0.22
RO-M-36	0.63	0.14	0.54	0.22	0.28	0.70	0.37	0.22	0.22
RO-M-42	0.63	0.14	0.54	0.22	0.28	0.70	0.15	0.22	0.22
RO-M-42	0.63	0.14	0.54	0.22	0.28	0.70	0.15	0.22	0.22
RO-M-44	0.63	0.14	0.54	0.22	0.28	0.70	0.15	0.22	0.22
RO-M-45	0.63	0.14	0.54	0.22	0.28	0.70	0.15	0.22	0.22
RO-M-46	0.63	0.14	0.54	0.22	0.28	0.70	0.15	0.22	0.22
RO-M-47	0.63	0.14	0.54	0.22	0.28	0.70	0.15	0.22	0.22

Project ID	Project Total Scores	Evaluation Class
RO-M-13	3.01	III
RO-M-17	3.01	III
RO-M-18	4.03	II
RO-M-19	3.01	III
RO-M-21	3.23	III
RO-M-31	3.45	III
RO-M-32	3.45	III
RO-M-33	3.45	III
RO-M-34	3.45	III
RO-M-35	3.45	III
RO-M-36	3.31	III
RO-M-42	3.09	III
RO-M-42	3.09	III
RO-M-44	3.09	III
RO-M-45	3.09	III
RO-M-46	3.09	III
RO-M-47	3.09	III

Projects of Lithuania

Evaluation

1. Answers (based on country's input)

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
LT-M-4	D	E	C	C	E	D	E	C	C
LT-M-5	D	E	C	C	E	D	E	C	C
LT-M-7	D	E	C	C	E	D	E	C	C

2. Raw scores

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
LT-M-4	2	1	3	3	1	2	1	3	3
LT-M-5	2	1	3	3	1	2	1	3	3
LT-M-7	2	1	3	3	1	2	1	3	3

Weights	Criteria A				Criteria B				
	WCA1	WCA2	WCA3	WCA4	WCB1	WCB2	WCB3	WCB4	WCB5
	15.63%	13.54%	13.54%	7.29%	14.00%	14.00%	7.33%	7.33%	7.33%

3. Weighted scores

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
LT-M-4	0.31	0.14	0.41	0.22	0.14	0.28	0.07	0.22	0.22
LT-M-5	0.31	0.14	0.41	0.22	0.14	0.28	0.07	0.22	0.22
LT-M-7	0.31	0.14	0.41	0.22	0.14	0.28	0.07	0.22	0.22

Project ID	Project Total Scores	Evaluation Class
LT-M-4	2.01	IV
LT-M-5	2.01	IV
LT-M-7	2.01	IV

Projects of Poland

Evaluation

1. Answers (based on country's input)

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
PL-M-31	A	E	B	C	D	A	D	D	C

2. Raw scores

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
PL-M-31	5	1	4	3	2	5	2	2	3

Weights	Criteria A				Criteria B				
	WCA1	WCA2	WCA3	WCA4	WCB1	WCB2	WCB3	WCB4	WCB5
	15.63%	13.54%	13.54%	7.29%	14.00%	14.00%	7.33%	7.33%	7.33%

3. Weighted scores

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
LT-M-5	0.31	0.14	0.41	0.22	0.14	0.28	0.07	0.22	0.22

Project ID	Project Total Scores	Evaluation Class
PL-M-31	3.17	III

Projects of Serbia

Evaluation

1. Answers (based on country's input)

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
SM-H-12	A	B	B	B	A	E	A	A	B

2. Raw scores

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
SM-H-12	5	4	4	4	5	1	5	5	4

Weights	Criteria A				Criteria B				
	WCA1	WCA2	WCA3	WCA4	WCB1	WCB2	WCB3	WCB4	WCB5
	15.63%	13.54%	13.54%	7.29%	14.00%	14.00%	7.33%	7.33%	7.33%

3. Weighted scores

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
SM-H-12	0.78	0.54	0.54	0.29	0.70	0.14	0.37	0.37	0.29

Project ID	Project Total Scores	Evaluation Class
SM-H-12	4.02	II

Projects of Slovenia

Evaluation

1. Answers (based on country's input)

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
SL-M-5	B	B	B	B	D	C	C	E	A
SL-M-7	A	B	B	B	C	D	C	E	A

2. Raw scores

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
SL-M-5	4	4	4	4	2	3	3	1	5
SL-M-7	5	4	4	4	3	2	3	1	5

Weights	Criteria A				Criteria B				
	WCA1	WCA2	WCA3	WCA4	WCB1	WCB2	WCB3	WCB4	WCB5
	15.63%	13.54%	13.54%	7.29%	14.00%	14.00%	7.33%	7.33%	7.33%

3. Weighted scores

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
SL-M-5	0.63	0.54	0.54	0.29	0.28	0.42	0.22	0.07	0.37
SL-M-7	0.78	0.54	0.54	0.29	0.42	0.28	0.22	0.07	0.37

Project ID	Project Total Scores	Evaluation Class
SL-M-5	3.36	III
SL-M-7	3.52	III

Projects of Turkey

Evaluation

1. Answers (based on country's input)

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
TU-M-30	A	E	B	B	C	A	B	A	C
TU-M-31	A	E	B	B	C	A	B	A	C
TU-M-32	A	E	B	B	C	A	B	A	C
TU-M-33	A	E	B	B	C	A	B	A	C
TU-M-34	A	E	B	B	C	A	B	A	C
TU-M-35	A	E	B	B	C	A	B	B	C
TU-M-36	A	E	B	B	C	A	B	B	C

2. Raw scores

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
TU-M-30	5	1	4	4	3	5	4	5	3
TU-M-31	5	1	4	4	3	5	4	5	3
TU-M-32	5	1	4	4	3	5	4	5	3
TU-M-33	5	1	4	4	3	5	4	5	3
TU-M-34	5	1	4	4	3	5	4	5	3
TU-M-35	5	1	4	4	3	5	4	4	3
TU-M-36	5	1	4	4	3	5	4	4	3

Weights	Criteria A				Criteria B				
	WCA1	WCA2	WCA3	WCA4	WCB1	WCB2	WCB3	WCB4	WCB5
	15.63%	13.54%	13.54%	7.29%	14.00%	14.00%	7.33%	7.33%	7.33%

3. Weighted scores

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
TU-M-30	0.78	0.14	0.54	0.29	0.42	0.70	0.29	0.37	0.22
TU-M-31	0.78	0.14	0.54	0.29	0.42	0.70	0.29	0.37	0.22
TU-M-32	0.78	0.14	0.54	0.29	0.42	0.70	0.29	0.37	0.22
TU-M-33	0.78	0.14	0.54	0.29	0.42	0.70	0.29	0.37	0.22
TU-M-34	0.78	0.14	0.54	0.29	0.42	0.70	0.29	0.37	0.22
TU-M-35	0.78	0.14	0.54	0.29	0.42	0.70	0.29	0.29	0.22
TU-M-36	0.78	0.14	0.54	0.29	0.42	0.70	0.29	0.29	0.22

Project ID	Project Total Scores	Evaluation Class
TU-M-30	3.75	III
TU-M-31	3.75	III
TU-M-32	3.75	III
TU-M-33	3.75	III
TU-M-34	3.75	III
TU-M-35	3.68	III
TU-M-36	3.68	III

Appendix III.4 Project classes per country

Country Network	Project ID	Description	Score	Category	Class	Comments
Austria						
TEM	AT-M-1	New motorway link from A4 motorway to border crossing at Kittsee to link up with Slovak motorway D4 to Bratislava			1	Completed
Belarus						
TEM	BL-M-1	Upgrading of the M1/E30 road, section from km 1.7 to km 9.8			1	Completed
TEM	BL-M-2	Upgrading of the M1/E30 road, section from Telmy to Kozlovichi (21 km lengs)			1	Completed
TEM	BL-M-3	Upgrading of the M1/E30 road, section from (n.a.)			1	Completed
Bosnia & Herzegovina						
TEM	BH-M-1	Construction of Bosanski – Gradiska – Banja Luka motorway (along E-661 route)		I	1	
TEM	BH-M-2	Construction of Tuzia-Orasja expressway	3.09	III	2	
TEM	BH-M-4	Construction of Foca-Hum Road		I	2	
TEM	BH-M-5	Construction of Mostar Bypass (E-73 road)		IV	4	
TEM	BH-M-6	Improvement of Lasva-Travnik Road (M5/E-761)	4.03	II	2	
TEM	BH-M-7	Improvement of Stolac-Neum Road (M17-3)		IV	4	
TEM	BH-M-8	Construction of Corridor V motorway		I	1	
TEM	BH-M-3	Construction of Banja Luka-Doboj Motorway		I	1	
TEM	BH-M-9	Reconstruction of section Tuzla-Sarajevo		IV	4	
TEM	BH-M-10	Construction of Renovica-Mesići Road (E-761)		IV	4	
Bulgaria						
TEM	BG-M-1	Reconstruction of road E85	2.84	IV	2	
TEM	BG-M-2	Maritza Motorway, Section 1		I	2	
TEM	BG-M-3	Maritza Motorway, Section 2		I	2	
TEM	BG-M-4	Maritza Motorway, Section 3		I	1	
TEM	BG-M-5	Kalotina-Sofia Motorway, section: Dragoman – Slivnitza – Sofia	3.74	IV	2	
TEM	BG-M-6	Kalotina-Sofia Motorway, section: Kalotina-Dragoman	3.74	IV	2	

Country Network	Project ID	Description	Score	Category	Class	Comments
TEM	BG-M-7	Kalotina-Sofia Motorway, Section: Hemus Connector		I	1	
TEM	BG-M-8	Kalotina-Sofia Motorway, Section: Sofia Ring Road – North Arc	3.74	IV	2	
TEM	BG-M-9	Hemus Motorway, Section 1	2.26	IV	2	
TEM	BG-M-10	Hemus Motorway, Section 2	2.26	IV	2	
TEM	BG-M-11	Trakia motorway – Lot 2		I	1	
TEM	BG-M-12	Trakia motorway – Lot 3		I	1	
TEM	BG-M-13	Trakia motorway – Lot 4		I	1	
Croatia						
TEM	CR-M-1	A3-01 Zupanja – Lipovac			1	Completed
TEM	CR-M-2	A4-01 Gorican		I	2	Completed
TEM	CR-M-3	A6-01 Bosiljevo – Kupjak			2	Completed
TEM	CR-M-4	A6-01Kupjak – Kikovica		I	2	Completed
TEM	CR-M-5	A7-01 Rijeka – Krizisce		I	1	
TEM	CR-M-6	A7-02 Krizisce – Senj		I	2	
TEM	CR-M-7	A7-03 Senj – Zuta Lokva		I	2	
TEM	CR-M-8	A1-01 Sveti Rok tunnel			1	Completed
TEM	CR-M-9	A1-02 Pirovac – Sibenic			1	Completed
TEM	CR-M-10	A1-03 Sibenic – Vrpolje			1	Completed
TEM	CR-M-11	A1-04 Dugopolje – Zagvozd (Makarska)		I	2	Completed
TEM	CR-M-12	A1-05 Zagvozd (Makarska) – Ploce		I	3	
TEM	CR-M-13	A1-06 Ploce – Neum		I	2	
TEM	CR-M-14	A1-07 Neum – Dubrovnik		I	3	
TEM	CR-M-15	A2-01 Macelj – Krapina			1	Completed
TEM	CR-M-16	A2-02 Zapresic – Zagreb			1	Completed
TEM	CR-M-17	A1-08 Mala Kapela			1	Completed
TEM	CR-M-18	A1-09 Dugopolje – Klis		I	2	Completed
TEM	CR-M-19	A1-10 Klis – Split		I	2	
TEM	CR-M-20	A5-01 Knezevo – Ceminac		I	2	
TEM	CR-M-21	A5-02 Ceminac – Osijek		I	2	
TEM	CR-M-22	A5-03 Osijek – Sredanci		I	2	Completed
TEM	CR-M-23	A5-04 Sredanci – Svilaj		I	2	
TEM	CR-M-24	A10-01 Metkovic – Ploce		I	2	
TEM	CR-M-25	A5-05 Ceminac – Batina		I	3	
TEM	CR-M-26	A9-01 Vodnjan – Pula		I	2	

Country Network	Project ID	Description	Score	Category	Class	Comments
TEM	CR-M-27	A9-02 Umag – Kanfanar			1	Completed
The Czech Republic						
TEM	CZ-M-1	Motorway D8: Trmice – German border			1	Completed
TEM	CZ-M-2	Motorway D8: Lovosice – Rehlovice		I	1	
TEM	CZ-M-3	Motorway D11: Podebrady – Hradec Kralove		I	1	
TEM	CZ-M-4	Motorway D1: Vyskov – Kromeriz			1	Completed
TEM	CZ-M-5	Motorway D47: Lipnik – Polish border		I	1	
The former Yugoslav Republic of Macedonia						
TEM	Ma-H-1	Construction of Demir Kapija – Smokvica section: Phase I 27.75		I	1	
TEM	Ma-H-2	Construction of Tavanovce – Kumanovo section (7.3 km)		I	1	
TEM	Ma-H-3	Finalize construction work along Corridor VIII (27.6 % of the total already built at modern highway standards, 8.7 % being currently under construction) (the Skopje bypass)		I	4	
Georgia						
TEM	GE-M-1	World Bank credit No. 3357GE			1	Completed
TEM	GE-M-2	Kuwaiti Fund credit No. 589			1	Completed
TEM	GE-M-3	KfW – Road component			1	Completed
TEM	GE-M-4	World Bank credit			1	Completed
Greece						
TEM	GR-M-1	"Strymonas – Nea Peramos" of the Egnatia motorway: construction of 41.5 km dual carriageway			1	Completed
TEM	GR-M-2	"Profitis – Macedonia Airport" (code: 59.1): construction of 40 km dual carriageway (Kavala bypass)			1	Completed
TEM	GR-M-3	"Derveni – Serres – Promahonas" (code: 60) – Section: Derveni – Lefkonas: construction of 64 km motorway		I	1	
TEM	GR-M-4	"Siatista – Kristallopigi" (code: 45) – Section: Siatista – Kostarazi: construction of 30 km motorway (Siatista – Argos Orestiko)			1	Completed
TEM	GR-M-5	"Ardanio – Ormenio" (code: 80) – Section: Ardanio – Soufli: construction of 30 km expressway			1	Completed

Country Network	Project ID	Description	Score	Category	Class	Comments
Hungary						
TEM	HU-M-1	M0: M1 to M5			1	Completed
TEM	HU-M-2	M0: M5 to M2		I	1	
TEM	HU-M-3	M2: Bp. – Vác		I	1	
TEM	HU-M-4	M2: Vác – HUN/SVK border		I	1	
TEM	HU-M-5	M3: Polgár – Nyíregyh.			1	Completed
TEM	HU-M-6	M3: Nyíregyh. – H/UA b.		I	1	
TEM	HU-M-7	M5: Kiskunf. – H/YU b.			1	Completed
TEM	HU-M-8	M6: Bp. – Dunaújv.			1	Completed
TEM	HU-M-9	M6: Dunaújv. – Boly		I	1	
TEM	HU-M-10	M6: Boly – H/Cr b.		I	1	
TEM	HU-M-11	M7: Zamárdi – H/CR .b			1	Completed
TEM	HU-M-12	M15: Mmóvár – H/SK b.			1	Completed
TEM	HU-M-13	M43: Szeged – Makó		I	1	
TEM	HU-M-14	M43: Makó – H/R b.		I	1	
TEM	HU-M-15	Sopron – N.kanizsa		I	1	
TEM	HU-M-16	M30: SK/H b. – Miskolc		I	1	
TEM	HU-M-17	M30: Miskolc – Emöd			1	Completed
TEM	HU-M-18	M35: Emöd – Debrecen			1	Completed
TEM	HU-M-19	M35: Debrecen bypass			1	Completed
TEM	HU-M-20	47/42: Debrecen – H/R b.		I	1	
Lithuania						
TEM	LT-M-1	Development of Transport corridor I (via Baltica) in the years 2004 to 2005		I	1	
TEM	LT-M-2	Development of Transport corridor IXB in the years 2004 to 2006		I	1	
TEM	LT-M-3	Development of roads (E85 Lyda – Vilnius, E272 Vilnius – Panevėžys, E272 Panevėžys – Šiauliai and E272 Šiauliai – Palanga) of Trans-European Road Network in the years 2004 to 2006		I	1	
TEM	LT-M-4	Widening of bridge on road A1 across Neris river in Kaunas city	2.01	IV	2	
TEM	LT-M-5	Widening of road A1 (6 traffic lanes)	2.01	IV	2	
TEM	LT-M-6	Widening of road A1 (6 traffic lanes)		IV	4	
TEM	LT-M-7	Road A5 Kaunas – Marijampolė – Suvalkai (construction of second driving direction)	2.01	IV	2	

Country Network	Project ID	Description	Score	Category	Class	Comments
TEM	LT-M-8	Road A5 Kaunas – Marijampolė – Suvalkai (construction of second driving direction)		IV	4	
TEM	LT-M-9	Road A8 Panevėžys – Aristava – Sitkūnai (construction of second driving direction)		IV	4	
TEM	LT-M-10	Road A8 Panevėžys – Aristava – Sitkūnai (construction of second driving direction)		IV	4	
Moldova						
TEM	MO-M-1	Improvement of traffic conditions along the road Leuseni – Chisinau – Dubasari – border with Ukraine on the Section of Chisinau Bypass			1	Completed
Montenegro						
TEM	SM-H-15	Sozina tunnel, access roads			1	Completed
TEM	SM-H-16	Eastern mini bypass of Podgorica			1	Completed
TEM	SM-H-17	Rehabilitation of road Podgorica – Bjelo Polje: improve capacity and safety			1	Completed
TEM	SM-H-18	Rehabilitation of road Podgorica – Bjelo Polje: improve speed, capacity and safety			1	Completed
TEM	SM-H-4	Upgrading border crossing at Debeli Brijek			1	Completed
TEM	SM-H-5	Upgrading border crossing at Bozaj			1	Completed
Poland						
TEM	PL-H-1	S1-I expressway (existing): Pyrzowice – Podwarpie, 11.5 km length (construction two carriageways)		I	2	
TEM	PL-H-2	S1-II expressway: Kosztowy – Bielsko Biala, 40 km length		I	2	
TEM	PL-H-3	S1-III expressway (existing): Bielsko – Biala – Jasienica, 11 km length		I	1	Completed
TEM	PL-H-4	S1-IV expressway (existing): Bypass Grodziec, 5.1 km length		I	1	Completed
TEM	PL-H-5	S1-V expressway (existing): Bypass Skoczow, 5.4 km length		I	1	Completed
TEM	PL-H-6	S1-VI expressway (existing): Skoczow – Cieszyn, 6.7 km length		I	1	Completed
TEM	PL-H-7	S3-I expressway: bypass Miedzyzdroje, 2.9 km length		I	1	Completed
TEM	PL-H-8	S3-II expressway: bypass Troszyna, Parłówko i Ostromice with S-3 Wolin -Troszyn 11.5 km length		I	2	

Country Network	Project ID	Description	Score	Category	Class	Comments
TEM	PL-H-9	S3-III expressway: bypass Miekowo, 5 km length		I	1	
TEM	PL-H-10	S3-IV expressway: Szczecin – junction Mysliborz, 55 km length		I	1	Completed
TEM	PL-H-11	S3-V expressway: junction Mysliborz – Gorzow Wlkp., 26 km length		I	1	Completed
TEM	PL-H-12	S3-VI expressway (existing): bypass Gorzow Wlkp., 9.5 km length		I	1	Completed
TEM	PL-H-13	S3-VII expressway: Gorzow Wlkp. – Skwierzyna, 26.7 km length		I	1	
TEM	PL-H-14	S3-VIII expressway: Skwierzyna – Jordanowo (A2), 31.5 km length		I	1	
TEM	PL-H-15	S3-IX expressway: Jordanowo – Sulechow, 33 km length		I	1	
TEM	PL-H-16	S3-X expressway (existing): bypass Nowa Sol, 15.2 km length		I	1	Completed
TEM	PL-H-17	S3-XI expressway: Nowa Sol – Potoczek, 25 km length		I	1	
TEM	PL-H-18	S3-XII expressway: Potoczek – Lubin, 16 km length		I	1	
TEM	PL-H-19	S3-XIII expressway: bypass Lubin, 11.8 km length		I	1	
TEM	PL-H-20	S3-XIV expressway: Lubin – Legnica, 15 km length		I	1	
TEM	PL-H-21	S3-XV expressway: bypass Legnica, 6.2 km length		I	1	
TEM	PL-H-22	S3-XVI expressway: bypass Jawora, 12 km length		I	1	
TEM	PL-H-23	S5-I expressway: Nowe Marzy – Bydgoszcz, 63.2 km length		I	1	
TEM	PL-H-24	S5-II expressway: passage through Bydgoszcz, 10 km length		I	1	
TEM	PL-H-25	S5-III expressway: Bydgoszcz – Stryszek i Białe Błota, 15.91 km length		I	1	Completed
TEM	PL-H-26	S5-IV expressway: Bydgoszcz – Żnin, 36 km length		I	1	
TEM	PL-H-27	S5-V expressway: Żnin – Gniezno , 41.5 km length		I	2	
TEM	PL-H-28	S5-VI expressway: Gniezno – Poznań (Kleszczewo), 41.1 km length		I	1	
TEM	PL-H-29	S5-VII expressway: Gluchowo – Wroclaw/Wronczyn, 16.0 km length		I	2	
TEM	PL-H-30	S69-I expressway: Bielsko-Biala – junction Krakowska, 3.8 km length		I	1	

Country Network	Project ID	Description	Score	Category	Class	Comments
TEM	PL-H-31	S69-II expressway: junction Krakowska – junction Zywiecka, 4 km length		I	1	
TEM	PL-H-32	S69-III expressway: junction Zywiecka – junction Wilkowice, 6 km length		I	1	
TEM	PL-H-33	S69-IV expressway: junction Wilkowice – Zywiec, 15.3 km length		I	1	
TEM	PL-H-34	S69-V expressway existing: Zywiec – junction Browar, 3.6 km length		I	1	Completed
TEM	PL-H-35	S69-VI expressway existing: junction Browar – junction Przybedza, 4.6 km length		I	1	Completed
TEM	PL-H-36	S69-VII expressway: junction Przybedzie – Milowka, 9 km length		I	1	Completed
TEM	PL-H-37	S69-VIII expressway existing: Milowka – Szare, 1.8 km length		I	1	Completed
TEM	PL-H-38	S69-IX expressway: Szare – Zwardon (Laliki) with tunnel - 4.9 km length		I	1	Completed
TEM	PL-H-39	S69-X expressway existing: Zwardon – Myto, 1.4 km length		I	1	Completed
TEM	PL-H-40	S6-I expressway: Lebork – Boze Pole, 36 km length		I	2	
TEM	PL-H-41	S6-II expressway: Boze Pole – Gdansk, 11 km length		I	2	
TEM	PL-H-42	S6-III expressway: passage through Gdynia, 3.5 km length		I	2	
TEM	PL-H-43	S8-I expressway: Wroclaw – Olesnica, 47.7 km length		I	1	
TEM	PL-H-44	S8-II expressway existing: bypass Olesnica, 12.7 km length		I	1	Completed
TEM	PL-H-45	S8-III expressway: Olesnica – Sycow, 18.5 km length		I	1	
TEM	PL-H-46	S8-IV expressway: Sycow -Walichnowy, 45.9 km length		I	2	
TEM	PL-H-47	S8-V expressway: Walichnowy – Łodz, 103.7 km length		I	2	
TEM	PL-H-48	S8-VI expressway: bypass Olszowa, 6 km length		I	1	
TEM	PL-H-49	S8-VII expressway: Piotrkow Tryb. – Wolica, 115.6 km length		I	1	
TEM	PL-H-50	S8-VIII expressway: Wolica – Salomea, 12 km length		I	1	
TEM	PL-H-51	S8-IX expressway: bypass Warszawa (Konotopa-Opacz- Pulawska), 19.8 km length		I	1	

Country Network	Project ID	Description	Score	Category	Class	Comments
TEM	PL-H-52	S8-X expressway: Konotopa – Marki, 11.7 km length		I	1	
TEM	PL-H-53	S8-XI expressway: Marki – Radzymin, 14.7 km length		I	2	
TEM	PL-H-54	S8-XII expressway: Radzymin – Niegow, 17 km length		I	1	Completed
TEM	PL-H-55	S8-XIII expressway: bypass Wyszkow, 12.8 km length		I	1	Completed
TEM	PL-H-56	S8-XIV expressway: Wyszkow – Ostrow Maz, 26.6 km length		I	1	
TEM	PL-H-57	S8-XV expressway: Ostrow Maz. – Zambrow, 22 km length		I	1	
TEM	PL-H-58	S8-XVI expressway: bypass Zambrow, 16.3 km length		I	1	
TEM	PL-H-59	S8-XVII expressway: Zambrow – Jezewo, 28.5 km length		I	1	
TEM	PL-H-60	S8-XVIII expressway: Jezewo – Bialystok, 23.1 km length		I	1	
TEM	PL-H-61	S8-XIX expressway: bypass Bialystok, 7.6 km length		I	1	
TEM	PL-M-1	A18-I motorway: junction Olszyna – junction Golnice, 70.0 km length		I	1	
TEM	PL-M-2	A1-I motorway: Gdansk – Nowe Marzy, 90 km length		I	1	Completed
TEM	PL-M-3	A1-II motorway: Nowe Marzy – Torun (Lubicz), 51.4 km length		I	1	
TEM	PL-M-4	A1-III motorway: Lubicz – Czerniewice, 10.1 km length		I	1	
TEM	PL-M-5	A1-IV motorway: Torun (Czerniewice) – Stryków, 144.0 km length		I	1	
TEM	PL-M-6	AI-V motorway: Stryków – Tuszyn, 40 km length		I	1	
TEM	PL-M-7	A1-VI motorway: Tuszyn – Czestochowa (Rzasawa), 83.8 km length		I	1	
TEM	PL-M-8	A1-VII motorway: Czestochowa (Rzasawa) – Pyrzowice, 53.5 km length		I	1	
TEM	PL-M-9	A1-VIII motorway: Pyrzowice – Sosnica, 44.4 km length		I	1	
TEM	PL-M-10	A1-IX motorway: Sosnica – Swierklany, 29.5 km length		I	1	Completed
TEM	PL-M-11	A1-X motorway: Swierklany – Gorzyczki, 25 km length		I	1	
TEM	PL-M-12	A2-I motorway: Swiecko – Nowy Tomysl, 105 km length		I	1	

Country Network	Project ID	Description	Score	Category	Class	Comments
TEM	PL-M-13	A2-II motorway (existing): Nowy Tomysl – Poznan, 50 km length		I	1	Completed
TEM	PL-M-14	A2-III motorway (existing): Konin – Koło, 27.4 km length		I	1	Completed
TEM	PL-M-15	A2-IV motorway (existing): Kolo – Dabie, 18.1 km length		I	1	Completed
TEM	PL-M-16	A2-V motorway (existing): Dabie – Wartkowice, 15.9 km length		I	1	Completed
TEM	PL-M-17	A2-VI motorway (existing): Wartkowice – Emilia, 24 km length		I	1	Completed
TEM	PL-M-18	A2-VII motorway (existing): Emilia – Strykow, 18.1 km length		I	1	Completed
TEM	PL-M-19	A2-VIII motorway: Strykow – Warszawa, 92 km length		I	1	
TEM	PL-M-20	A2-IX motorway: Warszawa (Lubelska) – Siedlce, 78.6 km length – bypass Minsk Maz. 15 km length		I	1	
TEM	PL-M-21	A4-I motorway: Zgorzelec – Krzyzowa, 51.4 km length		I	1	Completed
TEM	PL-M-22	A4-II motorway existing-reconstruction: Krzywa – Wroclaw, 92 km length		I	1	Completed
TEM	PL-M-23	A4-III motorway (existing): Kleszczow – Sosnica, 19.1 km length		I	1	Completed
TEM	PL-M-24	A4-IV motorway (existing): Sosnica – Wirek, 9.5 km length		I	1	Completed
TEM	PL-M-25	A4-V motorway (existing): Wirek – Batorego, 6.2 km length		I	1	Completed
TEM	PL-M-26	A4-VI motorway: Krakow -Szarow-Tarnow, 76.8 km length (one section 20 km)		I	1	Completed
TEM	PL-M-27	A4-VII motorway: Tarnow – Rzeszow, 80 km length		I	1	
TEM	PL-M-28	A4-VIII motorway: Rzeszow – Jaroslaw, 40.8 km length		I	1	
TEM	PL-M-29	A4-IX motorway: Jaroslaw – Korczowa, 41.4 km length		I	1	
TEM	PL-M-30	A6-I motorway: junction Klucz – junction Kijewo, 7.7 km length		I	1	Completed
TEM	PL-M-31	A2-X motorway: Siedlce-Terespol, 95 km length	3.17	III	2	
TEM	PL-M-32	A8-IX motorway: Bypass Wroclaw, 35.5 km length		I	1	
TEM	PL-H-62	S2-I expressway: Konotopa-Pulawska with Marynarska 20 km length		I	1	

Country Network	Project ID	Description	Score	Category	Class	Comments
TEM	PL-H-63	S3-VII expressway: S-3 Legnica (A4) – Lubawka, 56 km length		I	1	
TEM	PL-H-64	S5-VIII expressway: Poznań (A-2 węzeł "Głuchowo") -Wrocław (A-8 węzeł "Widawa"),155.3 km length		I	2	
TEM	PL-H-65	S7-I expressway: Gdańsk (A-1) – Elbląg (S-22), 60 km length		I	1	
TEM	PL-H-66	S7-II expressway:Elbląg(S-22) – Olsztynek (S-51), 10⁶.8 km length		I	1	
TEM	PL-H-67	S7-III expressway: Olsztynek (S-51) – Płońsk (S-10),128 km length		I	1	
TEM	PL-H-68	S7-IV expressway: Płońsk (S-10) – Warszawa (S-8), 50 km length		I	2	
TEM	PL-H-69	S7-V expressway: Warszawa – bypass Grójca, 21 km length		I	2	
TEM	PL-H-70	S7-VI expressway: bypass Grójec, 8.3 km length		I	1	Completed
TEM	PL-H-71	S7-VII expressway: Grójec – Białobrzegi, 17.8 km length		I	1	Completed
TEM	PL-H-72	S7-VIII expressway: Białobrzegi – Jedlińsk, 15.7 km length		I	1	Completed
TEM	PL-H-73	S7-IX expressway: Radom (Jedlińsk) – Jędrzejów, 98 km length		I	1	
TEM	PL-H-74	S7-X expressway: junction Kielce Północ, 7.3 km length		I	1	Completed
TEM	PL-H-75	S7-XI expressway: Jędrzejów – voivodeship border, 18.0 km length		I	1	
TEM	PL-H-76	S7-XII expressway: Voivodeship border – Kraków, 60 km length		I	1	
TEM	PL-H-77	S7-XIII expressway: Reconstruction Kraków – Myślenice, 30 km length		I	1	
TEM	PL-H-78	S7-XIV expressway: Myślenice – Lubień, with bypass Lubnia, 16,2 km length		I	1	Completed
TEM	PL-H-79	P7-XV expressway: Lubień – Rabka with tunnel, 17.2 km length		I	1	
TEM	PL-H-80	S8-XX expressway: Syców – Kępno -Sieradz – A1 (Łódź), 148 km length		I	2	
TEM	PL-H-81	S8-XXI expressway reconstruction Białystok – border (bypass Sztabin), 157 km length		I	2	
TEM	PL-H-82	S17-I expressway: Warszawa (w."Zakręt) – Garwolin, 42 km length		I	2	
TEM	PL-H-83	S17-II expressway: Bypass Garwolina, 12.8 km length		I	1	Completed

Country Network	Project ID	Description	Score	Category	Class	Comments
TEM	PL-H-84	S17-III expressway: Garwolin – Kurów, 58.5 km length		I	1	
TEM	PL-H-85	S17-IV expressway: Kurów – Lublin – Piaski, 68.5 km length		I	1	
TEM	PL-H-86	S17-V bypass Tomaszów Lubelski, 9.5 km length		I	1	
TEM	PL-H-87	S17-VI expressway: Piaski – Hrebenne, 123 km length		I	1	
Romania						
TEM	RO-M-1	Nădlac – Timişoara		I	1	
TEM	RO-M-2	Timişoara – Lugoj		I	1	
TEM	RO-M-3	Lugoj – Deva		I	1	
TEM	RO-M-4	Deva – Sebeş		I	1	
TEM	RO-M-5	Sebeş – Sibiu		I	1	
TEM	RO-M-6	Sibiu – Piteşti		I	1	
TEM	RO-M-7	Bucharest South bypass		I	1	
TEM	RO-M-8	Bucharest North bypass		I	1	
TEM	RO-M-9	Bucharest – Lehliu		I	1	
TEM	RO-M-10	Lehliu – Feteşti		I	1	
TEM	RO-M-11	Feteşti – Cernavodă		I	1	
TEM	RO-M-12	Cernavodă – Constanţa		I	1	
TEM	RO-M-13	Bucharest – Giurgiu	3.01	III	2	
TEM	RO-M-14	Lugoj – Drobeta Turnu Severin		IV	4	
TEM	RO-M-15	Drobeta Turnu Severin – Craiova		IV	4	
TEM	RO-M-16	Craiova – Bucharest		I	2	
TEM	RO-M-17	Timişoara – Stamora Moraviţa	3.01	III	2	
TEM	RO-M-18	Oradea – Zalău	4.03	II	1	
TEM	RO-M-19	Halmeu – Satu Mare	3.01	III	2	
TEM	RO-M-20	Satu Mare – Zalău		IV	4	
TEM	RO-M-21	Zalău – Cluj Napoca	3.23	III	2	
TEM	RO-M-22	Cluj – Turda		I	1	
TEM	RO-M-23	Turda – Sebeş		I	4	
TEM	RO-M-24	Turda – Ogra		I	1	
TEM	RO-M-25	Ogra – Sighişoara		I	1	
TEM	RO-M-26	Sighişoara – Braşov		I	1	
TEM	RO-M-27	Braşov – Predeal		I	1	

Country Network	Project ID	Description	Score	Category	Class	Comments
TEM	RO-M-28	Predeal – Comarnic		I	1	
TEM	RO-M-29	Comarnic – Ploiești		I	1	
TEM	RO-M-30	Ploiești – București		I	1	
TEM	RO-M-31	Albița – Crasna	3.45	III	1	
TEM	RO-M-32	Crasna – Tecuci	3.45	III	1	
TEM	RO-M-33	Tecuci – Mărășești	3.45	III	1	
TEM	RO-M-34	Mărășești – Râmnicu Sărat – Buzău	3.45	III	1	
TEM	RO-M-35	Buzîu – Bucharest N/E	3.45	III	1	
TEM	RO-M-36	Siret – Suceava	3.31	III	2	
TEM	RO-M-37	Suceava – Săbăoani		IV	4	
TEM	RO-M-38	Săbăoani – Bacău		IV	4	
TEM	RO-M-39	Bacău – Mărășești		IV	4	
TEM	RO-M-40	Sculeni – Laşi		I	2	
TEM	RO-M-41	Laşi – Târgu Frumos		I	2	
TEM	RO-M-42	Târgu Frumos – Săbăoani	3.09	III	2	
TEM	RO-M-42	Sibiu – Fagaras	3.09	III	2	
TEM	RO-M-43	Targu Mures – Piatra Neamt – Roman		I	2	
TEM	RO-M-44	Arad – Oradea	3.09	III	2	
TEM	RO-M-45	Petea- Satu Mare – Baia Mare	3.09	III	2	
TEM	RO-M-12	Cernavodă – Constanța		I	1	
TEM	RO-M-13	Bucharest – Giurgiu	3.01	III	2	
TEM	RO-M-14	Lugoj – Drobeta Turnu Severin		IV	4	
TEM	RO-M-15	Drobeta Turnu Severin – Craiova		IV	4	
TEM	RO-M-16	Craiova – Bucharest		I	2	
TEM	RO-M-17	Timișoara – Stamora Moravița	3.01	III	2	
TEM	RO-M-18	Oradea – Zalău	4.03	II	1	
TEM	RO-M-19	Halmeu – Satu Mare	3.01	III	2	
TEM	RO-M-20	Satu Mare – Zalău		IV	4	
TEM	RO-M-21	Zalău – Cluj Napoca	3.23	III	2	
TEM	RO-M-22	Cluj – Turda		I	1	
TEM	RO-M-23	Turda – Sebeș		I	4	
TEM	RO-M-24	Turda – Ogra		I	1	
TEM	RO-M-25	Ogra – Sighișoara		I	1	
TEM	RO-M-26	Sighișoara – Brașov		I	1	
TEM	RO-M-27	Brașov – Predeal		I	1	

Country Network	Project ID	Description	Score	Category	Class	Comments
TEM	RO-M-28	Predeal – Comarnic		I	1	
TEM	RO-M-29	Comarnic – Ploiești		I	1	
TEM	RO-M-30	Ploiești – București		I	1	
TEM	RO-M-31	Albița – Crasna	3.45	III	1	
TEM	RO-M-32	Crasna – Tecuci	3.45	III	1	
TEM	RO-M-33	Tecuci – Mărășești	3.45	III	1	
TEM	RO-M-34	Mărășești – Râmnicu Sărat – Buzău	3.45	III	1	
TEM	RO-M-35	Buzîu – Bucharest N/E	3.45	III	1	
TEM	RO-M-36	Siret – Suceava	3.31	III	2	
TEM	RO-M-37	Suceava – Săbăoani		IV	4	
TEM	RO-M-38	Săbăoani – Bacău		IV	4	
TEM	RO-M-39	Bacău – Mărășești		IV	4	
TEM	RO-M-40	Sculeni – Lași		I	2	
TEM	RO-M-41	Lași – Târgu Frumos		I	2	
TEM	RO-M-42	Târgu Frumos – Săbăoani	3.09	III	2	
TEM	RO-M-42	Sibiu – Fagaras	3.09	III	2	
TEM	RO-M-43	Targu Mures – Piatra Neamt – Roman		I	2	
TEM	RO-M-44	Arad – Oradea	3.09	III	2	
TEM	RO-M-45	Petea- Satu Mare – Baia Mare	3.09	III	2	
TEM	RO-M-46	Craiova – Pitesti	3.09	III	2	
TEM	RO-M-47	Sebes – Turda	3.09	III	2	
The Russian Federation						
TEM	RU-H-1	Development of the direction: Belarus border – Moscow – Nizhni Novgorod		I	1	
TEM	RU-H-2	Development of the direction: Ukraine border – Kursk – Saratov		I	1	
TEM	RU-H-3	Development of the direction: Syzran – Saratov – Volgograd		I	1	
TEM	RU-H-4	Development of the direction: Finnish border – St. Petersburg – Vologda – Kirov – Perm – Ekarinburg		I	1	
TEM	RU-H-5	Development of the direction: Ekarinburg – Tyumen		I	1	
TEM	RU-H-6	Construction of Chita – Khabarovsk (part of world national highway: Krasnoe – Moscow – Vladivostok)		I	1	
TEM	RU-M-1	Reconstruction of sections on the route: Ukraine border – Kursk – Voronezh – Saratov		I	1	

Country Network	Project ID	Description	Score	Category	Class	Comments
TEM	RU-M-2	Construction and reconstruction of motorway "Don" on the section Moscow – Voronezh			1	Completed
TEM	RU-M-3	Motorway "Don" on the section Voronezh – Rostov on Don – Novorossiisk/Sochi: Length of the section with necessity of construction and reconstruction – 302 km		I	1	
TEM	RU-M-4	Motorway "Kaspiy" Moscow – Tambov – Volgograd – Astrakhan and road Astrakhan – Makhachkala: length of the section with necessity of construction, modernization and reconstruction – 515 km		I	1	
TEM	RU-M-5	Motorway "Caucasus" on the section Pavlovskaya – Mineralnie Vodi – Kochubey / Makhachkala: length of the section with necessity of reconstruction – 359 km		I	1	
TEM	RU-M-6	Auxiliary and service infrastructure			1	
		Serbia				
TEM	SM-H-1	Upgrading of border crossing at Kotroman			4	Completed
TEM	SM-H-10	Improvement of Rzav Nova Varos road			1	Completed
TEM	SM-H-11	Upgrading of Nis – Pirot – Gradina road			1	Completed
TEM	SM-H-12	Completion of Belgrade bypass	4.02	II	1	
TEM	SM-H-13	Rehabilitation of Pancevo – Romanian border road		I	1	Completed
TEM	SM-H-14	Removal of bottlenecks on roads in Ovcar Banja			1	Completed
TEM	SM-H-19	Rehabilitation of Cacak – Pozega road			4	Completed
TEM	SM-H-2	Upgrading of border crossing at Presevo			1	Completed
TEM	SM-H-20	Cacak bypass, Phase 1			4	Completed
TEM	SM-H-3	Upgrading of border crossing at Gradina			4	Completed
TEM	SM-H-6	Rehabilitation of Bujanovac – Presevo road			1	Completed
TEM	SM-H-7	Rehabilitation of Leskovac – Bujanovac			1	Completed
TEM	SM-H-8	Rehabilitation of Liberty bridge in Novi Sad			1	Completed
TEM	SM-H-9	Rehabilitation of Belgrade – Nis road		I	1	

Country Network	Project ID	Description	Score	Category	Class	Comments
TEM	SM-M-1	Completion of motorway Novi Sad – Horgos		I	1	
TEM	SM-M-2	Completion of motorway Belgrade – Novi Sad		I	1	Completed
TEM		Corridor X, Leskovac – Presevo (FYROM)		I	1	
TEM		Corridor X, Novi Sad – Horgos		I	1	
TEM		Corridor Xb, Nis – Dimitrovgrad (border crossing Gradina)		I	1	
TEM		Gazela Bridge rehabilitation project		I	1	
TEM		Rehabilitation of motorway Beograd (Airport Nikola Tesla) – Bubanj Potok		I	1	
Slovakia						
TEM	SK-H-1	Expressway R3 Horna Stubna, bypass		I	1	
TEM	SK-H-2	Expressway R4 Kosice – Milhost		I	1	
TEM	SK-H-3	Expressway R4 Svicnik, relocation		I	1	
TEM	SK-M-1	Motorway D1 Bidovce – Dargov		I	2	
TEM	SK-M-10	Motorway D1 Turany – Hubova		I	1	
TEM	SK-M-11	Motorway D1 Hubova – Ivachnova		I	1	
TEM	SK-M-12	Motorway D1 Janovce – Jablonov		I	1	
TEM	SK-M-13	Motorway D1 Jablonov – Beharovce		I	1	
TEM	SK-M-14	Motorway D1 Fricovce – Svinia		I	1	
TEM	SK-M-15	Motorway D1 Presov West – Presov South		I	2	
TEM	SK-M-16	Motorway D1 Budimir – Bidovce		I	2	
TEM	SK-M-2	Motorway D1 Dargov – Pozdisovce		I	2	
TEM	SK-M-3	Motorway D1 Pozdisovce – State border SR/UA		I	2	
TEM	SK-M-4	Motorway D3 Hricovske Podhradie – Zilina, Strazov			1	Completed
TEM	SK-M-5	Motorway D3 Cadca, Bukov – Svrcinovec		I	2	
TEM	SK-M-6	Motorway D3 Svrcinovec – Skalite		I	1	
TEM	SK-M-7	Motorway D1 Sverepec – Vrtizer		I	1	
TEM	SK-M-8	Motorway D1 Hricovske Podhradie – Dubna Skala		I	1	
TEM	SK-M-9	Motorway D1 Dubna Skala – Turany		I	1	

Country Network	Project ID	Description	Score	Category	Class	Comments
Slovenia						
TEM	SL-M-1	Maribor – Pince			1	Completed
TEM	SL-M-2	Bič – Obrežje		I	4	Completed
TEM	SL-M-3	Vrba – Peračica			1	Completed
TEM	SL-M-4	Šentvid – Koseze		I	1	Completed
TEM	SL-M-5	Koper – Dragonja	3.36	III	2	
TEM	SL-M-6	Slivnica – Draženci			1	Completed
TEM	SL-M-7	Draženci – Gruškovje	3.52	III	2	
Turkey						
TEM	TU-M-1	Ankara – Pozanti motorway, Section 1: Ankara – Acikuyu		I	2	
TEM	TU-M-10	Bursa – Izmir motorway, Section 6: Manisa – Izmir		I	1	
TEM	TU-M-11	Tekirdag – İpsala border road, Section 1: Kinali junction – Tekirdag		I	1	
TEM	TU-M-12	Tekirdag – İpsala border road, Section 2: Tekirdag bypass		I	1	
TEM	TU-M-13	Tekirdag – İpsala border road, Section 3: Tekirdag – Malkara junction		I	1	
TEM	TU-M-14	Tekirdag – İpsala border road, Section 4: Malkara junction – İpsala border		I	1	
TEM	TU-M-15	Sanliurfa – Habur border, Section 1: Sanliurfa – Viransehir		I	1	
TEM	TU-M-16	Sanliurfa – Habur border, Section 2: Viransehir – Kiziltepe		I	1	
TEM	TU-M-17	Sanliurfa – Habur border, Section 3: Kiziltepe – Nusaybin junction		I	1	
TEM	TU-M-18	Sanliurfa – Habur border, Section 4: Nusaybin junction – Oyali		I	1	
TEM	TU-M-19	Sanliurfa – Habur border, Section 5: Oyali – Cizre		I	1	
TEM	TU-M-2	Ankara – Pozanti motorway, Section 2: Acikuyu – Ortakoy		I	2	
TEM	TU-M-20	Sanliurfa – Habur border, Section 6: Cizre – Silopi		I	1	
TEM	TU-M-3	Ankara – Pozanti motorway, Section 3: Ortakoy – Golcuk		I	1	
TEM	TU-M-4	Ankara – Pozanti motorway, Section 4: Golcuk – Pozanti		I	1	
TEM	TU-M-5	Bursa – Izmir motorway, Section 1: Orhangazi – Bursa		I	1	

Country Network	Project ID	Description	Score	Category	Class	Comments
TEM	TU-M-6	Bursa – Izmir motorway, Section 2: (Bursa – Karacabey) junction – Susurluk		I	1	
TEM	TU-M-7	Bursa – Izmir motorway, Section 3: Susurluk – (Balikesir – Edremit) junction		I	1	
TEM	TU-M-8	Bursa – Izmir motorway, Section 4: (Balikesir – Edremit) junction – Kirkagac		I	1	
TEM	TU-M-9	Bursa – Izmir motorway, Section 5: Kirkagac – Manisa		I	1	
TEM	TU – M – 21	İstanbul – İzmir motorway, Section 1: Gebze – (Yalova – Karamürsel) junction (new bridge)		I	1	
TEM	TU – M – 22	İstanbul – zmir motorway, Section 2: (Yalova – Karamürsel) junction – Orhangazi		I	1	
TEM	TU – M – 23	Gerede – Merzifon, Section 1: Gerede – 15. division border	3.45	I	1	
TEM	TU – M – 24	Gerede – Merzifon, Section 2: 4. division border – Ilgaz junction – (Kastamonu – Korgun) junction	3.45	I	1	
TEM	TU – M – 25	Gerede – Merzifon, Section 3: (Kastamonu – Korgun) junction – Tosya – 7/15 division border	3.45	I	1	
TEM	TU – M – 26	Gerede – Merzifon, Section 4: 7/15 division border – Osmancık	3.45	I	1	
TEM	TU – M – 27	Gerede – Merzifon, Section 5: Osmancık – Merzifon	3.45	I	1	
TEM	TU – M – 28	Amasya – Refahiye junction		I	1	
TEM	TU – M – 29	Afyon – Konya- Ereğli – (Ankara – Pozantı) motorway junction		I	1	
	TU – M – 30	North Marmara motorway, Section 1: Kınalı – Izzettin	3.75	III	2	
	TU – M – 31	North Marmara motorway, Section 2: Izzettin – Odayeri	3.75	III	2	
	TU – M – 32	North Marmara motorway (including 3rd suspension bridge on Istanbul Strait), Section 3: Odayeri – Paşaköy	3.75	III	2	
	TU – M – 33	North Marmara motorway, Section 4: Paşaköy – Gebze	3.75	III	2	
	TU – M – 34	North Marmara motorway, Section 5: Gebze – İzmit	3.75	III	2	
	TU – M – 35	North Marmara motorway, Section 6: İzmit – Akyazı	3.68	III	2	

Country Network	Project ID	Description	Score	Category	Class	Comments
	TU – M – 36	North Marmara motorway, Section 7: İzzettin – Hasdal	3.68	III	2	
Ukraine						
TEM	UKR-M-1	Building and maintenance of motorway Western border of Ukraine (Kosyny) – Kyiv on the road part Vinnytza – Kyiv on the term of concession		I	2	
TEM	UKR-M-2	Building and maintenance of new motorway Lviv – Krakovets on the term of concession		I	1	
TEM	UKR-M-3	Building and maintenance of new motorway Lviv – Brody on the term of concession		I	2	
TEM	UKR-M-4	Building and maintenance of motorway from Russian border (Scherbakivka) to the motorway of state value Kyiv – Kharkiv – Dovzhansky		I	2	

Appendix III.5 Funding sources, eligibility criteria and procedures

This appendix identifies possible sources of funding for national projects that had not yet secured funding at the time of writing of this final report, the eligibility criteria for the respective countries to receive funds as well as the required procedures.

III.5.1 European Investment Bank (EIB)

III.5.1.1 Projects eligible for bank financing

For EU Member States, projects considered for EIB financing must contribute to one or more of the following objectives:

- balanced economic development of the union and its less-favoured regions;
- enrichment of human capital: health and education;
- information technology and communications networks;
- research and development;
- diffusion of innovation;
- transport, telecommunications and Trans-European Networks (TENs);
- environment: protection and improvement of the natural and urban environment;
- projects with a positive impact on the regional or global environment (sustainable development and prevention of climate change);
- increasing the competitiveness and integration of European industry;
- development of small- and medium-scale enterprises (venture capital funding aimed at stimulating innovation by SMEs and entrepreneurship is undertaken by the European Investment Fund);
- securing the energy supply base and conserving energy.

In the Accession countries, the EIB underpins the development of basic infrastructure, the creation of new activities, protection of the environment and transfer of the existing body of Community legislation.

Outside the EU, the EIB participates in implementing the Union's development aid and cooperation policies through long-term loans from its own resources or subordinated loans and risk capital from EU or Member States' budgetary funds. It operates in

- the non-member Mediterranean countries by helping to attain the objectives of the Euro-Mediterranean Partnership with sights set on the establishment of a customs union by 2010,
- the African, Caribbean and Pacific States (ACP), South Africa and the Overseas Countries and Territories (OCT),
- Asia and Latin America, where it supports certain types of project of mutual interest to the EU and the countries concerned, and
- the Balkans, where it contributes to the goals of the Stability Pact by directing its lending specifically towards reconstruction of basic infrastructure and projects with a regional dimension.

Table III.5.1 - **Loans activity breakdown by region**

EU	26,174,501,924	169,033,777,103
EU	26,174,501,924	169,033,777,103
Article 18	188,834,298	991,223,790
Accession countries	103,000,000	2,739,700,000
Mediterranean countries	821,498,958	7,096,205,558
Africa, Caribbean, Pacific countries + OCT	219,872,073	2,038,240,185
South Africa	100,000,000	751,800,000
Balkan countries	311,000,000	1,330,000,000
Asia and Latin & Central America	207,943,995	1,898,548,436
Commonwealth of Independent States	0	25,000,000
Total	28,126,651,248	185,904,495,072

III.5.1.2 Project appraisal

As a borrower on the markets whose remit is to support viable projects helping to achieve the objectives of the EU, the EIB attaches special importance to the appraisal of the projects submitted to it.

Projects are examined by the EIB's teams of engineers, economists and financial analysts in close cooperation with the promoter. This examination focuses on the eligibility of the project, i.e. whether it conforms to the EU objectives which the EIB is responsible for promoting.

The confidential appraisal evaluates the project's economic, technical and financial characteristics. It enables the promoter to benefit from the experience and know-how acquired by the EIB in dealing with a wide range of projects in all Member States of the EU.

III.5.1.3 Evaluation

Working closely with the promoter, the EIB's departments make a documentary and on-site evaluation of the practical viability, economic benefits and scheduled implementation of the proposed project. Careful account is also taken of the protection of the environment and compliance with procurement procedures.

The evaluation also looks at the cost of a project, its finance plan and the standing of its financial and technical partners. The financial situation of the promoter, the projected cash flow and the security offered are also examined. After completion of the appraisal, the decision to grant a loan is taken by the EIB's Board of Directors.

III.5.1.4 Decision - making

The EIB, bearing in mind wider considerations of common benefit, seeks the opinion of the Member State concerned and of the European Commission. The project is then submitted for examination and approval firstly to the Management Committee of the EIB and then to its Board of Directors.

Once the finance contract has been signed with the promoter, the loan is disbursed in one or more instalments in keeping with the requirements and the progress in the works. Once finance has been provided for the project, its progress is monitored regularly. The EIB can thus assist with

any of the project's or promoter's additional requirements, while ensuring compliance with the aims of its financing decision.

III.5.1.5 Project monitoring

The EIB monitors the project until completion as well as during the loan repayment period.

In particular, it verifies regular servicing of the loan, checks that the funds are used in line with the corresponding objectives and forecasts, and keeps abreast of developments concerning the promoter and any partners. Finally, the EIB ensures that the project is implemented in accordance with the contract and evaluates its results.

III.5.1.6 Project cycle

III.5.1.6.1. Introduction

The mission of the EIB is to further the EU's objectives by granting long-term loans in support of viable capital investment. The EIB's lending

- has grown to an annual volume of nearly EUR 36 x 10^9,
- is committed in support of almost 300 operations,
- is accomplished with a workforce remaining stable at around 1,000, and
- is set against a background of increasing complexity and diversity of operations, both within and outside the EU.

The EIB is geared towards the long-term financing of productive projects, of both a tangible and an intangible nature, and it performs its remit

- in direct contact with the market, including a growing number of private enterprises, and
- after careful analysis of projects, borrowers and guarantees.

As a bank, the EIB fulfils the following tasks:

- it assesses the viability of projects from four points of view: economic, technical, environmental and financial;
- it evaluates each capital project and follows it through to completion;
- for projects outside the EU, it fosters the transfer of the existing body of Community legislation and regulations.
- it subjects each project (both within and outside the EU) to a process of appraisal and monitoring designed to ensure that its operations are in line with its role as the EU's financing institution and contribute value added in conjunction with other lenders;

The standard procedures described are, of course, tailored to each individual project.

Projects can be submitted to the EIB, officially or informally, by

- potential promoters (private or public companies),
- commercial banks wishing to involve the EIB in their finance plan, and
- public authorities, and international or national development finance institutions.

It is desirable for projects to be presented to the EIB at the earliest possible stage, especially in the case of infrastructure schemes and projects mounted under public–private partnerships.

In all cases, the EIB gives promoters a rapid response based on its knowledge of the particular country's economic and financial context. At this stage the EIB checks whether the project envisaged meets its fundamental criteria, notably regarding eligibility, scale, sources of additional finance (the EIB acts as a complementary source of finance) and the economic sector. This initial examination may already lead the EIB

- to suggest improvements to the technical, economic or environmental specifications of the capital projects submitted for financing,
- to draw the promoter's attention to certain procedures to be followed (e.g. the award of contracts, compliance with environmental requirements, etc.), and
- to request modifications to the loan application.

III.5.1.6.2. Examination of projects

If a project appears to meet the bank's criteria and the EIB's financial involvement seems likely to generate value added

- the appraisal procedure is launched by the Directorate General for Lending Operations, on the basis of a file compiled by the promoter,
- the Management Committee is informed of the main features of the planned project and the principal aspects on which the appraisal will focus, and
- an appraisal team composed of representatives of all Directorates concerned is set up to prepare the appraisal, and a timetable is established.

A site visit to the promoter is organized by the Directorate General for Lending Operations. Depending on the project, an engineer and/or an economist may join the loan officer in discussing in detail with the promoter the project's parameters and the EIB's potential support.

III.5.1.6.3. Information provided by the promoter

The form and content of documents in the project file submitted to the EIB are the responsibilities of the borrower who may, if necessary, seek internal or external technical assistance with their preparation. The diversity of projects makes it difficult in practice to standardize the documents needed for the appraisal. For this reason, the EIB does not require potential borrowers to complete set forms or questionnaires. The following list is therefore intended as a guide since during the appraisal the EIB will liaise closely with the enterprise or administrative body concerned in order to identify jointly the main problems likely to arise before and after commissioning of the project.

The documentation submitted to the Bank (which must of course be tailored to the nature of each individual project) should cover the following points:

- general and legal information about the borrower;
- financial data;
- technical data - general design and technical description of the project; study and implementation; detailed estimate of investments; operation;
- environmental data - environmental design of the project; measures taken to comply with or exceed applicable national, European and international standards; where necessary, environmental impact assessment as well as measures taken to ensure public consultation; where appropriate, planned provisions of an "Environmental Management Plan" for the project;
- economic data for calculating the project's economic rate of return and, in particular: the market, the sales policy and organization, the impact on employment, etc.

III.5.1.6.4. Project appraisal

After returning from the site visit, if its findings are positive, the EIB's team conducts a detailed project appraisal, following which the Management Committee examines the financing proposal and passes it on to the Board of Directors for decision.

Each project is also referred by the EIB to the Member State concerned and the Commission for their opinions. These opinions are a precondition for the signing of the finance contract.

The Commission has a period of two months to make its opinion known to the EIB.

The following criteria form the basis of a standard EIB appraisal but are tailored to each individual project. These points are all covered by the report submitted to the Board of Directors for a financing decision.

a) Rationale for bank financing: eligibility, value added of the operation

The project's contribution to EU objectives supported by the EIB2 is ascertained. The analysis also reveals how the bank's input brings "value added" to the project: this may be apparent in the financial terms offered, in the EIB's active and "catalytic" role in structuring the finance plan, or in the improvement of the project's technical specifications.

b) Market and sector

This analysis is based on the information gathered during the project appraisal and on the sectoral studies regularly carried out by the Projects Directorate. It looks at the sector in question, establishes worst- and best-case scenarios based on reasonable projections and assesses the promoter's qualities in relation to the project and the project's ability to meet existing demand.

c) Technical description, capacity

The EIB's analysis looks at the project's technical soundness and the promoter's ability to implement the technical solutions adopted. It also examines the technical risks and measures taken to attenuate these.

d) Investment cost

The EIB examines the total investment cost, the main project costs compared with those of similar schemes financed by the bank, the margins for contingencies and price inflation adopted, and the impact of taxes on the project and promoter.

e) Implementation

The EIB's analyses cover the following two areas:

- technical: establishment of a "technical description" of the project, to be appended to the contract and to serve as a basis for future monitoring;
- procurement: compliance with current procedures; percentage of project cost subject to international competitive bidding; acceptability to the bank of the procedures envisaged.

f) Operation

The EIB's analyses cover the management, the measures taken to meet particular risks, the evaluation of operating costs and employment.

g) Environmental impact

The EIB's analyses examine the environmental situation with and without the project together with the following: where appropriate, it reviews studies of alternative solutions; it looks at the project's impact on the natural and human environments; it defines the measures adopted to prevent, reduce or mitigate any adverse effects; it looks at compatibility with current or proposed environmental legislation; it considers the existence of an environmental management plan and the promoter's ability to implement and manage it; it carries out an examination of environmental aspects over the life of the project; it reviews the project's compatibility with sustainable development objectives — including prevention of climate change — to which the EU is committed.

In performing the environmental part of its appraisal, the EIB makes use of the variety of studies carried out by the promoter or by independent consultants on its behalf EIAs, SEAs, SISs, etc. The bank examines the mitigating measures proposed, reserving the right to ask for further studies to be undertaken by competent external consultants. In all cases, the EIB ensures compliance with adequate project-related conditionality.

h) Prices, tariffs and financial return from the project

The EIB calculates the expected cash flow in real terms.

Where appropriate, the forecasts and analyses of certain financial ratios may serve as a basis for formulating appropriate tariff policies.

The EIB carries out sensitivity and/or risk analysis.

i) Economic benefits

The EIB reviews the following: the economic justification of the project; the economic appraisal of the value added of the project and the bank's input; the calculation of the project's economic rate of return; the estimation of the external costs/benefits, such as environmental protection, regional development, etc. The EIB carries out a sensitivity analysis.

j) Financial and credit risk analysis

The Directorate General for Lending Operations performs a detailed financial analysis of the borrower as well as of the guarantor if the operation is backed by a commercial guarantee. This can of course be simplified for the EIB's repeat borrowers.

Where public borrowers promoting infrastructure projects are concerned (e.g. regions or municipalities), a different type of financial analysis is performed based on documents of a budgetary nature. The Credit Risk Department casts an objective eye over the financial viability of the borrower and the guarantor, with whom it has no business relationship.

III.5.1.6.5. Appraisal of global loans

Global loans are credit lines which the EIB makes available to financial intermediaries for financing small- and medium-scale projects; either ventures mounted by SMEs or small-scale infrastructure schemes. This type of loan enables the bank to contribute indirectly to the long-term financing of projects which, because of their size, are not eligible for direct EIB funding. The volume of such lending varies from country to country. In total, both within and outside the EU, the EIB has dealings with nearly 400 banks and financial institutions, which are or have been its partners in deploying this type of instrument.

The appraisal of global loans essentially entails an examination of the intermediary bank from two main angles:

- the financial robustness and ability to enter into a lasting relationship with the EIB;
- the ability of the financial intermediary to channel EIB funds swiftly to customers targeted by the global loan (SMEs or promoters of small-scale infrastructure): specialization, size of portfolio, appraisal methods for this type of project, procedures for monitoring borrowers and projects, etc.

The appraisal team seeks to define precise criteria in discussions with the intermediary, so as to optimize the impact of the long-term resources made available by the EIB.

III.5.1.6.6. Project approval

The overall results of the appraisal are summarized in a report to the Board of Directors. The Management Committee conducts a prior examination of this report and of its various annexes covering the technical, environmental, economic, financial, legal and credit risk aspects. Once the draft report is approved, it is passed on to the Board of Directors for decision. The Board decision may be taken while there are still a number of points to be finalized (e.g. in the case of a public–private partnership project). An approval by the Board which is conditional on the resolution of any outstanding issues may play a decisive catalytic role and speed up a project's launch. The Board's decision to approve the loan does not take effect until the finance contract has been signed.

The financing decision is subject to

- the opinions of both the EU Member State on whose territory the project will be located and the European Commission,
- the receipt of a formal loan application from the promoter, and
- the contractual finalization of any points still unresolved when the financing decision was taken by the Board.

III.5.1.6.7. Finance contract signature

Responsibility for this process lies with the Legal Affairs Directorate, working in conjunction with all other Directorates concerned. The finance contract incorporates all the key elements forming the basis for the EIB's decision and studied during appraisal. It includes an appended technical description and any necessary technical, economic or environmental conditions. Where appropriate, it is supplemented by one or more guarantee contracts.

Draft contracts are also submitted to the Credit Risk Department, which has to endorse the main financial clauses.

The approval is valid for one year. Where duly warranted, however, this period may be extended.

Following contract signature, the project is usually announced in a press release. Information on all projects financed by the bank is published on the EIB's website (www.eib.org) as well as in the statistical supplement accompanying the EIB's Annual Report.

III.5.2 European Bank for Reconstruction and Development (EBRD)

III.5.2.1 Introduction

The European Bank for Reconstruction and Development (EBRD) was established in 1991 when communism was crumbling in Central and Eastern Europe and ex-soviet countries needed support to nurture a new private sector in a democratic environment. Today the EBRD uses the tools of investment to help build market economies and democracies in 27 countries from Central Europe to Central Asia.

The EBRD is the largest single investor in the region, and mobilizes significant foreign direct investment beyond its own financing. It is owned by 60 countries and two intergovernmental institutions. Meanwhile, despite its public sector shareholders, it invests mainly in private enterprises, usually together with commercial partners.

It provides project financing for banks, industries and businesses, both new ventures and investments in existing companies. It also works with publicly owned companies to support privatization, restructuring of state-owned firms and improvement of municipal services. The

EBRD uses its close relationship with governments in the region to promote policies that will bolster the business environment.

The mandate of the EBRD stipulates that it must only work in countries that are committed to democratic principles. Respect for the environment is part of the strong corporate governance attached to all EBRD investments.

Every EBRD investment must fulfil the following:

- help move a country closer to a full market economy: the transition impact;
- take risk that supports private investors and does not crowd them out;
- apply sound banking principles.

Through its investments, the EBRD promotes

- structural and sectoral reforms,
- competition, privatization and entrepreneurship,
- stronger financial institutions and legal systems,
- infrastructure development needed to support the private sector, and
- adoption of strong corporate governance, including environmental sensitivity.

Functioning as a catalyst of change, the EBRD

- promotes co-financing and foreign direct investment,
- mobilizes domestic capital, and
- provides technical assistance.

III.5.2.2 Application for financing

The EBRD is the largest single investor in Central and Eastern Europe and the Community of Independent States (CIS). The bank has committed more than EUR 20 x 10^9 to over 800 large projects. Small projects are almost always financed through financial intermediaries. By supporting local commercial banks, micro-business banks, equity funds and leasing facilities, the EBRD has helped finance around 200,000 smaller projects.

The EBRD provides loan and equity finance, guarantees, leasing facilities and trade finance. The bank also finances professional development through support programmes.

The following guidelines are for the private sector. Public sector projects are initiated directly through dialogue with the government concerned.

III.5.2.3 Finance for large projects

EBRD investments in private sector projects range from EUR 5 x 10^6 to EUR 250 x 10^6; the average amount is EUR 25 x 10^6. The bank takes a flexible approach and tailors solutions to the needs of private investors. The bank finances privatization and restructuring initiatives. It also supports municipal services and the infrastructure that underpins the private sector.

III.5.2.4 Criteria and structure — large projects

The project must be located in an EBRD country of operation as specified in table III.5.2.

Table III.5.2 - **Countries of EBRD operations**

Albania	Georgia	Romania
Armenia	Hungary	The Russian Federation
Azerbaijan	Kazakhstan	Serbia and Montenegro
Belarus	Kyrgyzstan	Slovakia
Bosnia and Herzegovina	Latvia	Slovenia
Bulgaria	Lithuania	Tajikistan
Croatia	The former Yugoslav Republic of Macedonia	Turkmenistan
The Czech Republic	The Republic of Moldova	Ukraine
Estonia	Poland	Uzbekistan

The project must have good prospects of being profitable.

Significant equity contributions in cash or in kind are required from the project sponsor.

The project must benefit the local economy.

The project must satisfy the EBRD's environmental standards as well as those of the host country.

Smaller projects are almost always financed through financial intermediaries. In exceptional circumstances, the EBRD may consider financing smaller projects.

III.5.2.5 Project structure

The EBRD tailors solutions to client and project needs and to the specific situation of the country, region and sector. It assigns a dedicated team of specialists with expertise in project finance, the region and sector, law and environment.

The EBRD funds up to 35 % of the total project cost for a greenfield project or 35 % of the long-term capitalization of an established company.

Additional funding by sponsors and other co-financiers is required. The EBRD may identify additional resources through its syndications programme.

Typical private sector projects are based on at least one-third equity investment. Significant equity contributions are required from the sponsors. Sponsors should have a majority shareholding or adequate operational control. In-kind equity contributions are accepted.

Excluded sectors the EBRD does not finance include the following:

- defence-related activities;
- the tobacco industry;
- substances banned by international law;
- stand-alone gambling facilities.

In addition, the EBRD may not finance certain products or processes due to their environmentally harmful nature or if their adverse impact cannot be adequately mitigated.

III.5.2.6 Loans

The EBRD's loans are structured with a high degree of flexibility to provide loan profiles that match client and project needs. This approach determines each loan currency and interest rate formula.

The basis for a loan is the expected cash flow of the project and the ability of the client to repay the loan over the agreed period. The credit risk can be taken entirely by the bank or may be partly syndicated to the market. A loan may be secured by a borrower's assets and/or it may be converted into shares or be equity-linked. Full details are negotiated with the client on a case-by-case basis.

Loan features

Loan features include

- minimum EUR 5 x 10^6 to EUR 250 x 10^6, although this can be smaller in some cases,
- fixed or floating rate,
- senior, subordinated, mezzanine or convertible debt,
- denominated in major foreign or local currencies,
- short- to long-term maturities, from 5 years to 15 years, and
- the possible incorporation of project-specific grace periods.

Interest rates

EBRD loans are based on current market rates and are priced competitively. Financial terms can be discussed in detail with banking staff once a project has been presented to the bank. The EBRD does not subsidize projects, nor does it offer soft loans.

The bank offers both fixed and floating interest rates:

- fixed rate basis, linked to a floating rate such as LIBOR;
- floating rate basis with a cap or a collar.

As the rate type directly affects profitability, a project's financial structure should preferably include both floating and fixed rate loans. The mix is evaluated with respect to the client and project sensitivities to interest rate movements.

Fees and charges

A margin is added on to the base rate. The margin is a combination of country risk and project-specific risk. This information is confidential to the client and the EBRD.

In addition to the margin, the bank may charge some of the following fees and commissions:

- front-end commission, paid up-front;
- commitment fee, payable on the committed but undisbursed loan amount;
- loan conversion fee, paid at the time of interest rate or currency conversion on the amount which is to be converted.

Prepayment, cancellation and late payment fees are also charged if necessary.

In line with commercial practice, sponsors will be obliged to reimburse the bank for out-of-pocket expenses, such as fees for technical consultants, outside legal counsel and travel expenses.

Other lending terms

Full lending terms are negotiated with the client for each project.

Recourse

Recourse to a sponsor is not required. However, the EBRD may seek specific performance and completion guarantees plus other forms of support from sponsors of the kind that are normal practice in limited-recourse financing.

Insurance

The EBRD requires project companies to obtain insurance against normally insurable risks. Examples include theft of assets, outbreak of fire, specific construction risks. The EBRD does not require insurance against political risk or non-convertibility of the local currency.

Security

The EBRD usually requires the companies it finances to secure the loan with project assets. These can include

- a mortgage on fixed assets, such as land, plant and other buildings,
- a mortgage on movable assets, such as equipment, other business assets,
- an assignment of the company's hard currency and domestic currency earnings,
- a pledge of the sponsor's shares in the company, and
- an assignment of the company's insurance policy and other contractual benefits.

Covenants

Typical project finance covenants are required as part of the loan package. Such covenants, limiting indebtedness and specifying certain financial ratios and various other issues, will be negotiated.

Loan repayment

Repayment is normally in equal, semi-annual instalments. Longer maturities may be considered on an exceptional basis, for example, up to 15 years for large infrastructure operations.

Hedging possibilities

The EBRD can help manage financial risks associated with a project's assets and liabilities. This covers foreign exchange risk, interest rate risk and commodity price risk. Risk - hedging instruments include currency swaps, interest rate swaps, caps, collars, and options and commodity swaps.

Guarantees

The EBRD provides various types of guarantee. These range from all-risk guarantees, whereby the bank covers lenders against default regardless of the cause, to partial risk-specific contingent guarantees covering default arising from specified events.

In all cases, the maximum exposure must be known and measurable and the credit risk must be acceptable. Precise legal definitions of the events guaranteed and pricing are handled on a case-by-case basis.

Illustration of generic products

Generic products include the following:

- debt guarantees;
- equity guarantees;
- local currency loan guarantees;
- guarantees for capital market products;
- guarantees for trade facilitation contact.

III.5.2.7. Project stages

When the EBRD has all the necessary information, a deal typically takes 3 months to 6 months from initial contact to signing. In some cases, however, this can be shorter. The total project cycle, from initiation to repayment, can range from 1 year for working capital or trade financing projects to 15 years for long-term sovereign infrastructure projects.

The EBRD review project cycle consists of the following stages (see also figure III.5.1).

Concept review — The EBRD's Operations Committee (OpsCom) approves the project concept and overall structure, including the proposed financing structure and supporting obligations. At this stage, the EBRD and the client sign a mandate letter which outlines the project plan, development expenses and responsibilities.

Final review — Once the basic business deal (including a signed term sheet) has been negotiated and all investigations have been substantially completed, the project receives a final review by the OpsCom.

Board review — The EBRD President and operation team present the project to the Board of Directors for approval.

Signing — The EBRD and the client sign the deal and it becomes legally binding.

Disbursements — Once repayment conditions have been agreed and the bank's conditions met, the funds are transferred from the EBRD's account to the client's account.

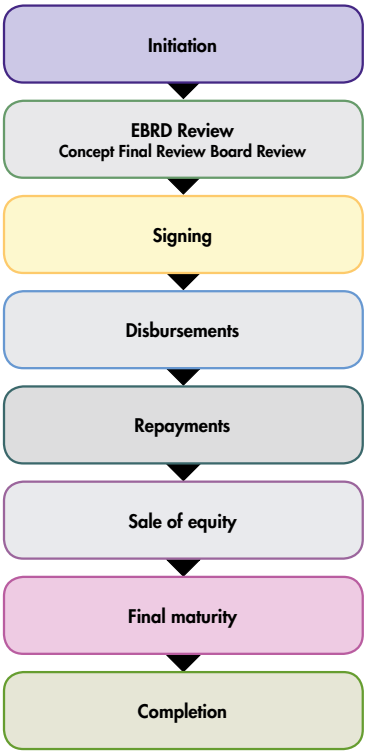
Repayments — The client repays the loan amount to the EBRD under an agreed schedule.

Sale of equity — The EBRD sells its equity investments on a non-recourse basis.

Final maturity — The final loan amount is due for repayment to the EBRD.

Completion — The loan has been fully repaid and/or the EBRD's equity investment divested.

Figure III.5.1 - **EBRD review project cycle**



III.5.2.8 Small - and medium - finance

Many projects are too small to be funded directly by the EBRD. To give entrepreneurs and small firms greater access to finance, the EBRD supports financial intermediaries, such as local commercial banks, micro-business banks, equity funds and leasing facilities.

Investment criteria are consistent with EBRD policy, but financial intermediaries make independent decisions about which small and medium enterprises (SMEs) they fund.

III. 5.2.9.Small - and medium - loan funding requirements

The EBRD's financial intermediaries consider sound and sensible projects that support private sector development. Each bank or programme has its own requirements and investment limits. For detailed financing information, contact the intermediary directly.

The requirements related to SMEs for obtaining loans through local banks include the following:

- sound business plans for establishing or expanding a company's business;
- solid management with a proven track record;
- products that are competitive in the marketplace;
- information on owners/partners;
- financial history;
- security in the form of pledges, mortgages, etc.;
- the funds provided must be used in strict accordance with the aims stated in the original business plan.

In line with the EBRD's mandate, banks ensure that all proposals pay due regard to environmental issues.

Funding cannot be provided to majority state-owned companies or for government-guaranteed projects.

In addition, equity contributions, either in existing or new business, of around 35 % are often required.

The must be a commitment to publicize any EU technical cooperation support received through events or press releases.

III.5.2.10 Transport sector

The EBRD has invested EUR 3.16 x 10^9 in the transport sector as of 31 December 2003. These investments are spread across a total of 97 projects. In the following paragraphs one case study is presented: the new road link to Russia's Far East and less traffic for St Petersburg.

During the long winter months, people living in remote settlements in Russia's Far East are completely cut off and can be reached only by air. At the other extremity of this huge country, trucks thunder through the centre of St. Petersburg creating congestion and pollution. With the EBRD's help and a 15-year loan of EUR 218 x 10^6, two new road projects will transform the quality of life for these distinctly different communities.

The first loan to the Russian road sector will help build a section of the first-ever East–West road link to the Russian Far East. When completed in 2005, a new two-lane road, covering 2,165 km (between Chita and Khabarovsk) will run parallel to the Trans-Siberian railway and provide the first road connection between Moscow and Vladivostok. As well as opening up this remote region, the road will speed up the movement of goods and provide an alternative to rail freight, resulting in increased availability of essential commodities and lower transportation costs.

The environmental damage arising from such an enormous construction project has been minimized through strict construction regulations. The project has passed all environmental requirements and was met with overwhelming approval during the public consultation period. Igor Slyunyaev, the head of the Russian Road Administration, Rosavtodor, comments: "The financing of the EBRD is an absolute necessity for us in order to be able to construct the Chita – Khabarovsk road and the St. Petersburg bypass. Both roads are a priority for my country and I am very pleased that the EBRD is bringing its expertise to assist us with the construction and the reform of the road sector."

Construction started in 2003 on the EBRD-financed section of the St. Petersburg eastern bypass, which will take heavy trucks away from the historic city centre. This will reduce noise and pollution, and improve road safety and air quality for St. Petersburg residents. The reform of the way in which the road sector is financed is an integral part of the project. The EBRD is providing technical assistance to Rosavtodor to develop a road management system to improve road safety and to upgrade quality control. This follows on from proposals (developed by consultants and now implemented) to recover some of the costs of road use by charging road users via dedicated taxes.

This project depends on close cooperation between the EBRD and the Russian Ministry of Transport, and it will act as a model for future collaboration.

III.5.3 The World Bank

III.5.3.1 Transport sector overview

Why is the transport sector important?

The value added by transport is estimated to account for 3 % to 5 % of GDP.

Public investment in transport typically accounts for between 2.0 % and 2.5 % of GDP and may rise as high as 3.5 % in countries modernizing outdated transport infrastructure or building new transport infrastructure.

Transport likewise commonly accounts for 5 % to 8 % of total paid employment.

Demand for freight and passenger transport in most developing and transition countries is growing 1.5 to 2.0 times faster than GDP, and the bulk of this increase is for road transport.

Although demand for freight transport in industrialized countries grows less rapidly than GDP, in developing and transition countries the growth rate is closer to that for passenger transport.

In 1994, foreign aid accounted for 12 % of total infrastructure financing in developing countries (including transport), while private financing of infrastructure accounted for 7 % and was rising. In 1996, private sector lending to emerging markets peaked at USD 19^6 x 10^9. Since then it has fallen sharply and estimates for 1998 are just over USD 17 x 10^9.

III.5.3.2 Sector issues at a glance

Globalization of trade: Advances in international logistics (for example, multimodal transport technology, electronic documentation, streamlined customs procedures, etc.) have greatly expanded the scope for international trade in goods and services.

Congestion and pollution: Growing road congestion, particularly in cities, generates pollution and increases road accidents (about 500,000 persons per annum are killed in road accidents in the World Bank's developing member countries and about 70 % of these fatalities are pedestrians).

Transport sector deficits: Poorly managed public transport services impose a heavy burden on public finance (for example, until recently, the transport sector deficit in Zambia absorbed 12 % of the Government's total current revenues).

Expenditure needs: Large sums of money are required to maintain and modernize existing transport infrastructure (for example, road spending alone often accounts for 10 % to 20 % of a government's development budget).

Private capital flows: In 1996, lending to emerging markets by private sector creditors totalled USD $19^6 \times 10^9$ (about 15 % of this went to the transport sector). The current global financial crisis has sharply reduced these private capital flows which are estimated to have fallen to USD 17×10^9 in 1998.

III.5.3.3 Transport sector policies

World Bank sector mission

Access: Improve access to markets, employment and services to promote social and economic development of our developing member countries.

Public and private sectors: Assist clients to make best use of the public and private sectors in the provision of transport services.

Institutional and financial development: Promote institutions which can manage and finance the transport sector on a sustainable long-term basis.

World Bank sector strategy

Reinventing government: Focus is on restructuring publicly owned transport enterprises, privatizing where feasible, and commercializing/concessioning elsewhere to subject the provision of transport services to the discipline of the market place.

Cutting public sector deficits: Railway concessioning has produced spectacular results: it has turned Brazil's USD 500×10^6 rail deficit into an annual USD 160×10^6 payment to the Treasury (Brazil Railways restructuring project); likewise it has reduced Argentina's annual net deficit by USD 700×10^6 (Argentina Public Enterprise Reform Adjustment Loan).

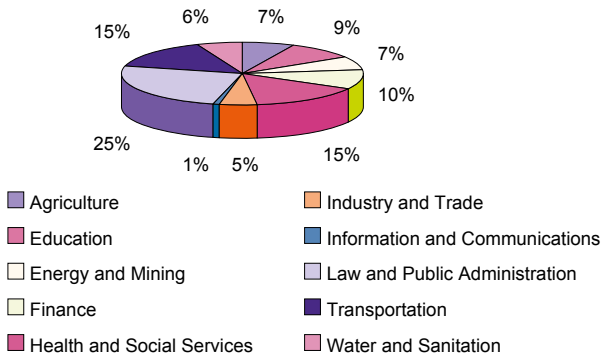
Managing roads like a business: The vast majority of the World Bank's road projects deal with maintenance and rehabilitation, and commercialization of road management and finance. Commercialization is moving ahead in all the bank's regions with an increasing number of countries deciding to finance their roads on a fee-for-service basis (e.g. Jordan Third Transport Project, Zambia Road Sector Investment Programme, Pakistan Highways Rehabilitation Project).

Rural accessibility: There are several innovative projects in this area which are attempting to establish sustainable institutional arrangements for managing and financing rural roads (e.g. Guatemala Rural and Main Roads Project, Zambia Road Sector Investment Programme).

The World Bank finances two types of project to eligible member countries: long-term investment (5 years to 10 years) and short-term adjustment (1 year to 3 years) projects. Currently, the bank's lending portfolio consists of some 1,900 active projects, representing annual disbursements of approximately USD 21×10^9. The bank's on-line projects database provides data and information on the current portfolio of pipeline, active, dropped and closed projects.

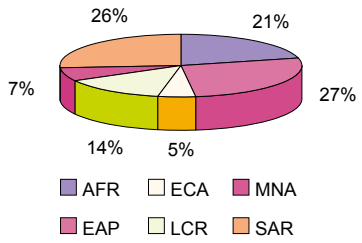
World Bank lending for transport

Annual average bank lending by sector, FY02-04



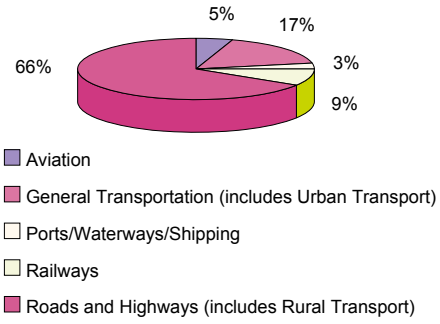
Bank annual average FY02-04 = USD 19 x 10⁹

Annual average transport lending by mode, FY02-04



Transport annual average FY02-04 = USD 3 x 10⁹

Annual average transport lending by region, FY02-04



The World Bank Group countries and regions

The World Bank's Highway Design and Maintenance (HDM-III) model is recommended to be used for the basic analysis, including economic evaluation, in assessing the optimum works programme, phasing, choice of technological options, etc. of a project. Even where the HDM model is not being used as the evaluation tool, it can be used as a basis for assembling operating cost estimates for a range of vehicle types using local input at different operating speeds, for which HDM-VOC software is available. In cases where the HDM tool is not being used, the assessment of the benefits to "base load" or "normal" traffic should be complemented by a consideration of the benefits to "generated" traffic, including traffic diverted from other routes, modes or destinations, as well as any forecast increase in the total number of trips or movements being made. The analysis should allow for the savings of cost on other routes, modes or Origin/Destination (O/D) pairs in order to avoid overestimation of the total benefit. Generated traffic (or associated degenerated traffic where diversions are involved) should normally be assigned a value half that of the base load traffic effects ("the rule of half"). However, generated freight traffic may in some circumstances require a more careful analysis. The benefits for normal or base load traffic should be calculated at the resource cost of inputs, i.e. net of any taxes or subsidies. Special care should be taken to assess the impact on project returns of any distortion of input prices. For generated traffic, the gross value should be calculated as the area under the demand curve as perceived by the user, less the total resource cost of the extra traffic. This will involve valuing traffic at the cost to users including fuel taxation, and it also requires appropriate adjustment for any other well-founded misperception of the user costs of transport.

The roads and highways section of the World Bank's knowledge base will be expanded in the near future to address the following additional issues:

- secondary benefits;
- modal interactions;
- pricing effects — tolls and shadow tolls;
- phasing/stage construction;
- low - volume roads and social benefit evaluation;
- road safety.

III.5.3.4 Economic analyses in transport project and programme appraisal

Purposes and uses

The purpose of economic appraisal of investment projects is to ensure that selected projects are worthwhile (i.e. they yield benefits with a value in excess of their cost), are well designed (i.e. they are better value than alternative projects directed to the same end) and are practicable (i.e. the responsible agency has the capability and incentive to realize those benefits). The basic form of economic evaluation recommended for public sector investment project appraisal within the World Bank is a social cost–benefit analysis. A social cost–benefit analysis attempts to add together the effects on all affected parties, and brings together results of fiscal, financial, user benefit and third-party impact analyses. It also attempts to value all costs and benefits to society, irrespective of to whom they accrue, in the calculation of a single indicator, the Net Present Value (NPV) or the Economic Rate of Return (ERR).

Wherever possible a project should be divided into separable components which can each be subject to economic testing. It is also important to ensure that alternative solutions are subject to comparable and consistent analyses. In particular, the comparability of the requirements made of road and public transport investments should be carefully established. While the calculation of a single indicator such as the ERR is a useful barometer in making "go/no go" decisions, it is much more important for economic analysis to have been used in project design to inform such decisions on programme composition, choice of technology, project timing and programme phasing, infrastructure management, pricing and policy reforms. A quite common fear about the emphasis on the project ERR is that funds are essentially fungible, at least within sector budgets, so that what the World Bank ought to be testing is not a specific project presented for finance, but the marginal project within the sector. This is rarely possible, and is best addressed by being satisfied that financing a specific project is not making space for a clearly unacceptable project. The issue of whether a project should be in the public or private sector should also be addressed as an economic issue.

Basic appraisal format

The economic evaluation of a transport project attempts to compare the benefits resulting from the investment with the costs of that investment. Ideally this would measure the total benefits in increased output across all final product sectors in a spatially and sectorally identified input–output model. Such a model would also ideally pick up all external effects, including environmental impacts. In practice, such models do not work with the necessary degree of refinement for project evaluation. More partial-equilibrium approaches have been adopted in some rural transport project cases by estimating the increase in agricultural and other outputs associated with a project. Even this is not generally tractable with the result that appraisals generally concentrate on the "first round" impacts on transport users and producers. The comparison made in the analysis is

between the situation "with project" and that "without project", which must not be confused with a simplistic "before and after" comparison. In practice, however, the "do-nothing" alternative may be difficult to define. The costs and benefits considered should include all elements which contribute to individual welfare. On the cost side these include purchased inputs (for example, fuel), non-purchased inputs (time) and quality of service characteristics (such as comfort, convenience, reliability, flexibility, etc.) This is referred to as the "generalized cost" of transport. The total benefit measurement includes benefits both to existing users and producers of transport services, and to those who are new users generated by an improvement, picked up in the "rule of half" measure. Effects on non-users (for example, noise or air pollution impacts on residents adjacent to a road or airport) should also be included. All values should be stated in constant price terms (i.e. 1998 USD), except where changes in relative real prices can be confidently forecast. To allow costs and benefits accruing at differing points in time to be aggregated, a discounting process is used for which the specification of an appropriate discount rate is necessary. The relative merits and uses of the alternatives indicators used to represent the merit of the project [either a net present value (NPV) or the internal economic rate of return (ERR)] are discussed in detail in the Operational Procurement Review (OPR) evaluation handbook. Since many of the elements of the ERR or NPV estimation are subject to error, calculations of the sensitivity of the calculated net benefit indicator to ranges in individual parameters (capital cost, traffic growth rate, etc.) and calculation of "switching values" of individual parameters at which the project NPV or ERR becomes sub-marginal are a minimum requirement. Monte Carlo simulations can be used to explore more complex risk distributions.

Generic valuation conventions

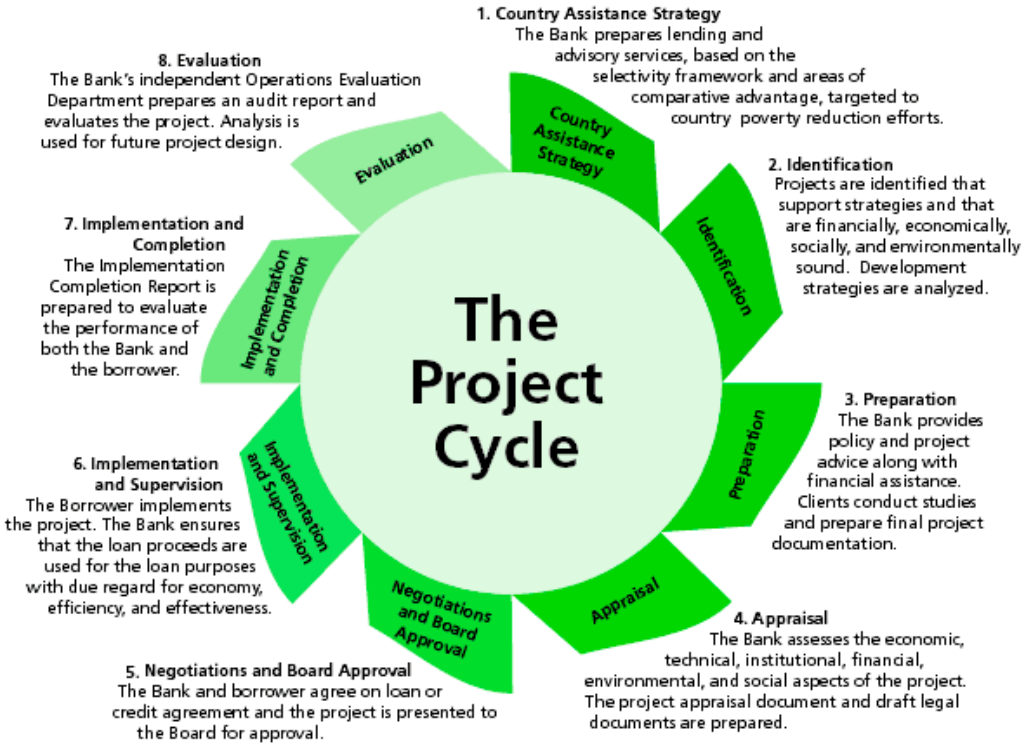
The calculated economic value of a project depends critically on a small number of parameters, which have to be assumed or estimated. National economic growth rates are the main basis for most future-demand forecasting. These should always be consistent with the rates adopted in the Country Assistance Strategy (CAS), and advice on these should be sought from the country's economist. The impact of growth on transport demand will then depend on the income elasticity of demand (the rate of change in the quantity of transport services demanded with respect to the rate of change in income). This varies between passenger and freight, by mode, and by country type. Where possible, local experience should be analysed. For freight, the elasticity of tonne-km with respect to GDP appears to lie between 1.05 and 1.25, with the higher values more appropriate for developing countries. Values around 1.25 appear to be appropriate conservative default values for road freight, while those for rail appear to be somewhat lower. For passenger transport, the elasticities of passenger-km demanded with respect to income are usually substantially below 1 for bus transport, between 1 and 2 for rail and automobile transport, and may be above 2 for air transport. Price elasticities show even greater variability. For land freight transport estimated price elasticities mostly fall in the range from 0.4 to 1.2, suggesting a default value of about 0.8. For passenger transport, elasticities are typically higher for leisure than for business trips, for off-peak than for peak, and for air and rail than for bus or urban transit.

Operating-cost-savings estimations are dealt with under the modal sections of this knowledge base. Shadow prices of resource inputs, of labour and of foreign exchange should always conform to country team norms and advice on these should be sought from the country's economist. Values of time should usually distinguish at least between working time and non-working time, and wherever possible should be based on local data.

The value of savings in accident costs should also be based on local estimates of accident incidence rates in different conditions as well as local values for both the resource impacts (loss of net output, repair and medical costs) and the human costs.

III.5.3.5 Project cycle

Each year the World Bank lends between USD 15 x 10^9 and USD 20 x 10^9 for projects in the more than 100 countries it works with. Projects range across the economic and social spectrum in these countries from infrastructure, to education, to health, and to government financial management. The projects the World Bank finances are conceived and supervised according to a well-documented project cycle. Documents produced as part of the project cycle can be valuable sources of information for interested stakeholders wanting to keep abreast of the work the World Bank is financing and for businesses wishing to participate in World-Bank-financed projects. Below is a step-by-step guide to the project cycle, the documents that are produced as part of the process, and how to access them.



How the process begins: poverty reduction and country assistance strategies

The World Bank recognizes that many past assistance efforts, including some of its own, failed because the agenda was driven by donors rather than by the governments it was trying to assist. Under its current development policy, the World Bank helps governments take the lead in preparing and implementing development strategies in the belief that programmes that are owned by the country, with widespread stakeholder support, have a greater chance of success.

In low-income countries, the World Bank uses the Poverty Reduction Strategy (PRS) approach which involves widespread consultation and consensus building on how to boost development. Under this process, a national poverty reduction strategy is prepared by the country, creating a framework for donors to coordinate better and to align their programmes behind national

priorities. The government consults a wide cross section of local groups and combines this with an extensive analysis of poverty in the country's society and its economic situation. The government determines its own priorities from this process and produces targets for reducing poverty over a 3 year to 5 year period. These are outlined in a Poverty Reduction Strategy Paper (PRSP). The bank and other aid agencies then align their assistance efforts with the country's own strategy — a proven way of improving development effectiveness.

Phase 1: Country Assistance Strategy

The World Bank's blueprint for its work with a country is based on a Country Assistance Strategy (CAS) which, in the case of low-income countries, is derived from the priorities contained in the country's Poverty Reduction Strategy Paper (PRSP). The CAS is produced in cooperation with the government and interested stakeholders. The preparation of the CAS may draw on analytical work conducted by the World Bank or other parties on a wide range of economic and social sectors, such as health, education, agriculture, public expenditure and budgeting, fiscal management, or procurement, among others.

Phase 2: Identification

The World Bank's Country Assistance Strategy (CAS) forms the blueprint for its assistance to a country. In low-income countries, the CAS is based on the priorities identified in the country's Poverty Reduction Strategy Paper (PRSP) (as outlined in Phase 1). The goals outlined in the CAS guide the priorities of the World Bank's lending programme and are a useful source of information for interested stakeholders and businesses wishing to identify potential future areas of World Bank lending. During the identification phase, World Bank teams work with the government to identify projects which can be funded as part of the agreed development objectives. Once a project has been identified, the World Bank team creates a Project Concept Note (PCN) which is an internal document of four to five pages that outlines the basic elements of the project, its proposed objective, its likely risks, alternative scenarios to conducting the project, and a likely timetable for the project approval process.

Useful public documents are the following.

- The Project Information Document (PID) is prepared after an internal review of the PCN and is released publicly through the World Bank's InfoShop. It is usually four to five pages long and contains the information mentioned above — the objective, a brief description, etc. It also contains the name of the World Bank Task Manager or Team Lead who is supervising the project, a useful contact for companies interested in bidding for work on the project. The PID is an essential resource for tailoring bidding documents to the project concerned.
- The Integrated Safeguards Data Sheet (ISDS) is also prepared after the project has received its first formal review and has been made available publicly. It identifies key issues under the World Bank's safeguard policies for environmental and social issues, and provides information about how they will be addressed during the project preparation.

Phase 3: Preparation

This part of the process is driven by the country that the World Bank is working with and can take anything from a few months to 3 years, depending on the complexity of the project being proposed. The World Bank plays a supporting role, offering analysis and advice where requested. During this period, the technical, institutional, economic, environmental and financial issues facing the project will be studied and addressed — including whether there are alternative methods for achieving the same objectives. An assessment is required of projects proposed for

World Bank financing to help ensure that they are environmentally sound and sustainable (i.e. Environmental Assessment). The scope of the Environmental Assessment depends on the scope, scale and potential impact of the project.

Useful public documents are the following.

- An Environmental Assessment Report (EA) analyses the likely environmental impact of a planned project and the steps to mitigate possible harm.
- An Indigenous Peoples Development Plan identifies potentially adverse effects on the health, productive resources, economies and cultures of indigenous peoples.
- The Environmental Action Plan describes the major environmental concerns of a country, identifies the main causes of problems, and formulates policies and concrete actions to deal with the problems.

Phase 4: Appraisal

The World Bank is responsible for this part of the process. Bank staff review the work done during the identification and preparation phases, often spending 3 weeks to 4 weeks in the client country. They prepare for the bank management either Project Appraisal Documents (investment projects) or Programme Documents (for adjustment operations) and the Financial Management team assesses the financial aspects of the project. The PID is updated during this phase. These documents are released to the public after the project is approved (see Phase 5).

Phase 5: Negotiation and board approval

After World Bank staff members have appraised the proposed project, the bank and the country that is seeking to borrow the funds, negotiate on its final shape. Both sides come to an agreement on the terms and conditions of the loan. Then the Project Appraisal Document (PAD) or the Programme Document (PGD), along with the Memorandum of the President and legal documents, are submitted to the World Bank's Board of Executive Directors for approval. The appropriate documents are also submitted for final clearance by the borrowing government, which may involve ratification by a council of ministers or a country's legislature. Following approval by both parties, the loan agreement is formally signed by their representatives. Once this has occurred, the loan or credit is declared effective, or ready for disbursement, after the relevant conditions have been met, and the agreement is made available to the public.

Useful public documents are the following.

- The Project Appraisal Document (PAD) presents all the information the Board needs to approve World Bank financing of the proposal. Before 1999, this document was called the Staff Appraisal Report.
- The Programme Document (PGD) describes adjustment-lending operations, and sets out the World Bank's appraisal and assessment of the feasibility and justification for the programme.
- The Technical Annex supplements a Memorandum and Recommendation of the President for freestanding technical assistance loans, which do not require Project Appraisal Documents.

Phase 6: The implementation and supervision phase

The implementation of the project is the responsibility of the borrowing country, while the World Bank is responsible for supervision. Once the loan is approved, the borrowing government, with technical assistance from the World Bank, prepares the specifications and evaluates bids for the procurement of goods and services for the project. The bank reviews this activity to ensure

that its procurement guidelines have been followed. If they have, the funds will be disbursed. The World Bank's Financial Management Team maintains an oversight of the financial management of the project including periodically requiring audited financial statements.

A useful public document is the following.

- The report on the Status of Projects in Execution (SOPE) provides a very brief summary of all projects that were active during the previous fiscal year. Previously an internal communication to the Board of Executive Directors, the SOPE report is now available to the public. Projects that closed during the fiscal year are no longer included in the SOPE, since their Implementation Completion and Results reports are also publicly disclosed.

Phase 7: Implementation and completion

At the end of the loan disbursement period (anywhere from 1 year to 10 years), a completion report identifying accomplishments, problems and lessons learned is submitted to the World Bank Board of Executive Directors for information purposes.

A useful public document is the following.

- Implementation Completion and Results reports review the results and assess an operation on completion of each loan financed by the World Bank. Operational staff prepare these self-evaluations for every completed project.

Phase 8: Evaluation

Following the completion of a project, the Bank's Operations and Evaluation Department conducts an audit to measure its outcome against the original objectives. The audit entails a review of the project completion and results report and preparation of a separate report. Both reports are then submitted to the executive directors and the borrower. They are not released to the public.

Useful public documents are the following.

- Project Performance Assessment Reports rate project outcomes (taking into account relevance, efficacy and efficiency), sustainability of results, and the institutional development impact. One in every four completed projects (or about 70 a year) is chosen for a Project Performance Assessment Report, which takes Operations and Evaluation Department staff about 6 weeks to produce and normally includes a visit to the project in the borrowing country.

- Impact Evaluation Reports assess the economic worth of projects and the long-term effects on people and the environment. These "second looks" at projects are performed 5 years to 8 years after the close of loan disbursements.

- Inspection Panel Reports review claims by affected parties that the World Bank failed to follow its operational policies and procedures with respect to the design, appraisal and/or implementation of a World-Bank-financed operation.

Projects may be dropped at any point in the project cycle from preparation to approval. For such projects, which never achieve active status, the Project Information Documents described above are effectively the final documents.

III.5.4 European Union

III.5.4.1 Introduction to EU funding

Most EU funding is not paid directly by the European Commission but via the national and regional authorities of the Member States. This is the case for payments under the Common Agricultural Policy and most payments under the structural policy financial instruments (the European Regional Development Fund, the European Social Fund, the European Agricultural Guidance and Guarantee Fund, and the Financial Instrument for Fisheries Guidance), which make up (in monetary terms) the great bulk of EU funding.

The Commission pays direct grants to beneficiaries (public or private legally constituted bodies — universities, businesses, interest groups, NGOs — and, in some exceptional cases, individuals) in pursuance of other common policies in such fields as research and development, education, training, the environment, consumer protection, and information. It also pays direct grants in pursuance of EU external policies.

All EU funding is channelled towards precise objectives and priorities under the various common policies which, in turn, are based on provisions of the Treaties. Grants are awarded on the basis of specific EU legislation, except those for pilot schemes, preparatory actions and certain tasks carried out by the European Commission as an institution. The award and payment principles and procedures of EU grants (of all types) are governed by the Financial Regulation and its Implementing Rules, and in particular Title VI of Part 1.

The Financial Regulation also requires all grants awarded to beneficiaries in the course of a financial year to be published each year, including the names and addresses of the beneficiaries and the relevant amounts awarded.

The Nature of Community contribution is a grant on the basis of new Financial regulation (1605/2002), its rules for implementation (2342/2002) and the Vade Mecum on grant management.

The Level of Community contribution is a grant limited from 10 % up to 50 % of the total amount of eligible costs. It is a successor to other programmes. There was a call for proposals with a view to obtaining grants in the field of transport (OJ C 202 of 18 July 2001, p. 20).

The budget line is presented in B2-702; B2-704; A-7041.

The total amount of grants (total available budget) to be awarded in the period 2002 to 2003 was estimated at EUR 7.4 x 10^6 for transport, and EUR 0.2 x 10^6 for the organization of conferences in the fields of energy and transport.

The Legal Basis for the funding is contained in Articles 70 to 80, 154 to 156, 157 and 174 to 176 of the Treaty establishing the European Community and regarding legislation.

III.5.4.2 Evaluation of EU activities: Commission evaluation system and regulatory requirements

The European Commission has a policy of regularly evaluating its programmes and activities. In this context, evaluation functions have been established within the individual Directorates General in order to coordinate and carry out evaluations. The central services of the Commission provide support and coordination.

The basic regulatory requirements on evaluation are set out in the Financial Regulation and Communications of the Commission.

III.5.4.3 The Financial Regulation and its Implementing Rules

The Financial Regulation provides basic rules on evaluation in its articles 27(4), 28(1) and 33(2d) and these are further detailed in articles 21(1) and 22(2) of the Implementing Rules.

The Financial Regulation

Article 27(4): "in order to improve the decision-making, institutions shall undertake both ex ante and ex post evaluations in line with guidance provided by the Commission. Such evaluations shall be applied to all programmes and activities which entail significant spending and evaluation results disseminated to spending, legislative and budgetary authorities".

Article 28(1): "any proposal submitted to the legislative authority which may have an impact on the budget, including changes in the number of posts, must be accompanied by a financial statement and the evaluation provided for in the article 27(4)".

Article 33(2d): "the Commission shall attach to the preliminary draft budget ... information on the achievement of all previously set objectives for the various activities as well as new objectives measured by indicators. Evaluation results shall be consulted and referred to as evidence of the likely merits of a proposed budget amendment".

The Implementing Rules to the Financial Regulation

Article 21(1): "all proposals for programmes or activities occasioning expenditure or a reduction in revenue for the budget shall be subject of an ex ante evaluation, which shall identify:

a) the need to be met in the short or long term;

b) the objectives to be achieved;

c) the results expected and the indicators needed to measure them;

d) the added value of Community involvement;

e) the risks, including fraud, linked with the proposals and the alternative options available;

f) the lessons learned from similar experiences in the past;

g) the volume of appropriations, human resources and other administrative expenditure to be allocated with due regard for the cost-effectiveness principle;

h) the monitoring system to be set up".

Article 21(2): "all programmes or activities shall then be the subject of an interim and/or ex post evaluation in terms of the human and financial resources allocated and the results obtained in order to verify that they were consistent with the objectives set, as follows:

a) The results obtained in carrying out a multiannual programme shall be periodically evaluated in accordance with a timetable which enables the findings of that evaluation to be taken into account for any decision on the renewal, modification or suspension of the programme;

b) Activities financed on an annual basis shall have their results evaluated at least every six years".

III.5.4.4 Communications on evaluation

The Commissioner for Budget together with the President of the Commission have issued several Commission Communications which set out the Commission's evaluation policy and provide rules for the services on how to implement it.

The basic elements and the development of the Commission evaluation system are described in:

- Focus on Results: Strengthening Evaluation of Commission Activities, Communication to the Commission from Mrs Schreyer, July 2000

The Commission has subsequently established a set of standards and good practices in evaluation to be applied within its services:

- Evaluation Standards and Good Practice, Communication for the Commission from the President and Mrs Schreyer, December 2002

The Commission also carries out a number of cross-cutting evaluations examining strategic issues which embrace activities within several policy areas:

- Putting Strategic Evaluation into Practice within the Commission, Communication of the President with the agreement of Mrs Schreyer, November 2001

III.5.5 Instrument for Structural Policies for Pre-Accession (ISPA)

III.5.5.1 Introduction

ISPA is one of the three financial instruments (with Phare and Sapard) to assist candidate countries in the preparation for accession. Over the period from 2000 to 2006, a total of EUR 1,040 x 10^6 a year (at 1999 prices) was made available for infrastructure projects in the field of environment and transport.

Its main priorities in preparing the candidate countries for accession are

- to familiarize them with the policies and procedures of the EU,
- to help them be up to date with EU environmental standards, and
- to expand and link with the Trans-European transport networks.

Who can apply for ISPA grants, and how are ISPA grants decided?

The candidate countries can propose, via the National ISPA Coordinator, projects in the sectors eligible for ISPA. The projects must be part of an ISPA sector investment plan adopted by the candidate countries and endorsed by the European Commission.

The sectors eligible to receive assistance are the following:

- the environment — bringing the candidate country up to EU standards;
- transport — expanding the Trans-European transport networks;
- technical assistance, directly related to the projects being funded.

Applications must be sent to the ISPA directorate of DG Regio. The application will be examined by the European Commission services and (when necessary) discussed with the applicant country. When the European Commission considers the project to be acceptable, it will submit the project for opinion to the Management Committee, which is composed of representatives of the Member States.

After receipt of a positive opinion from the Management Committee, the European Commission will adopt the project and submit a Financing Memorandum for signature to the applicant country.

III.5.5.2 Transport — expanding the Trans-European transport networks

"Agenda 2000" stresses the urgent need to build and repair transport infrastructure in the candidate countries and to link it to the EU's transport networks. For the countries concerned, improving their transport infrastructure is a crucial part of their economic development strategy. The development of efficient transport systems is thus an essential component in the pre-accession strategy.

Assistance should go to transport infrastructure projects which encourage sustainable forms of moving people and goods, and in particular projects which are of European Community interest (identified at the Helsinki and Crete conferences), and also those which enable the

countries concerned to meet the objectives of the Accession Partnerships. This will include expanding the TENs to provide good connections between the EU and the candidate countries, and interconnections between national networks and links from them to the TENs.

Bringing the transport infrastructure in the candidate countries up to the standards of the EU in order to meet the expected growth of traffic will call for major investments. ISPA will be contributing therefore to funding the development of railways, roads, ports and airports, taking into account the requirements for sustainable transport and modal change.

III.5.5.3 Eligibility of measures

Mirroring the pattern of the Cohesion Fund, for which funding is granted on a project-by-project basis, ISPA will fund the following types of measure:

- project: a project is an economically indivisible series of works for a precise technical function and with identified objectives;
- stage of project: a technically and financially independent stage, which can be identified as operational in its own right;
- group of projects: projects meeting the following three conditions may be grouped:
  - they must be located in the same area or situated along the same transport corridor;
  - they must be objective oriented under an overall plan for the area or corridor;
  - they must be supervised by a single body responsible for coordinating and monitoring.

Such projects must be of a high quality and on a sufficient scale to have a significant impact in the field of environmental protection or the improvement of transport networks. In light of the experience gained with the Cohesion Fund, and in particular to avoid disproportionate administrative burdens, projects will need to have a minimum size of EUR 5 x 10^6. For the start-up period of ISPA, the European Commission will, however, restrict itself to supporting large projects only.

Projects will be selected and approved on the basis of national programmes for transport or the environment, which form part of the central elements of the Accession Partnerships, and the national programmes for adopting the "acquis communautaire". These programmes must contain strategies specifically aimed at transport and the environment, and take the trans-national dimension into account when developing future TENs.

III.5.5.4 Financial provisions per country

Over the period from 2000 to 2006, a total of EUR 1,040 x 10^6 a year (at 1999 prices) was divided evenly between environmental and transport infrastructure projects. The allocation of ISPA resources amongst the recipient countries was decided by the Commission using criteria based on population, per capita GDP (in purchasing power parity terms) and land surface area. In order to encourage the beneficiary countries to propose high-quality projects and to have some flexibility in the management of ISPA funding, the allocation was specified as a range as follows:

8.0 % to 12.0 %	Bulgaria
5.5 % to 8.0 %	The Czech Republic
2.0 % to 3.5 %	Estonia
7.0 % to 10.0 %	Hungary
4.0 % to 6.0 %	Lithuania
3.5 % to 5.5 %	Latvia
30.0 % to 37.0 %	Poland
20.0 % to 26.0 %	Romania
1.0 % to 2.0 %	Slovenia
3.5 % to 5.5 %	Slovakia

The rate of assistance was up to 75 % of eligible public expenditure, but in exceptional cases up to 85 %. The actual rate depended on the following criteria: the matching funds available, any potential revenue generated from the projects and application of the 'polluter-pays' principle.

III.5.5.5 How to apply for ISPA co-financing of projects

The recipients of ISPA assistance were the central Governments of the candidate countries. Only applications received via the National ISPA Coordinator were examined by the Commission services. Applications must be made using standard application forms.

III.5.5.6 Implementation of projects receiving ISPA grants

The beneficiary countries were responsible for the implementation of projects receiving ISPA grants. This means that they, while respecting the rules of the European Commission, have to launch the call for tenders, to attribute contracts and to follow up the implementation. The European Commission's services were consulted at all stages on the proceedings.

III.5.5.7 Procurement rules

Contracts for technical assistance, services, supplies and works were awarded following the usual procedures (i.e. after publication in the Official Journal and on the internet). The detailed procedures for tendering and contracts are laid down in the "Practical Guide to Phare, Ispa & Sapard contract procedures" of the European Commission.

Note meanwhile that the following exceptions apply.

- In the case of works, tenders can be invited on the basis of open tendering procedures or restricted tender after pre-qualification, depending on which procedure is the most suitable to the case in question. The procedures of the manual should be applied in conjunction with the contract provisions, except for Annex D which needs to be replaced by the contract arrangements of the International Federation of Consulting Engineers (FIDIC);
- For all types of contract:

the pre-qualification option can be used extensively, and

pricing can be specified in national currency.

- Tendering and contracting will be subject to ex ante approval (endorsement) by the European Commission as laid down in the manual for each type of procurement and procedure followed (e.g. tender dossier, evaluation procedure, evaluation report, contract, etc.).

III.5.5.8 How can companies take part in projects with ISPA grants?

Companies can react to tender publications launched by the candidate countries. Information on tenders can be found on the EuropeAid cooperation office website. Replies to the invitations for tenders need to be sent to the country concerned.

III.5.5.9 Public–private partnerships

Recent years have seen a marked increase in cooperation between the public and private sectors for the development and operation of infrastructure for a wide range of economic activities. Such public–private partnership (PPP) arrangements were driven partly by limitations in public funds to cover investment needs but also by efforts to increase the quality and efficiency of public services.

The efforts of the Accession Countries and the new Member States to reform and upgrade infrastructure and services could potentially benefit from the PPP approach. However, PPPs should only be considered (1) if it can be demonstrated that they will achieve additional value compared with other approaches, (2) if there is an effective implementation structure and (3) if the objectives of all parties can be met within the partnership.

DG Regional Policy has undertaken a wide consultation process within the European Commission, involving the EIB, the EBRD, PPP units and task forces of the Member States and candidate countries. The result can be found in "Guidelines for Successful Public–Private Partnerships", published in March 2003.

As a natural follow-up and in an effort to address the knowledge gap in a practical way, DG Regio produced in June 2004, with the same effective collaboration from its partners, a repertory of PPP case studies across countries and across sectors called "Resource book". The "Resource book" was presented at a workshop "Building a valuable approach to PPPs" which took place on 5 July 2004.

III.5.5.10 How are ISPA grants disbursed?

On the signature by the European Commission, the beneficiary country receives 10 % of the total grant. Another 10 % is paid on the signature by the beneficiary country of the first contract for the project. The rest of the grant is paid on evidence of payment of invoices, of which 20 % after the acceptance of the final report. Exceptions on the above-described procedure are possible for technical assistance projects for the Extended Decentralization (EDIS).

III.5.6 INTERREG

III.5.6.1 How to apply for INTERREG IIIC funding

The deadline for submission of East zone applications (the fourth call for project proposals) was 19 November 2004. In the North and West zone the fourth call closed on 8 October 2004. The North zone received 27 applications, the West zone 57. The extended third call for Regional Framework Operations in the South zone, which closed on 8 October 2004, also resulted in 25 applications.

All documents important for the development of an application are found in the Application Pack.

III.5.6.2 Application pack

The application pack consists of the following documents.

- Application Form: Programme Manual, which provides an overall view of the planning, management and follow-up to the INTERREG IIIC operation, from the preparation of the application to the implementation, reporting and finalization.

- Co-financing Statements: Programme documents (Community Initiative Programmes and Programme Complements).
- Relevant EU regulations: Model authorization letter for Regional Framework Operations, which is relevant for Regional Framework Operations only. In cases where regional authorities at a geographically lower level or bodies other than the governing authority of the respective region represent the territorial unit listed in the Community Initiative Programme, a written authorization of the governing authority of the respective region is required.
- Map: A map showing the location of all partners involved in the operations has to be attached to the Application Form.

III.5.6.3 Total available budget for INTERREG IIIC

For the EU Member States, the total ERDF budget available for co-financing operations for all four INTERREG IIIC programme zones amounts to EUR 315.4 x 10^6. This total has to be matched with national co-financing from the project partners of the EU Member States. Most national co-financing will be made up of public funds. For partners from Norway, the Norwegian Government has provided a separate budget of EUR 2.7 x 10^6 for co-financing interregional cooperation throughout Europe. These Norwegian national funds have to be matched with regional co-financing from Norwegian project partners. The co-financing rate is up to 30 % of the total eligible budget.

Contributions from third-party countries, including EU funds for Non-Member States, play also an essential role in financing operations.

III.5.6.4 General rate of INTERREG IIIC co-financing

The ERDF co-financing rate for the operations is 75 % of the eligible costs for partners in Objective 1 areas and 50 % of the eligible costs for partners in other areas. For partners from outermost regions (French Overseas Departments, Canary Islands, Azores and Madeira) involved in operations financed by the South Programme, the ERDF co-financing rate is 85 % of the eligible costs.

Regions having dual objective status (partly Objective 1) that are involved in Regional Framework Operations (RFOs) must calculate an average co-financing rate varying between 50 % and 75 % taking into account an estimated involvement of each region's institutions in the RFO sub-projects.

III.5.6.5 Financial models that can be applied in INTERREG IIIC operations

Each operation is free to apply the financial model that fits best to the operation, partnership or objectives. Note that the financial model has to be in line with Commission Regulation 438/2001. Examples can be found in the Programme Manual.

III.5.6.6 Advance payments available in INTERREG IIIC

No advance payments are provided in the INTERREG IIIC programme. All payments from the Paying Authority to the Lead Partner must be based on expenditure actually paid out and recorded. Payments are linked to reports — as soon as the report is accepted, the payment is authorized.

III.5.7 The Green Paper on public–private partnerships and European Community law on public contracts and concessions

Public–private partnerships (PPPs) are forms of cooperation between public authorities and the world of business, which aim to ensure that infrastructure projects can be carried out or that services of use to the public can be provided. These forms of partnership have been developed in several areas of the public sector, such as transport, public health, education, public safety, waste management and water distribution.

Various factors explain the increased recourse to PPPs. In view of the budget constraints confronting Member States, the use of PPPs meets a need for private funding for the public sector. Another explanation is the desire to benefit more in public life from the know-how and working methods of the private sector. The development of PPPs is also part of a more general change in the role of the state in the economy, which is moving from the role of direct operator to one of organizer, regulator and controller.

On the basis of a Green Paper, the EC has launched a debate on the desirability of adapting the European Community rules on public procurement and concessions to accommodate the development of public–private partnerships (PPPs). The main objective is to see whether it is necessary to improve the current rules in order to ensure that economic operators have access to PPPs under conditions of legal clarity and real competition. Over the last ten years, PPPs have been developing in several Member States. They are now used in many areas of the public sector. The choice of a private partner by a public authority must be made in accordance with community rules on the award of public contracts. However, there is no specific system under community law for PPPs and the Community rules on awarding public contracts are applied to PPPs with differing degrees of intensity. The Green Paper sets out the scope of community rules, with a view to identifying any uncertainties and assessing to what extent community intervention might be necessary.

This Green Paper analyses the phenomenon of PPPs with regard to community law on public procurement and concessions.

Under community law, there is no specific system governing PPPs.

PPPs created for contracts that qualify as "public contracts" under the Directives coordinating procedures for the award of public contracts must comply with the detailed provisions of those Directives. However, "works concessions" are covered only by a few scattered provisions of secondary legislation and "service concessions" are not covered by the "public contracts" Directives at all.

Nevertheless, all contracts in which a public body awards work involving an economic activity to a third party, whether covered by secondary legislation or not, must be examined in the light of the rules and principles of the EC Treaty, and particularly those on the freedom of establishment and the freedom to supply services (Articles 43 to 49 of the EC Treaty). These principles include in particular the principles of transparency, equal treatment, proportionality and mutual recognition.

The EU rules governing the choice of a private partner have therefore been coordinated in the Community at various levels and to various extents, so that a wide variety of approaches are still possible at national level.

The aim of this Green Paper is to launch a wide-ranging debate to find out whether the community needs to intervene to ensure that the economic operators in the Member States have better access to the various forms of public–private partnership in a situation of legal certainty and effective competition.

It therefore describes the ways in which the rules and the principles deriving from community law on public contracts and concessions are applied when a private partner is being selected, and for the subsequent duration of the contract, in the context of different types of PPP. The Green Paper also asks a set of questions intended to find out more about how these rules and principles work in practice, so that the EC can determine whether they are sufficiently clear and suitable for the requirements and characteristics of PPPs.

The Green Paper thus addresses various topics as follows: the framework for the procedures for selecting a private partner (competitive dialogue procedure for certain PPP operations qualifying as public contracts, minimal framework for secondary legislation, no framework for works and service concessions), privately initiated PPPs, the contractual framework and contract amendments during the life of a PPP, and subcontracting. The Green Paper addresses both PPPs created on the basis of purely contractual links ("contractual PPPs"), and PPPs involving joint participation of a public partner and a private partner in a mixed capital legal entity ("institutional PPPs").

This Green Paper is one of the priorities identified by the commission in its internal market strategy for 2003 to 2006, and contributes to the measures planned as part of the initiative on growth in Europe

III.5.8 Public–private partnership (PPP)

Under PPP arrangements, private sector contractors become long-term providers of services rather than simply upfront asset builders, combining the responsibilities of designing, building, operating and, possibly, financing assets in order to deliver the services needed by the public sector. As a result, central and local government agencies become increasingly involved as regulators and focus resources on services' planning, performance monitoring and contract management, rather than on the direct management and delivery of the services.

Relevant PPP structures are as follows.

a) Public procurement model (traditional financing)

This is the traditional public procurement model which governments have relied on to develop their infrastructure systems. With this approach, designated government agencies, such as a ministry or a public authority, are vested with the responsibility of developing infrastructures. These agencies typically elaborate master plans prioritizing needs and then arrange the financing, design and construction of individual projects. Once a project is completed, it is then operated and maintained by the agency, together with the other assets under its care.

b) BOT model

Under the BOT (Build-Operate-Transfer) model a contract is arranged with a private or publicly owned project company to design, build and operate a facility for a defined period, after which the facility is handed back to the public sector. The facility is financed and owned by the project company from completion and throughout the contract period. The key driver is transfer of the design, construction and operating risks to the private sector. The extent of the government support and guarantees depends on the project's cash flows and rates of return.

c) Concession-type of PPP (DBFO and BOOT models)

In a pure concession model, the private sector takes on all (i.e. 100 %) of the investment. Instead of sharing project risks, public and private parties divide ex ante the identified risks by contractual arrangements about responsibilities, risks and financing.

Concession types are most common in the current PPP practice. There are two possible structures of concession models: the DBFO model and the BOOT model.

Under the DBFO (Design-Build-Finance-Operate) model a contract is signed between a government body and a private party responsible to design, build, finance and operate a facility for a defined period, after which the facility reverts to the public sector. The facility is owned by the private sector for the contract period and it recovers costs through public subsidies. This model allows the use of private finance and the transfer of design, construction and operating risks to the private sector.

Under the BOOT (Build-Own-Operate-Transfer) model a contract is arranged with a private party to design, build, finance and operate a facility for a defined period, after which the facility reverts to the public sector. Under this scheme, the private sector acts as the infrastructure manager throughout the contract period and it is the unique financier of the infrastructure. Accordingly, the sources of financing for the facility are as follows: private sector; EU; national/local government; international financial institution (IFI) debt; commercial debt; private equity.

The main features of PPP models are shown in table III.5.3.

Table III.5.3 - Main features of PPP models

PPP type	Application	Financing
Traditional financing contracting model	Capital projects with small operating requirements Capital projects for which the public sector wishes to retain operating responsibility	Public sector as the funder, using: • EU funds • national/local funds • IFI debt • commercial debt
BOT model	Projects that involve a significant operating content Particularly suited to projects related to water	Public and private funding: *public sector:* • EU funds • national/local funds private sector: • IFI debt • commercial debt
DBFO model	Projects that involve a significant operating content Particularly suited to projects related to roads	Public and private funding: *public sector:* • EU funds • national/local funds private sector: • IFI debt • commercial debt • private equity
BOOT model	Projects that provide an opportunity for the introduction of user charging Particularly suited to projects related to roads	Private sector as the funder, using: • EU funds • national/local funds • IFI debt • commercial debt • private equity
BO model	Projects that provide an opportunity for the introduction of user charging Particularly suited to projects related to airports	Private sector as the funder, using: • EU funds • national/local funds • IFI debt • commercial debt • private equity

Annex IV Road financing in Europe and recommendations for the financing of road projects in the Master Plan

The scope of this study was to provide an up-to-date review of the available literature and practices dedicated to road financing, primarily in Europe. A summary of the various means and methods available for securing the financing of road construction projects will be presented. This summary takes into account the information collected from interested countries and should include sufficient information to enable some recommendations to be made for the TEM countries that are currently engaged in the revision of the TEM Master Plan.

1. ROAD FINANCING THEORY AND PRACTICE[6] — AN OVERVIEW

1.1 Tasks to be financed (purposes of road expenditure)

During recent decades, governments all around the world have been faced with a complicated set of options when looking to invest in transport and road infrastructure. The main principles for determining the most appropriate models for financing road expenditure are examined in this annex. Financing, in this context, is defined as the provision of money at the time and in the quantity that is needed to meet society's road infrastructure and road transport service provision needs. Financing is a fundamental element of road infrastructure operation and provision.

Accepting the view that transport infrastructure as a whole is needed to provide a well-defined set of public services, financing the transport sector (at the highest level and including road expenditures) is fundamentally a sovereign task that involves determining how much of the government's available (public) resources will be channelled into road infrastructure during a given time period, as opposed to being dedicated to other policy priorities. Sovereign tasks are fundamentally the role of a government and cannot be carried out by external parties.

A great array of tasks is involved in the provision of road infrastructure and road transport services. Some of these correspond directly to specific points in the life cycle of the road infrastructure, while others are ongoing. The tasks associated with providing and operating road infrastructure can be outlined as follows.

a) Administrative tasks:

- establishment of high-level policy directions, development and operation strategies related to the provision of road infrastructure and road-related public services;
- definition and organization of the political and administrative framework for decision-making;
- assignment of responsibilities;
- needs assessment and demand management;
- definition, selection (evaluation), preparation and approval of multiannual programmes and individual road projects;
- selection of procurement and delivery methods;
- supervision of works and assurance of performance and quality;
- education and training of road specialists, research and development;
- regulation of the activities in the road sector (permits, licences, etc.).

[6] Developed from OECD/ITF: "Transport Infrastructure Investment — Options for Efficiency" (2008).

b) Works and maintenance-related tasks:

- new construction (increasing capacity of the existing road network by extension, building new elements);
- upgrading the existing road infrastructure (increasing capacity by widening and strengthening pavements and bridges, improving alignment, etc.);
- major repairs/rehabilitations;
- maintenance.

c) Operation-related tasks:

- traffic surveying, regulation and management, ensuring availability and safety;
- surveying and assessing the condition of the road infrastructure, i.e. the quality of services provided;
- establishment and operation of a road databank;
- asset management and accounting;
- toll collection (if applicable).

All of the tasks outlined above must, of course, be financed. The financing must also extend to the necessary administrative structures within the public sector required to oversee road infrastructure and road transport services provision, no matter which model is employed. Governments must also decide how the available public (and potentially private) resources will be distributed between the different tasks, and between road infrastructure and the provision of road transport services.

Other approaches can be used to determine the tasks related to the provision of roads and road transport services, serving as a base for the allocation of available resources among them (see the practice in the United States of America in Appendix IV.1).

This annex includes a study on how public resources are allocated for the financing of new construction projects and how their share, in relation to total road expenditures, is determined for the medium and long term. It will also look at what measures are needed to ensure that the allocated money will actually be spent on that purpose and nothing else.

1.2 Sources and instruments of road financing

1.2.1. Primary and secondary sources

When we look at the resources available for road financing at their most basic level there are only two primary sources of revenue: taxpayers and road users. Although demand for the provision of more roads and improved road transport services appears to be growing, the public revenues available for transport spending are becoming more uncertain. Motor fuel and vehicle taxes — which as a source account for approximately two thirds of public funding for road projects — have not kept pace with inflation in many TEM member countries and have declined in value. With the cost of fuel remaining relatively high at the pump, rises in motor vehicle fuel tax to pay for transportation projects are politically unpopular.

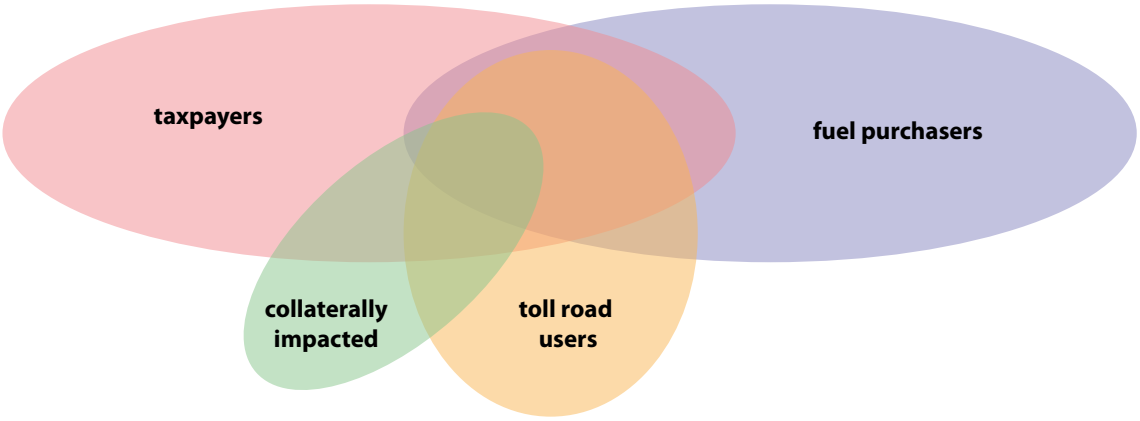
Other primary sources of public funding — such as tolls, vehicle registration fees, driver's license fees, special truck licence fees, and a host of miscellaneous taxes and fees — can be politically unpopular, making it difficult to derive additional funding from these mechanisms to compensate for the increased need for road network development.

Secondary, or additional, resources may come from

- ancillary services (e.g. renting space to service providers alongside public roads),
- third-party contributions (e.g. contributions of land owners or commercial firms towards the building of new connecting roads and interchanges), and
- the sale of public land adjacent to the new road infrastructure.

All these additional resources will likely play a secondary role, and very often will also come from taxpayers and road users. The taxpayer and the road user may be the same individual, although this is not necessarily always the case (see figure IV.1.). A taxpayer might never use a given piece of road infrastructure (e.g. a new motorway), especially if she or he lives in a region of the country far removed from where it is located. In other instances, taxpayers may not use a given stretch of road infrastructure, but may indirectly benefit from it by purchasing goods that are moved over it. Users may be from other countries as well (when international traffic transits a given country), and thus not only the taxpayers in that country where the road infrastructure itself is located.

Figure IV.1 - Overlapping of cost bearers' groups taking part in road funding



The term "taxpayers" can refer to those paying taxes today, and thus contributing to general revenues, and also to those who will pay in the future, paying off today's borrowings. The instruments through which financing from these sources may be channelled into the provision of road infrastructure and road services are also fundamentally limited and are largely restricted to the following:

- general and earmarked taxation (budgetary resource allocation) and grants from international organizations, like the EU (if any);
- operational revenues or user charges (fees and tolls);
- non-user funding (revenues generated from ancillary services and third-party contributions);
- capital accumulated by corporate entities, financial institutions and financial markets (borrowing and private sector involvement under PPPs).

The choice of funding sources and instruments for tapping and channelling appropriate funds into road infrastructure is not intrinsically linked to the model employed for the provision of road infrastructure and road transport services. However, instruments used for financing will have a profound impact on how each funding model functions. The choice of which particular mix of taxes and user charges (or public and private capital) to employ is a fundamental sovereign

task, and must be undertaken by governments before they design the model by which the road infrastructure and road transport services will be provided.

1.2.2. Financing instruments

There are many different types of instrument a government, public institution or corporate entity may use to finance its expenditure. In general, financing instruments are related to one of two categories: debt and equity. Although there are certain exceptions, debt instruments generally represent fixed obligations to repay a specific amount at a specified date in the future, together with interest. In contrast, equity instruments generally represent ownership interests entitled to dividend payments, when declared, but with no specific right to a return on capital. The contributions, subsidies and grants of international organizations to public budgets can be considered as specific equity instruments stripped from (direct) reimbursement in the form of dividend payments or return on capital.

Within each of these two general categories, there are a wide variety of rights, privileges, and limitations that may be established by the investing or borrowing entity (see table IV.1).

Common stock is the most basic form of equity instrument. It represents an ownership interest in a corporation, including an interest in earnings, that translates into declared dividends as well as an interest in assets distributed upon dissolution. Preferred stock is another form of equity instrument. It represents a hybrid in the sense that it is an equity interest with certain features resembling debt. Holders of common stock (stockholders or shareholders) have the greatest opportunity to share in a company's profitability because of the unlimited potential for dividends, appreciation in the value of their common stock, and realization of liquidation proceeds. However, common stock holders also bear the greatest risk of loss because they are generally subordinate to all other creditors and preferred stock holders.

Debt instruments such as notes, bonds and debentures are generally entitled to receive payments which are senior in priority to preferred or common stockholders. Debt instruments may be secured by certain assets of the corporation or may be unsecured (i.e. backed by a simple pledge of the borrower's credit), long-term or short-term in duration, and carry variable or fixed interest rates. They may impose certain affirmative or negative obligations upon the borrower, including restrictions on the ability of the borrower to complete certain transactions (such as incurring other indebtedness or issuing capital stock).

Several of the advantages in issuing debt instruments include the predictability of payments to investors, the absence of dissolution in the management's interest in corporate growth and voting power, and the reduction in risk for investors in the loss in their investment. Disadvantages include the potential restrictions on operations, limitations on the use of the working capital due to debt service obligations, and the tying up assets through pledges as collateral.

There are numerous considerations involved in the road funding planning process to make use of debt or equity instruments. The planner should take into account the various types of instrument which may be used and the respective advantages and disadvantages of each type from the viewpoint of both the incumbent government or public entity as well as the prospective taxpayers as investors or borrowers. Both near-term and long-term objectives for each should be duly considered when developing road financing strategies.

Table VI.1 - Financing instruments – an overview

Financing tools			Private funding	Public funding
Generally: budget			None	General taxes
Special case: extra budgetary funds or special accounts			None	Earmarked/dedicated taxes
Capital financing[a]			Senior shares	
Mezzanine financing[b]	Equity		Preference shares, convertible shares	
	Debt		Subordinated loan[c], subordinated bonds, convertible bonds	
Debt financing	Loans		Commercial loans (syndicated loans)	Loans borrowed from governments, banks, international financial institutions, or regional development banks
	Bonds	Private issue	Project bonds	Bonds with sovereign guarantee, municipal bonds, bonds of publicly owned companies, bonds guaranteed by international financial institutions
		Public issue		
	Standby and conditional loans, buffer stocks[e]			
Guarantees			Commercial bank guarantee, credit line guarantee[d], standby source[e], direct insurance[f]	Sovereign guarantee, guarantee of state financial institution, guarantee of international or regional financial institution
Revenues generated by the project			Toll revenues, revenues generated by secondary developments	
Retained earnings			Retained profit, warranties	
Pledging assets			Bonds	None
Capital increase by share issue			Share issue at the stock exchange	None
Value capture; using part of the added value, generated by the project, enjoyed by its beneficiaries			None	Increase in property taxes, tax surplus funding, land lease fee, special charges

[a] Investment.
[b] Funding facilities transient between investment and lending, showing some common features with each of them.
[c] Disbursement is conditional upon certain tests; its principal and interest are to be paid only after scheduled debt service of senior debt has already been duly met.
[d] Limited guarantee amount within a given credit line opened by a bank to a client.
[e] Facilities available only where well-defined conditions are met.
[f] Insurance provided by the insurance company, enjoying exclusivity.

1.2.3. Taxation

The most common financing instrument for road infrastructure is the government budget, sourced from tax revenues and possibly public borrowing. Policy decisions establish the extent of public funding for the provision of road infrastructure and road transport services as opposed to other priorities. These decisions are based on consideration of taxpayers' priorities, which are often noted during platforms established by politicians as part of the electoral process and finalized during discussions at government level. Direct public financing may also be subject to negotiation between different levels of government. For example, in a federal system (like that of Germany) some taxes may be collected by the central government, although responsibility for road infrastructure development, maintenance and operation may be at state, or regional level. In these instances, central governments distribute appropriate tax revenues to the states (*Länder*) or

regions. In some cases, allocations are earmarked for specific purposes, and the states may lobby and negotiate for more funds. A similar dynamic may exist between local (municipal) governments and regional, state or central Governments, or even between the national governments of EU Member States and the European Commission.

Table IV.2 shows the share of taxes in the price of fuel in the EU25 Member States in 2007, while table IV.3 provides information on motor vehicle tax revenues in the EU15 Member States (no data are available for other EU Member States).

Today, resources from the public sector pool of general revenue are (and are likely to remain) a primary means of financing for the transport systems (including roads) of most European countries. This means that as governments contemplate the use of alternative financing instruments and mechanisms (including PPPs), they must also determine the role of the public contribution and subsidies in these.

Many models commit governments to using general revenues to pay for road infrastructure over long time periods, and this must be accounted for when the original choice of funding model is made.

A primary complaint regarding traditional budget funding is that it does not meet the road infrastructure needs brought about by ever-growing demand. This is reflected by the observed volume and performance of traffic (see figure IV.2).

However, where this is the case it may be a manifestation of other priorities being put before the provision of road infrastructure and road transport services in the budgeting process, which in turn is the prerogative of the political decision-making process. For example, many European countries (including most TEM Member States) collect much more in road-related fiscal charges than they spend on the provision of road infrastructure (see figures IV.3 and IV.4).

Direct public financing is often seen as being inflexible and subject to political considerations. It may, therefore, be difficult to address the life-cycle costs of road infrastructure and to prioritize accordingly. Budget processes can, however, be made more flexible. For example, road infrastructure funding may be considered in the context of medium- or long-term development plans and programmes, instead that of individual projects. Governments can also make long-term commitments to these programmes and projects, and subject them to indexed adjustments. However, due to the inherent logic of annual budget processes, it is difficult for governments to apply life-cycle cost management fully in the road sector.

Table IV.2 - **Fuel prices "at the pump" in the EU25 in 2007** *[Source: ERF, 2009]*

	Unleaded		Diesel	
	€/litre	o·f which taxes (%)	€/litre	o·f which taxes (%)
BEL	1.28	64.70	0.9:8	50.80
CZE	1.03	56.70	1.00	51.70
DNK	1.26	62.80	1.05	54:90
DEU	1.30	66.40	1.11	58.40
EST	0.86	48.80	0.83	44.50
GRC	0.98	50.10	0.95	44.80
ESP	1.02	53.20	0.94	52.70
FRA	1.25	64.80	1.06	56:90
IRL	1.10	57.30	1.06	51.80
ITA	1.28	60.50	1.13	53.70
CYP	0.93	42.30	0.87	40:90
LVA	0.90	51.60	0.88	44.50
LTU	0.88	43.30	0.85	44.50
LUX	1.09	55.10	0.92	46:90
HUN	1.08	55.80	1.02	48.70
MLT	1.04	45.20	0.94	41.30
NLD	1.42	62.60	1.06	48.00
AUT	1.08	57.50	1.00	53.00
POL	1.06	5'9.00	0.95	50.70
PRT	1.30	62.00	1.05	52.00
SVN	1.03	55.30	0.96	50.60
SVK	1.09	58.10	1.08	55.60
FIN	1.26	64.40	0.99	50.70
SWE	1.22	57.'90	1.09	57.50
UKR	1.37	67.70	1.41	66.30

Table IV.3 - **Motor vehicle tax revenue in the EU15** *[Source: ERF, 2009]*

	AUT	BEL	DNK	DEU	ESP	FRA	GRC	IRL	ITA	NLD	PRT	FIN	SWE	UKR
	€ bn	€ bn	DKK bn	€ bn	€ bn	€ bn	€ bn	€ bn	€ bn	€ bn	€ bn	€ bn	SEK bn	£ bn
	2006	2004	2008	2007	2007	2007	2006	2005	2007	2007	2006	2007	2008	2007
Purchase or transfer VAT on vehicles. servicing/repair parts. tyres	2.510	4.291	n.a.	26.800	6.497	13.458	n.a.	0.058	19.560	2.643	1.200	1.219	15.000	1.283
New vehicles sales	n.a.	1.176	n.a.	n.a.	4.027	7.617	0.742	n.a.	n.a.	0.820	n.a.	n.a.	n.a.	n.a.
Second hand vehicles sales	n.a.	0.074	n.a.	2.100	0.071	0.627	0.115	n.a.	n.a.	0.089	n.a.	n.a.	n.a.	n.a.
Services and repair+tyres	n.a.	1.416	n.a.	4.200	n.a.	5.215	n.a.	n.a.	n.a.	1.573	n.a.	n.a.	n a.	n.a..
Accessories and spare parts	n.a.	0.865	n.a.	1.300	2.399		0.18	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Fuels & Lubricants	5.523	5.765	15.000	39.300	18.601	33.673	2.820	2.339	33.370	6.943	3700	3.314	50.000	24.510
Sales & registration taxes	0.53	0.319	24.000	n.a.	1.761	1.891	0.997	1.712	1.320	0.797	1.175	1.412	n.a.	n.a.
Annual ownership	1.510	1.463	9.626	8.900	2.412	1.109	0.819	0.802	6.210	2.766	0.080	0.585	11.850	538
Driving license fees taxes	n.a.	0.007	n.a.	0.008	0.099	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.07
Insurance taxes	0	0.449	2.096	3.520	0.752	3.900	n.a.	n.a.	4.550	n.a.	n.a.	0.272	3.350	n.a. a
Tolls	1.300	n.a.	0.413	n.a.	n.a.	8.838	n.a.	0.039	1.180	n.a.	n.a.	n.a.	n.a.	n.a.
Customs duries	n.a.	0.093	n.a.	0.48	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.125	n.a.	n.a.	n.a.
Other taxes	0.57	0.520	n.a.	0.29	0.391	1.163	n.a.	0.136	4.240	1788	0.090	n.a.	7.250	3.710
TOTAL	12.236	12.148	50.490	80.000	30.513	64.033	5.673	5.086	70.430	17.419	6.370	6.802	87.450	46.5
€bn	12.3	12.1	67	80	30.5	64	5.7	5.1	70.4	17.4	6.4	6.8	7.9	52.6
Total = € 378 bn														

Figure IV.2 - Transport growth in the EU27 in the period 1995 to 2006 *[Source: ERF, 2009]*

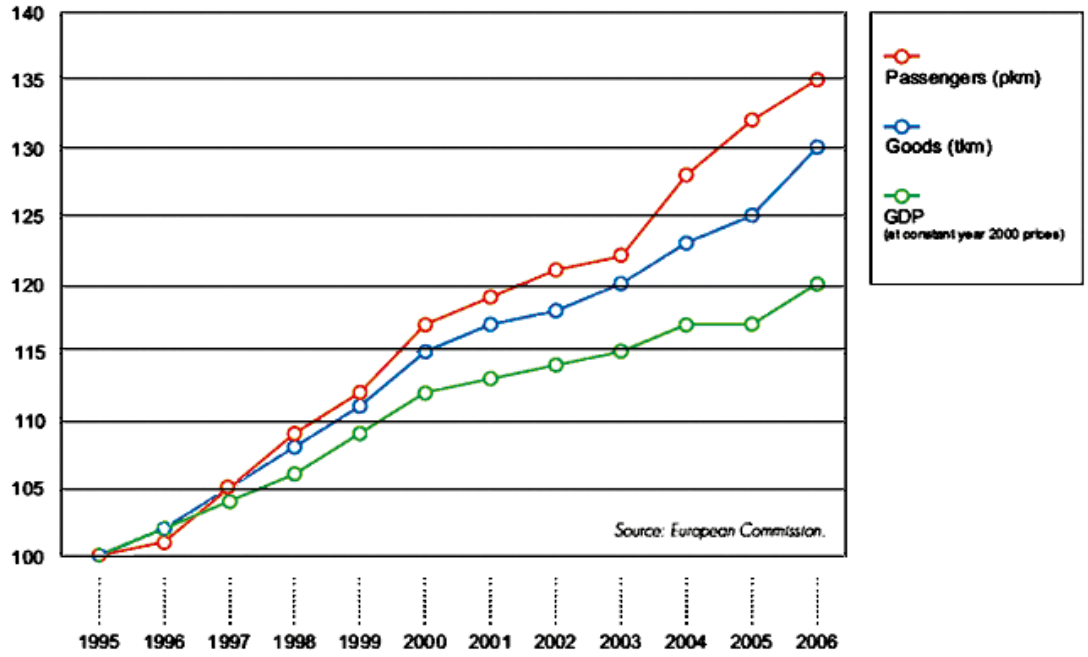


Figure IV.3 - Investment in road infrastructure in selected EU Member States in 2007 (EUR x10⁶)
[Source: ERF, 2009]

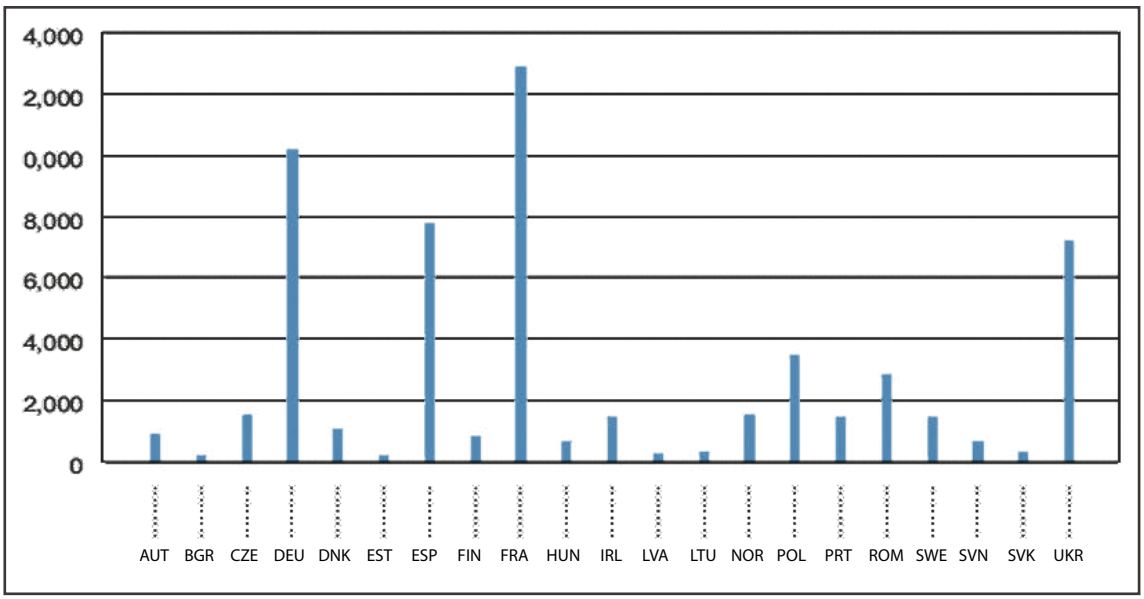
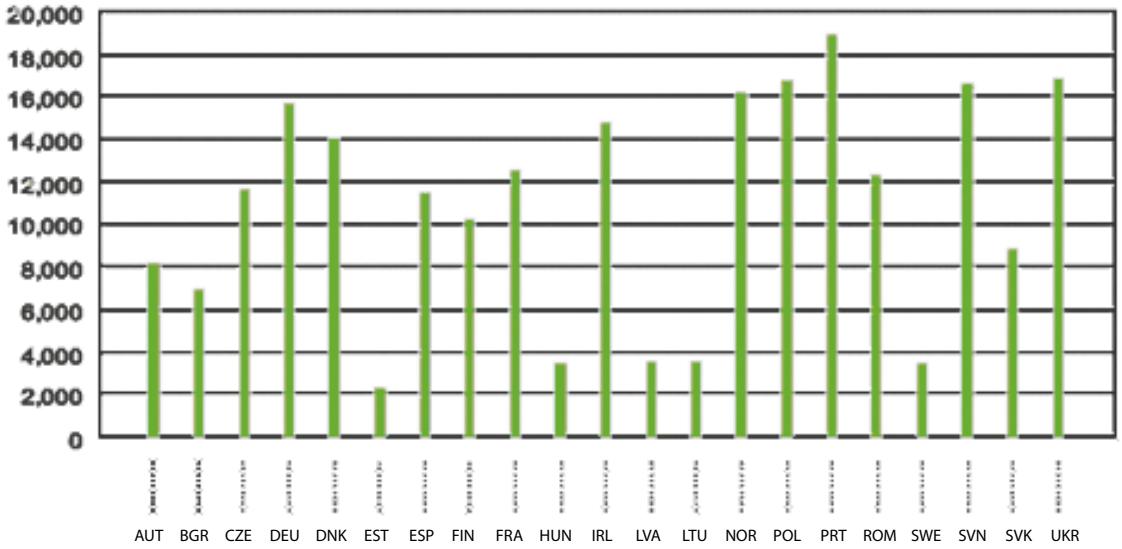


Figure IV.4 - **Investment in road infrastructure in selected EU Member States in 2007 (EUR/km)**
[Source: ERF, 2009]



1.2.4. Grants from the EU

The TEM and TERN networks, as developed and defined by the EU, substantially overlap with each other. The TERN was defined by Council decision 93/629/EEC of 29 October 1993, and is a project aimed at improving the internal road infrastructure of the EU. The TERN project is one of several Trans-European Transport Networks (TEN-T).

As laid out by the EU Council decision, the TERN is to include motorways and high-quality roads — whether existing, new or to be adapted — which share one or more of the following characteristics:

- they play an important role in long-distance transport;
- they bypass the main urban centres on the routes identified by the network;
- they provide interconnection with other modes of transport;
- they link landlocked and peripheral regions to central regions of the EU.

Trans-European Transport Networks are co-financed by the following EU instruments (see table IV.4):

- grants from the Trans-European transport budget of the EU;
- grants from the Cohesion Fund (CF) budget, in countries eligible for intervention by the fund;
- grants from the European Regional Development Fund (ERDF), with priority for Convergence Objective regions;
- loans and guarantees from the European Investment Bank (EIB).

Table IV.4 - Planned funding sources of the comprehensive TEN-T in EU27, 2013 horizon

Transeuropean Transport Network	1996-1999 EU27	2000-2006 EU 27	2007-2013 EU 27
Cost (€ billion) TEN-T Basic Network - New Member States (EU 12) - Old Member States (EU 15)	106 5 101	302 27 275	390 72 318
Community contribution (€ billion) Programme TEN-T Cohesion Fund ERDF (regions convergence) EIB Loans and guarantees	2.23 8.23 7.51 26.50	4.43 16.50 8.6 41.4	8.013 34.8 9.4 53.00
Total Community contribution (€ billion) Grants Grants and Loans	18.06 (17%) 44.56 (41 %)	29.53 (9.8%) 70.93 (22.5%)	52.2 (13.4%) 105 (27%)
Other resources (national)	63.4 (59%)	231.1 (76.5%)	285 (73%)

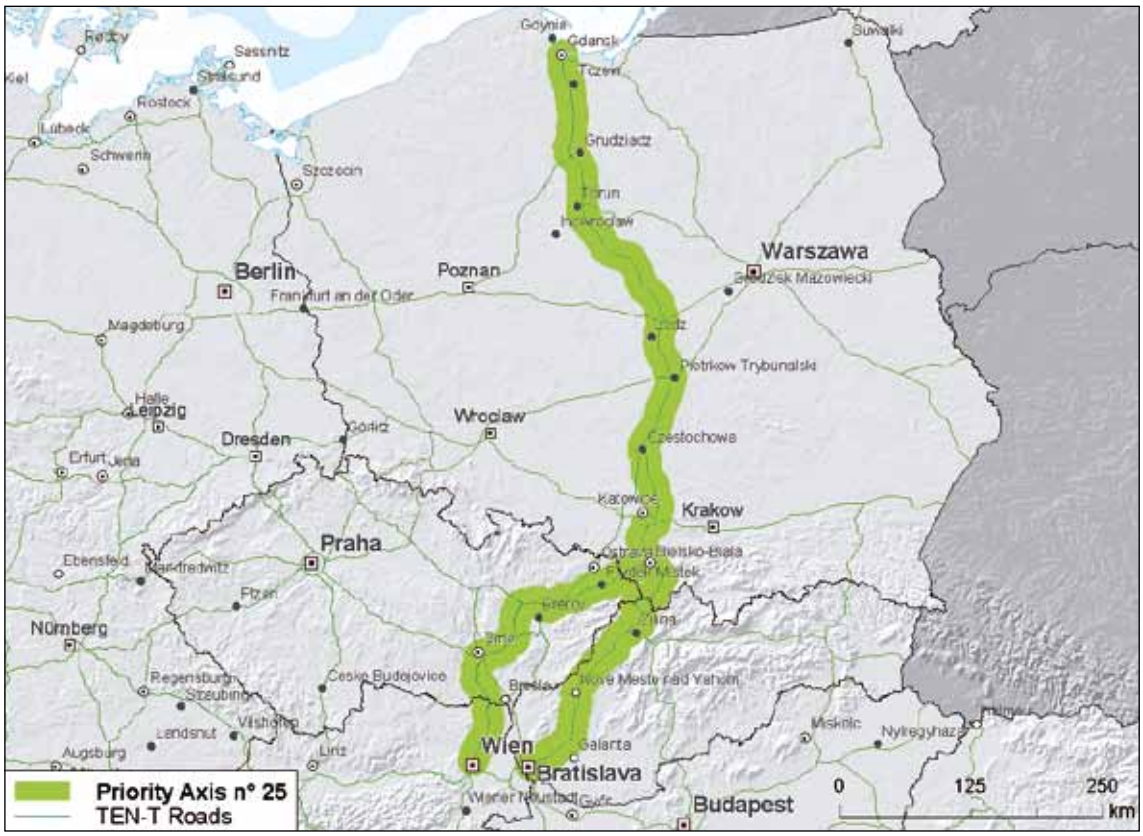
Grants from the Trans-European network budget are mainly allocated for the co-financing of 30 TEN-T priority projects. Only one of these projects (the TEN-T Priority Project 25) is taking place on the TEM network (see figure IV.5).

The Structural Funds, among them the ERDF and the CF, are funds allocated by the EU for two related purposes: support for the poorer regions of Europe and support for integrating European infrastructure, especially in the transport sector. The timeframe for the programmes that are currently under way runs from 1 January 2007 to 31 December 2013, with budgets of EUR 277 x 10^9 for the Structural Funds, and EUR 70 x 10^9 for the CF.

The ERDF supports programmes addressing regional development, economic change, enhanced competitiveness and territorial cooperation throughout the EU. Funding priorities include research, innovation, environmental protection and risk prevention, while infrastructure investment retains an important role, especially in the least-developed regions [including in the new Member States (NMS) of the TEM/EU]. The CF contributes to interventions in the field of the environment and TEN-T. It applies to EU Member States with a Gross National Income (GNI) of less than 90 % of the EU average, which means it covers the NMS (EU12) as well as Greece and Portugal. Spain remains eligible for the CF on a transitional basis.

The new strategic approach is the method by which overarching priorities for the Structural Funds are set at an EU level that Member States and regions then transform into national priorities. The overarching priorities at EU level have been established in the Community Strategic Guidelines (CSG), setting the framework for all actions that can be taken using the funds. Within this framework, each Member State has its own National Strategic Reference Framework (NSRF) which sets its priorities, ensuring linkages with its national policies. Finally, the Operational Programmes for each region within the Member State are drawn up to reflect the needs of the regions, constrained only by the NSRF.

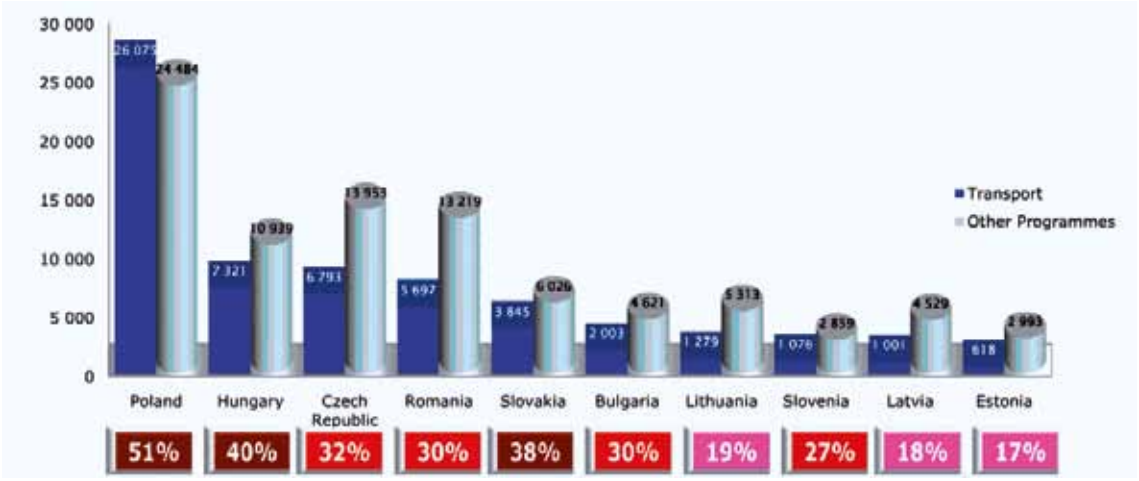
Figure IV.5 - **TEN-T Priority Project 25**



According to the transport-related Operational Programmes approved for 2007 to 2013 in TEM Member States, it is intended that a considerable amount of available EU grants be allocated to co-finance road/motorway projects that aim to increase capacity and to improve the quality of services both on the TEM network and on the TERN (see figures IV.6 and IV.7).

Figure IV.6 - **EU funds devoted to NMS in Central and Eastern Europe in the period 2007 to 2013 (EUR 181,734 x 10⁹)**

Figure IV.7 - **EU funds devoted to transport infrastructure development in EU10 at the national level in the period 2007 to 2013**



1.2.5. User charges

User charges are levied for the purchase of specific services. Where road transport is concerned, the term usually refers to tolls and tariffs paid directly by road users (car owners and hauliers) or shippers. Some European countries use *vignettes*, a flat-rate permit that when purchased allows the holder to use a public road system, or certain parts of it (e.g. motorways and expressways), for a predetermined period of time. Tolls constitute a considerable source of income for road financing in the EU and TEM Member States (see table IV.5).

There is sometimes debate about what differentiates a user charge from a tax. Technically, taxes are not seen to be directly related to the consumption of a specific goods or service, while a charge is. Thus, in reality, taxes on fuel (especially those levied on top of general taxes, such as VAT) could well be seen as road user charges since the revenues result from the use of roads. Indeed, a significant portion of most governments' revenue comes from taxes and charges levied on road transport, vehicles and fuel. Fiscal charges and taxes related to road transport can be added to general government revenues — as is usually the case — or earmarked for use in the road sector (via appropriate road funds). A road fund differs from general taxation funding in the sense that a special account is created in which revenues that can only be spent on road infrastructure are deposited. These revenues can come from road-related taxes as well as other forms of taxation. So-called "second generation" road funds are based on the principle that roads are considered a utility. An important characteristic distinguishing them from previous (first generation) road funds is the separation of the utility charge related to road use and a tax paid into the general public revenue. However, road funds are seldom used in European countries.

User charges may be employed with different, and potentially conflicting, objectives in mind. One purpose may be to compensate the infrastructure provider for operation and maintenance costs (including some part of the external costs); another may be up-front financing of a project or to generate profits, which will inevitably provide the operator with incentives to increase traffic levels. Alternatively, user charges may be set for demand-management purposes, implying a desire to limit the use of infrastructure.

- replace the alpha-2 codes by alpha-3 codes
- replace "n.a." by "NA"

Table IV.5 - Net toll revenues in EU Member States (EUR x10⁶) [Source: ERF, 2009]

Country	2006	2007	2008
BEL	49.6	41.60	49.20
DNK	385.00	396.80	437.00
GRC	154.00	155.00	170.50
ESP	1,677.40	1,821.95	1,992.50
FRA	6,406.60	6,849.00	7,383.60 (3)
ITA	4,071.24	4,333.40	4,473.80 (3)
NLD	25.40	22.59	24.50
AUT	1,192.00	1,250.28 (2)	1,435.00 (4)
PRT	639.90	664.80	713.00
HUN	97.20(1)	114.80	155.60
SVN	139.40	151.96	172.70
NOR	362.40	388.10	386.20
HRV	198.10	226.94	258.60
POL	n.a.	n.a.	175.50
UKR	n.a.	81.00	78
YUG	n.a.	176.50	182.80
CZE	n.a.	n.a.	198.50
DEU	n.a.	3,078.00	3,359.30
SVK	n.a.	n.a.	74.94 (5)

Source ASECAP

(1) The revenue collected by AAK Zrt on motorways in Hungary
(2) Preliminary value for 2006
(3) Preliminary value
(4) Preliminary value 2007
(5) Revenue from vignette on the whole charged network including motorways, expressways and selected 1st class roads.

Tolls are often collected by the entity responsible for either the provision or the maintenance and operation of the road infrastructure. In other instances, different state entities (or dedicated private companies) may collect tolls, which may be specifically earmarked for transfer to the road provider. Where charges are not earmarked, they are added to general government accounts and thus to non-specific public policy priorities. General packet radio service (GPRS) and satellite-based technology is increasingly allowing for road tolling systems that are network- or system-wide, aimed at charging users for their exact use of the system.

Distance-based tariffs and electronic toll collection (ETC) is currently being used for HGV user charges on motorways in Europe, most notably in Germany, Austria, the Czech Republic, Slovakia and Switzerland. This is supported as a matter of policy by the EU. Other free-flow tolling technologies are used at toll gates on motorways in France, Italy, Spain and Greece. London, Oslo, Bergen, Trondheim, Rome and Stockholm apply charges to drivers in the urban area with a view to managing demand. However, for the moment, there is still no proven technology for effectively pricing the use of entire road networks for all users at the point of use, although there

is great potential for the deployment of satellite-based systems and advances in on-board vehicle equipment.

1.2.6. Non-user funding

The leasing of space for services related to road infrastructure use can also provide sources of revenue. These services can include restaurants, food outlets, stores, parking lots, motels and service stations. This financing source has considerable potential to provide revenues without necessarily adding "new" costs where the road user or taxpayer is concerned.

A further possible source of non-user funding of road infrastructure development involves taxing increases in property values that a given project may bring about — in other words charging the indirect beneficiary as opposed to the direct user. This creates a motive for the private sector, such as the construction industry or certain business sectors (e.g. supermarkets, warehouses, multimodal terminals, etc.), to pay for having the connecting road infrastructure built. Examples exist where property developers have paid for parts of the cost of building connecting road infrastructure.

1.2.7. Borrowing and private sector involvement

Borrowing means that payment is deferred, and consequently that future rather than present taxpayers or road users will have to pay. Road assets typically have huge construction costs and very long lifespans. This may provide an obvious rationale for borrowing in order to even out payments among beneficiaries over time. In most European countries, public borrowing is, however, not specifically linked to spending on transport.

Sovereign governments should borrow to smooth national consumption or to undertake public investment projects (among them socio-economically efficient road projects) that they could not otherwise finance. The ability of a sovereign government to borrow on international credit markets depends on its perceived ability to repay and on the incentives it will have to do so. In recent years, the theoretical literature on sovereign borrowing has dealt mainly with the second of these issues: the country's willingness to repay. The question at the heart of the sovereign borrowing literature was why governments have an incentive to repay their debts with foreign creditors within the existing international legal framework. There is no bankruptcy code for sovereign borrowers and lenders cannot take control of a country nor seize a significant amount of its assets in the event of a sovereign default.

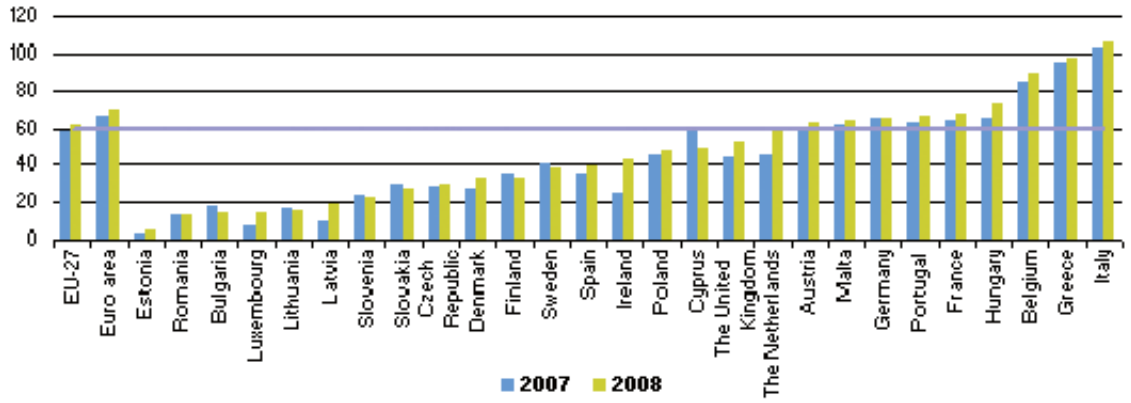
Economists have offered two main explanations for why governments may want to repay: reputation (exclusion from future credit) and direct sanctions. While sovereign governments' willingness to repay is an important factor, lenders will naturally also be concerned about their ability to repay. Here, issues of both long-term solvency and short-term liquidity have to be considered and assessed carefully.

Turning to empirical implications, the repudiation models that allow for the existence of lending mostly predict credit rationing in the form of a debt ceiling. This upper bound of the debt a country is able to incur depends on the costs it has to pay in the event of a default. These costs are usually related to the links that a country has with the world (including reputation spillovers); trade and financial linkages such as foreign direct investment (FDI) are specific examples. The bigger a country's output, the larger the punishment that can be imposed through trade sanctions and collateral seizure. Political instability should also negatively affect the amount a country can borrow. The shorter the amount of time a government can expect to be in office, the higher its incentives to take advantage of the immediate benefits of higher loans and to discount any future

sanctions. Lastly, global factors, in particular the world interest rate, will affect the cost of servicing the debt stock and the temptation to default. Income variability should have a positive effect on creditworthiness: countries that are more prone to shock have a higher interest in maintaining access to credit markets and are therefore less likely to default.

Economic performance varies from state to state. The Growth and Stability Pact governs fiscal policy within the EU. It applies to all Member States, with specific rules which apply to the Eurozone members that stipulate that each state's deficit must not exceed 3 % of its GDP and that its public debt must not exceed 60 % of its GDP (Maastricht criteria). However, many larger members have consistently run deficits substantially in excess of 3 %, and the Eurozone as a whole has a debt percentage exceeding 60 % (see figure IV.8).

Figure IV.8 - General Government debt (general Government consolidated gross debt as a percentage of GDP)

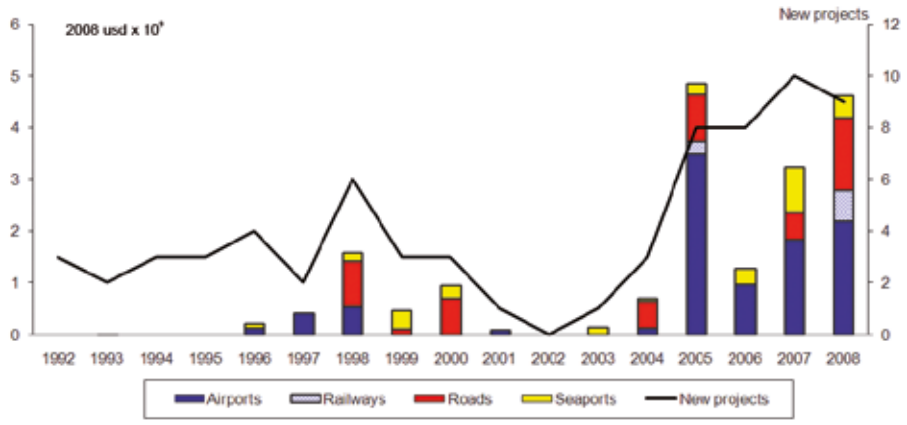


Borrowing can also be undertaken by independent (in some cases private) infrastructure providers. Other than ministries and agencies, the various alternative corporate structures dealing with public roads are likely to be entitled to undertake independent borrowing in order to finance their development, maintenance and operational needs. In addition, PPP arrangements where financing is the responsibility of the contractor typically involve raising resources by way of a combination of equity and loans. Private borrowing is often not registered on public balance sheets, although it may still create obligations for governments.

Borrowing may affect the costs of road infrastructure provision and road transport services insofar as private entities are typically subject to higher interest rates than are sovereign states or sub-national governments. Furthermore, in some instances such as not-for-profit enterprises, the need to maintain a good credit rating for private borrowing may impose discipline on the road infrastructure and road transport services provider. Apart from general public borrowing, the public sector also has the option of creating special financial instruments, such as bonds, dedicated to the development of given infrastructure. This has been employed particularly in the United States of America, where special instruments have recently been created to leverage public sector grants in order to access financing from capital markets.

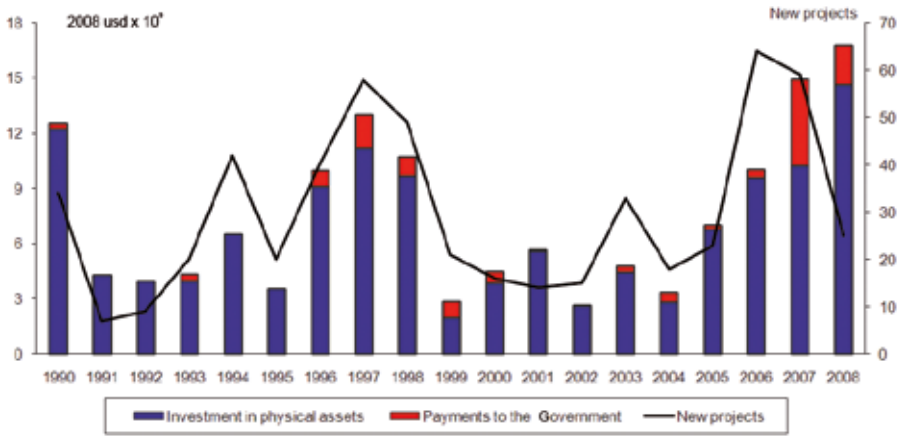
In the search for additional resources, some governments have made serious attempts to attract private capital in road funding under various PPP schemes (see figures IV.9 and IV.10)

Figure IV.9 - Investment commitments to transport projects with private participation in Europe and Central Asia, by subsector, in the period 1992 to 2008 [Source: World Bank and PPIAF, PPI Project Database]



Note: The PPI Project Database records no transport projects with private participation or investment commitments to such projects in the region in the period 1990–91.

Figure IV.10 - Investment commitments to road projects with private participation in developing countries, by type of investment, in the period 1990 to 2008
[Source: World Bank and PPIAF, PPI Project Database]



Sources of private finance are equity (the capital held by a project company's shareholders) or debt (the capital provided by lenders). Private investors apply a project finance approach to road investment: their commitments rely on the performance of the project. Revenues to cover the costs of investments can come from direct user charges such as tolls, from shadow tolls (as a function of traffic performance) and/or from periodical availability payments of fees related to performance and the quality of services provided, paid by the client (public) authority, or a mixture of these sources.

Public–private partnership road projects are highly leveraged capital-intensive projects. Lenders, which provide the major portion of financing in the form of debt instruments, undertake loan approval processes to examine the various aspects of the projects that could influence debt servicing capability while making credit decisions. In view of this, project sponsors can also assess beforehand how desirable the project is from the debt-financing perspective in order to facilitate the timely arrangement of debt financing and to avoid funding problems.

1.2.8. Criteria for selecting and evaluating funding sources

Each of the sources mentioned above (in chapter 1.2.7) has potential applicability in a variety of settings. Whether a particular source is of potential use in a particular social and economic environment depends on a variety of factors, many of which are contextual and unique to individual conditions. Contextual factors requiring review in the search for new funding sources include the following:

- state, regional and local governance traditions and philosophies of taxation and public spending;
- the types of road projects and road transport services to be funded;
- the elements for which funding is being sought (e.g. ongoing road agency development programmes or individual road projects);
- the type of source that is desired and that is appropriate (e.g. pay-as-you-go funding or debt financing);
- national, regional and local perspectives on the role of road transport in the community now and in the future.

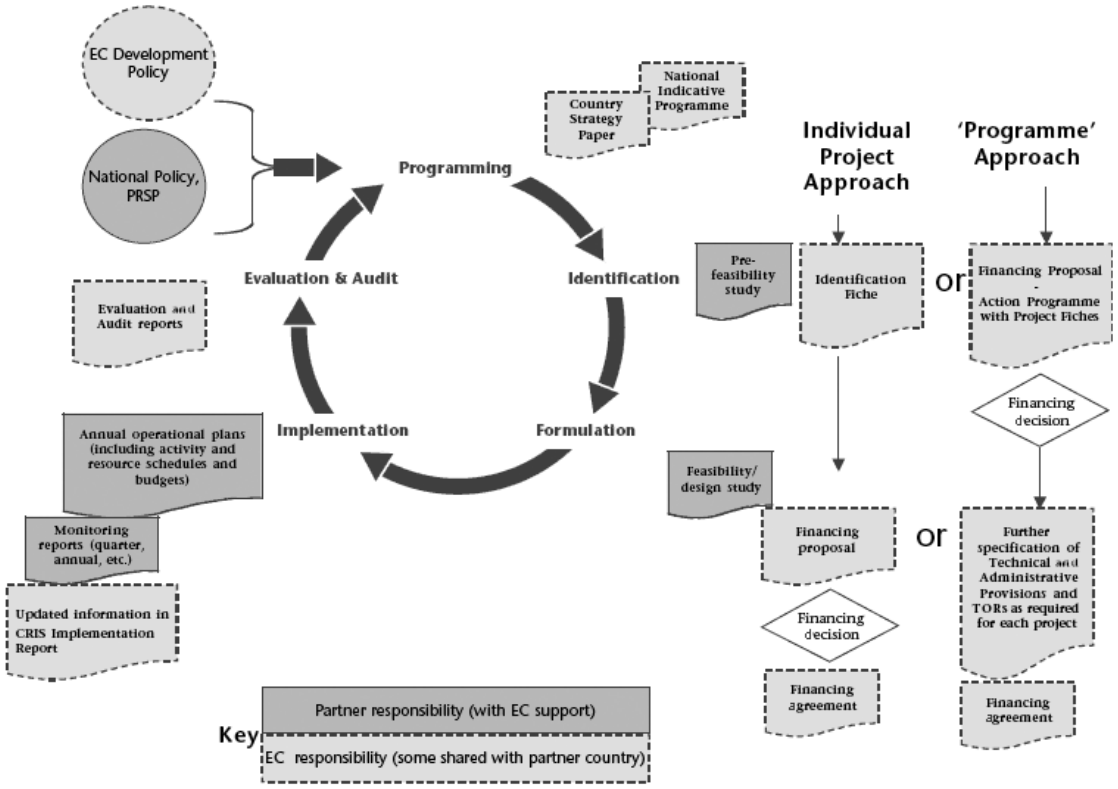
A good understanding of these contextual factors is an important prerequisite in the search for enhanced road network development funding. Once contextual factors are understood, all stakeholders must come to a similar understanding of the general advantages and disadvantages of available alternative funding sources as well as an understanding of how these alternatives satisfy a set of widely used criteria. Among the most important of these criteria are the following:

- revenue yield adequacy and stability;
- cost efficiency in the application of sources;
- equity in the application of the alternatives across demographic and income groups as well as the jurisdictions involved;
- economic efficiency in balancing "who pays" with "who benefits" from road investments that are under consideration;
- political and popular acceptability;
- technical feasibility.

Among these criteria, revenue yield is a principal consideration. An enormous amount of effort is required to enact and sustain funding for any public service, including provision of roads and road transport services. When these efforts are undertaken, sponsors should be certain that the resulting flow of funds will be adequate to meet funding requirements, be reliable and be predictable.

Financing proposals and decisions at programme or at project level have a crucial position in the life cycle of operations and should be supported by appropriately prepared pre-feasibility and/or feasibility studies (see figure IV.11).

Figure IV.11 - **Financial proposals and financial decisions supported by pre-feasibility and/or feasibility studies in the life cycle of operations**

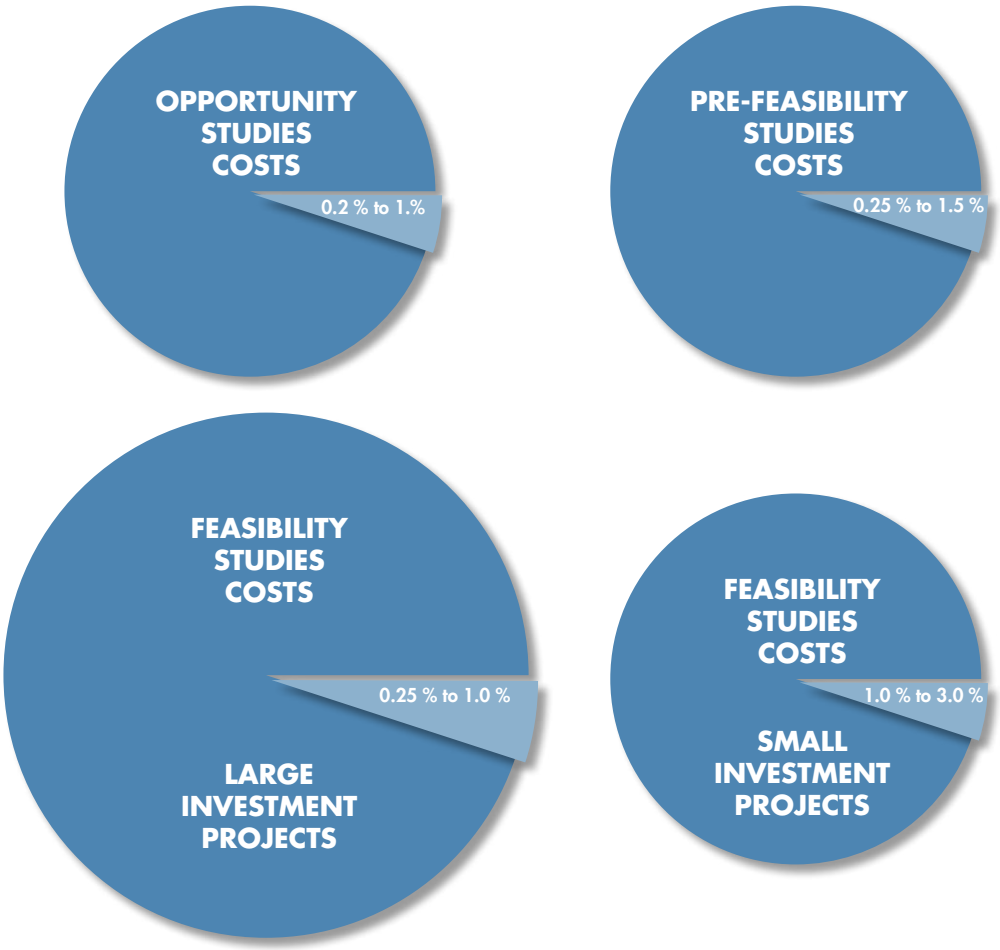


Pre-feasibility and/or feasibility studies need to be prepared at the identification and formulation phases of the cycle of operations, supporting financial decisions. The aim of a pre-feasibility study is to provide decision-makers in the government with sufficient information to justify the acceptance, modification or rejection of the proposed project idea, and to determine the scope of follow-up planning work (i.e. a feasibility/design study). The aim of a feasibility/design study is to provide decision-makers in the government with sufficient information to justify the acceptance, modification or rejection of the project proposal and, if deemed feasible, adequate information on which to proceed to conclude a funding model and/or financing agreement.

Acknowledging that the gestation time of a capital intensive road infrastructure project is generally very long (5 years to 12 years), pre-feasibility and/or feasibility studies are considered to be important tools and support measures for investment and funding decisions and should be launched at an early stage in the operations cycle. The cost of these studies is relatively small (see figure IV.12) so they can be carried out and financed even in a period of severe budgetary constraints.

The objective of a feasibility study is to find out whether an identified project can be taken to fruition, and if so, how. A feasibility study should tell management: (i) whether the project can be implemented; (ii) what the alternative solutions are; (iii) what the criteria are for choosing between the alternative solutions; (iv) whether there is a preferable alternative. The management in charge makes its decision on the basis of the outcome of a feasibility study. The main elements of all feasibility studies are economic and financial cost–benefit analysis and environmental impact assessment.

Figure IV.12 - **Estimated cost of pre-feasibility and feasibility studies expressed as a percentage of project cost**



1.2.9. Summary of sources and road financing schemes

Figure IV.13 provides a schematic outline combining the various means and sources of road funding described in chapter 1.2.

It shows a downward flow of available resources beginning with initial sources of financing, through the various models for road infrastructure development, maintenance and operation, and finally to the road transport services. The dashed lines indicate where a given flow is one of the various options available. Private capital is shown in blue. For example, road user charges can be applied to any of the mechanisms noted on figure IV.13.

Figure IV.13 - A framework for the provision and financing of road infrastructure and related services
[Source: OECD/ITF, 2008]

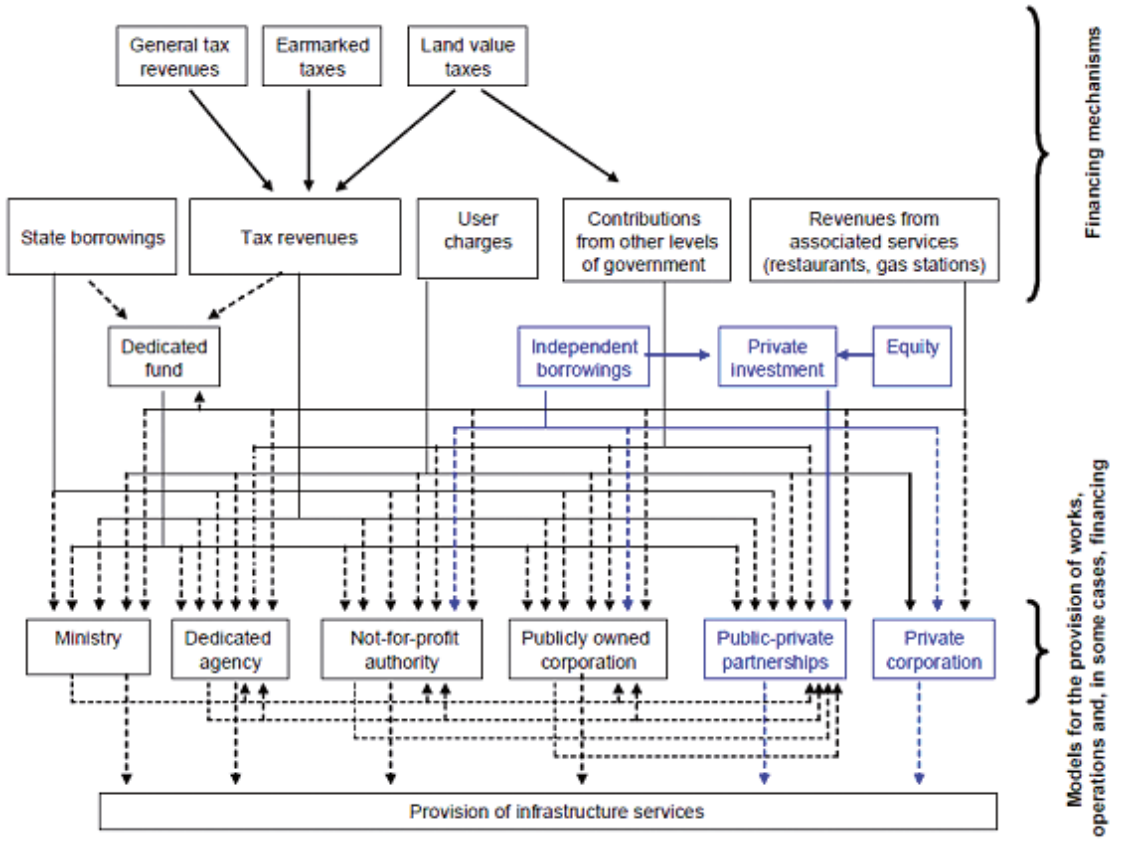


Figure IV.13 illustrates the claim that the various road financing mechanisms are not intrinsically linked to given models for the provision of road infrastructure and road transport services. It also reveals the complexity of the inter-relationships between these mechanisms and sources. In determining which means to use to provide a given road infrastructure project, governments obviously have numerous options available to them. Furthermore, various models may be employed concurrently, even where the same infrastructure is concerned.

2. SUMMARY OF EUROPEAN EXPERIENCE IN ROAD FINANCING

2.1 Road financing needs

There are initially two key drivers for road infrastructure investment requirements. One is the existing stock of road infrastructure assets, which creates a demand for periodic renewal. The second is GDP growth, which in turn is a function of such factors as population increase, per capita income and productivity growth. Many projections have been made claiming that the need to renew the current large stock of road infrastructure in combination with growing demand is creating substantial pressure to invest in road transport infrastructure, especially in the NMS of the EU and other TEM Member States.

There are, of course, many caveats behind these projections. In particular, the demand for new road infrastructure capacity will be affected by a number of other aspects. Demographic factors, including population change, migration and, in particular, people's mobility and choice of where to live and work, are important determinants. For example, a shift in population concentrations from rural to urban areas also creates a demand for commuting which may, in turn, affect the modal split and modify the need for road investment.

Trade patterns will also play a key role. The growth of emerging economies is already altering the spatial organization of trade, with resulting impacts on transport systems. The result for governments may be a need to strategically enhance infrastructure in areas most affected by new trade patterns. However, even there, emerging trends may have very different implications for the various transport modes. For example, recent studies have shown important decreases in the weight/value ratio of trade. Vertical specialization is also increasing trade in inputs for manufacturing. Timeliness in transport is an increasingly essential factor, partially driven by consumers' tastes, especially where high-value products are concerned. These tendencies together explain the modification of the modal split in surface transportation observed in Europe throughout the second half of the 20th century.

Another determinant concerns the relative growth in passenger and freight road transport. Since Heavy Goods Vehicles (HGVs) require a higher standard of road structure (e.g. road surfaces with increased bearing capacity), the growth rate of road freight transport is particularly important where cost expansion is concerned. The single most important determinant of future demand for road financing, however, will be the governments' choice of pricing policies. Apart from influencing the amount of financing available for the provision of road infrastructure and road transport services, different levels of user charges, such as fuel taxes and tolling, may create different road traffic volumes and traffic growth rates.

2.2 Traditional financing of roads

The commonest way of funding road infrastructure provision is through allocation from government budgets. During the annual budgetary process, resources are allocated to different parts of the public sector, including that concerning roads. Also, governments decide how to raise revenue by charging and taxing activities in different parts of society, including taxing activities related to road use. With a few exceptions, such as the United States of America and Japan, most countries do not directly link expenditures to revenues raised in the same sector. As discussed above, public revenues generated by road-related taxes are often greater than total public expenditure

on roads, meaning that they provide an important source of funding for governments to use on completely unrelated priorities. At the same time, it should be acknowledged that the total cost associated with the use of any transport mode, including roads, is seldom fully quantified. It is therefore not obvious what the balance between the social costs and benefits would be, if it could be estimated at all.

Table IV.6 - Shares of revenue from road-related taxes and fees in selected European countries in 1998 [Source: The Unite Project, EC]

Country	Vignettes	Tolls	Fuel Tax	Vehicle Tax	Sale or Registration Fee	Other	Insurance	Road Revenues as % of GDP
Austria	6	5	60	19	9	0	0	3
Belgium	2	0	57	20	5	1	14	3
Denmark	0	1	26	16	53	0	4	3
Finland	0	0	60	28	12	0	0	3
France	0	15	67	18	0	0		3
Germany	1	0	78	21	0	0	0	2
Great Britain	0	1	80	19	0	0	0	4
Greece	0	26	54	5	14	0	0	5
Hungary	0	8	84	2	0	5	0	4
Ireland	0	1	51	16	32	0	0	3
Italy	0	8	75	14	0	0	3	4
Luxembourg	1	0	90	7	0	0	2	2
The Netherlands	1	0	53	20	26	0	0	3
Portugal	1	9	61	27	0	2	0	4
Spain	0	8	73	11	8	0	0	3
Switzerland	6	0	67	24	0	3	0	2
Sweden	1	0	82	16	1	0	0	2
Average Share	1	5	66	17	9	1	1	3

Any international comparison of spending on, and revenue from, the use of infrastructure is by nature uncertain. Two main problems are particularly pertinent. One is related to the different tiers — central, regional and local — of government. Differences in responsibilities across these levels make it difficult to know whether all relevant information about spending and/or revenue is available, in particular since the duties given to the respective tiers may differ between countries. The second problem is that countries may differ in their definition of certain concepts. Often, spending on investment is paid for during the year that resources are used, but some countries have an active balance sheet with annual down payments of initial loans. Furthermore, the distinction between reinvestment and new investment is often imprecise.

With these factors in mind, table IV.6 summarizes the proportions of revenue collected in 1998 from different sources within the road sector in selected European countries. Although there is significant variance between countries, an average of 66 % of revenue came from fuel taxes

and 17 % from taxes on vehicle ownership. Revenues from the roads sector average 3 % of GDP in these countries.

Table IV.7 - Road-related revenue and its components (percentages)
[Source: Adapted from IRF (2004), World Road Statistics]

Country	Year	Tax on purchase	Tax on ownership	Tax on use (fuel)	Toll	Other	Road Revenues vs. all tax revenues
Austria	2002	8	24	53	13	2	2.9
Costa Rica	2002	58	12	0	2	28	n/a
Croatia	2002	19	3	13	10	55	5.2
Cypress	2002	7	1	29	0	63	5.9
Denmark	1999	49	19	29	0	3	5.5
Ecuador	1999	45	35	3	17	0	n/a
Ethiopia	2001	0	0	0	0	0	3.5
Finland	2002	20	10	64	0	6	14.5
France	2000	12	13	66	9	0	18.1
Ghana	2001	2.2	2.2	91.3	2.2	0	n/a
Georgia	2002	0	10.5	86	3.5	0	17
Great Britain	1999	15	13	61	0	11	10.6
Greece	1998	73	0	20	7	0	2.5
Hong Kong	1998	28	24	45	0	3	4.7
Iceland	2002	22	21	57	0	0	10.6
Ireland	2001	42	0	58	0	0	n/a
Italy	1999	14	10	16	1	59	n/a
Japan	2002	7	40	53	0	0	8.25
Kyrgyzstan	2002	0	11	89	0	0	2.6
Latvia	2002	0	16.5	83.5	0	0	n/a
Luxembourg	2002	0	100	0	0	0	0.5
Malta	2002	65	0	33.5	0	1.5	4.2
Mongolia	2002	11	0	89	0	0	n/a
The Netherlands	1999	26	30	44	0	0	2.2
Norway	2002	28	17	43	9	3	4.9
Slovenia	2002	3	9	88		0	10.1
Sweden	2002	0	11	46	0	43	9.2
Switzerland	2002	12	19	66	0	3	6.4
Ukraine	2002	0	28	0	0	72	n/a
USA	2001	1	26	66	7	0	n/a

Similar information from a different source — the International Road Federation's "World Road Statistics" [Source: IRF, 2004] — is summarized in table IV.7, which provides information

on the significance of revenue from the roads sector seen in the perspective of aggregate public sector tax revenue. These taxes provide on average some 7 % of total revenue although the spread is substantial, going from a minimum of less than 1 % (Luxembourg) to a maximum of 18 % (France). It is worth noting that there are discrepancies between the data sources of tables IV.6 and IV.7.

In Europe, revenues derived from road users greatly exceed spending in the sector, by 2-to-1 on average in Western Europe and by up to 3-to-1 in some other European countries. The high degree of road funding that is derived from fuel taxes may be one reason why, in several countries, most roads are not tolled. If the public thinks that roads have already been paid for by way of fuel taxes, they will be reluctant to pay again in the form of tolls. Further arguments against user charging is that the public road network is perceived as a public good, and that there are efficiency motives for not charging for the use of non-congested roads.

Many countries finance part of their road transport infrastructure through tolls. Table IV.6 indicates that Greece (26 %), France (15 %), Portugal (9 %), Hungary (8%), Italy (8 %) and Spain (8 %) garnered a substantial share of their road-related revenue from tolls in 1998. The split of revenue sources has changed more recently. The current situation in TEM countries is very similar (see table IV.8). Fuel taxes are still, however, the main source of income in these countries. Furthermore, tolling does not necessarily mean that the proceeds are earmarked for roads, although that is often the case.

Table IV.8 - Toll revenues generated in TEM countries that are applying toll collection systems and are members of, or associated to, the European Association with tolled motorways, bridges and tunnels (ASECAP) [Source: ASECAP, 2009]

TEM countries	Com-panies	Toll road network (km)	AADT light vehicles (vehicle/day)	AADT heavy vehicles (vehicle/day)	AADT total (vehicle/day)	Net toll revenue in 2008 (EUR x10^6)
Austria	3	2,103.7	30,584	4,214	34,798	1,516.00
Croatia	4	1,198.7	12,031	1,764	13,795	266.78
Greece	1	916.5	7,782	1,342	9,123	100.00
Hungary[a]	3	900	20,402	5,420	25,822	171.40
Poland	3	235	14,987	5,968	20,955	175.10
Serbia	1	603	NA	NA	NA	200.80
Slovenia	1	552.4	21,018	5,899	26,917	201.62
Slovakia[a]	1	344.6	14,326	4,931	19,257	90.38
The Czech Republic	1	1,171.1	NA	3,782[b]	NA	245.40

[a] vignette system, time-based flat rates; [b] >12 tonnes

There is also growing recognition that charging policies should be designed to internalize the negative consequences of road use, as well as to manage demand (i.e. they should be designed to price congestion). The development of satellite and other technologies is increasing the options available for making this a reality at national and international levels, although currently such network pricing is limited to certain routes, vehicles and areas. The EU's Eurovignette Directive, for example, establishes minimum rates for vehicle taxation and a maximum level for a time-

related charge and a distance-related toll, linked to the costs of constructing, operating and developing the infrastructure network. In 2009, Austria, Germany, the Czech Republic, Slovakia and Switzerland all made use of a toll on HGVs traffic, which was collected by ETC systems.

2.3 Search for alternative funding of roads

Since at least the middle of the 20th century, road transport infrastructure in most European countries has been paid for out of general public revenues, funded by taxes and public (sovereign) borrowing. Since the late 1970s, governments have looked for innovative ways to provide transport and other infrastructure; this quest has included stimulating further engagement of the private sector in the provision of road infrastructure and road transport services.

The search for alternative funding models is often justified based on a belief that current road financing systems are insufficient to meet development, maintenance and operation needs. The reasons for this perceived "funding gap" are complex. On top of the increase in demand for road capacity and services (discussed earlier), the costs associated with the provision of road infrastructure and road transport services may also have increased, partially as a result of factoring in externalities such as environmental and congestion costs.

Under fully public financing, infrastructure must compete with other policy priorities, some of which may be perceived as being more politically pressing. These include public security (under terrorist threat) and the health care and pensions in a so-called welfare state, as well as traditional concerns such as education.

In many countries, the revenues from taxes associated with road transport (particularly taxes on fuel for automobiles) are traditionally greater than government expenditure on that mode. In these countries, the road transport sector is therefore an important source of general revenue funding. This implies that the perceived funding gap in providing road infrastructure and road transport services may, in fact, be a shortfall in other priority areas, which are effectively being subsidized by the road sector. However, this is difficult to truly ascertain unless the full costs of road transport (including externalities) have been quantified, which is almost never the case.

These problems also exist in most TEM countries (including NMS) where, in addition, road infrastructure (especially high-quality motorways) with appropriate levels of service must often be created or upgraded to meet the needs of fast-growing traffic and to accommodate economic development. Meanwhile, public funds are scarce and the Maastricht criteria, as well as the recent economic and financial crisis, strictly limit the amount of public sources available.

With this as a background, many governments have pursued the use of various "innovative" alternative models, sometimes as part of a concerted policy focusing on infrastructure in general or given modes in particular, and sometimes on a piecemeal basis. The reasons provided for these actions can often be reduced to the following three:

- to access new (additional to public) sources of financing for road infrastructure;
- to borrow for road infrastructure without this impacting on the public deficit and debt (the limits of which are set by the Maastricht criteria for Eurozone Member States and for the NMS in particular);
- to improve the efficiency with which road infrastructure is provided and managed.

Theoretically, of course, the third reason should be the basis of decision-making concerning the use of different funding models for the provision of road infrastructure and road transport services, in order to optimize the use of scarce public (and eventually private) resources by applying the greatest possible efficiency in that process. Meanwhile, strict accounting rules were approved (see Appendix IV.2) with the aim of discouraging Governments of Member States from

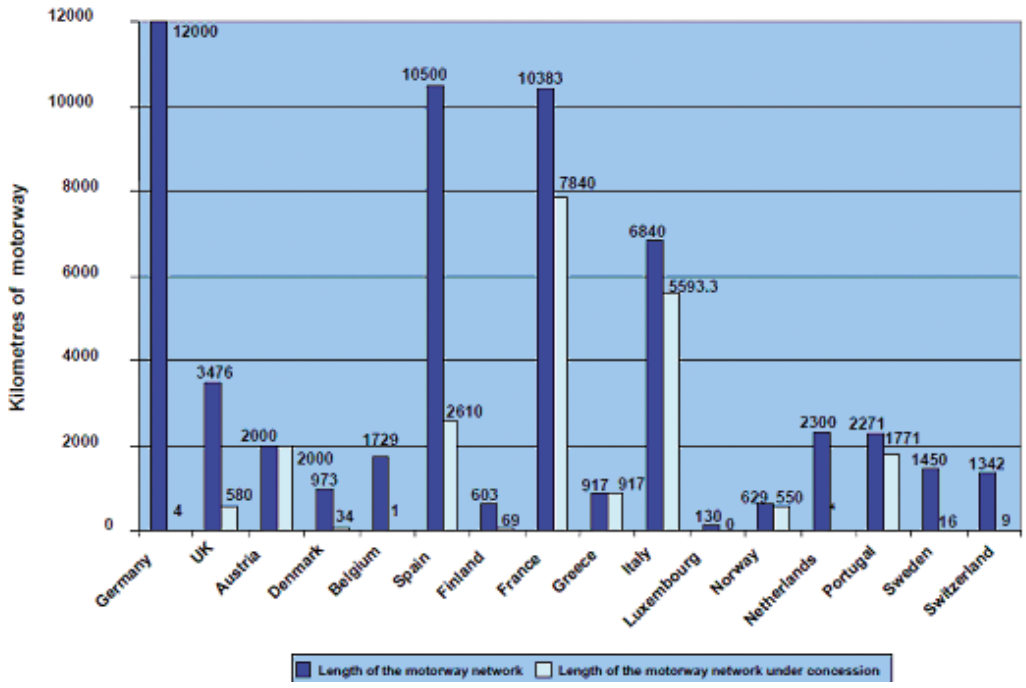
pledging a "dangerously high" proportion of future tax revenues to regular payments owing to private partners engaged under various forms of PPPs.

Although European countries supply most of their road systems by way of ministries or agencies, and pay for them by employing resources from the public budget, there are also many instances where this is not the case. However, most alternative models for providing infrastructure involve roads that are high profile, or that provide a particularly high level of service, such as higher speeds, greater safety, less congestion, greater comfort, etc. In many cases, these are tolled, while in others governments directly fund the infrastructure provider through such mechanisms as shadow tolls or availability fees. Where routes are tolled, they are very often provided as an alternative to other, publicly provided, freely accessible routes.

Figure IV.14 and table IV.9 focus on concession motorways in Europe and provide an insight into the great variety of practices that exist. Figure IV.14 shows that while Belgium, Denmark, Finland, Germany, Luxembourg, the Netherlands, Sweden and Switzerland have all or most of their motorways provided directly by the Government, Austria, France, Italy, Norway and Portugal concession out most of their motorways. The Austrian case involves concessioning to a state-owned company (ASFINAG).

The nature of these concessions also varies greatly. Table IV.9 shows that in some countries, concessionaire companies are mainly or entirely public, while in others they are private. Italy, Norway and Spain have several different companies operating concessions, while other countries, such as France, involve relatively few commercial firms (although several public motorway concession companies had been privatized recently). Other countries have only a limited amount of concession motorway infrastructure. There is also considerable variety within countries over time, which is not shown here. Furthermore, it is important to recall that these data refer to highways which, in terms of kilometres, only represent a fairly minor (albeit essential) portion of overall public road systems.

Figure IV.14 - Overview of European practices in motorway concessions (with or without tolls)
[Source: Bousquet-Fayard, 2005]



Various countries have delegated responsibility for major sections of their motorway networks to concessionaires that are, to one extent or another, independent from the Government. Countries that have led in this field include Austria, France, Italy, Spain and Portugal. In each case, different means are employed for financing the motorway network.

Portugal employs a range of different concession mechanisms across its primary motorway network and for key bridges, combining both direct tolling and shadow tolls. The organization responsible for overseeing the network and PPP arrangements has also been devolved into a state-owned company.

Table IV.9 - Motorway concessions in Europe as of February 2004
[Source: adapted from Fayard, 2005 (data from PIARC)]

Country	Motorway Network (kms)	Network under Concession (km and %)	Concessionaire Companies			
			Public* (kms)	Private (kms and %)	No. of public*	No. of private
Austria	2000	2000 (100%)	2000	0	3	0
Belgium	1729	1.4[a] (0.1%)	1.4[a]	0	1	0
Denmark	973	34[b] (3%)	0	34[b] (3%)	2[b]	0
Finland	603	69 (11%)	0	69 (11%)	0	1
France	10383	7840 (76%)	6940	900 (9%)	10[c]	4
Germany	12000	4[d] (0.03%)	0	4[d] (0.03%)	0	1a
Greece	916.5	916.5 (100%)	916.5	0	1	0
Italy	6840	5593.3[e] (82%)	1201.6	4391.7 (64%)	7	17
Luxembourg	130	0	0	0	0	0
Norway	629	550[f] (87%)	550	0	26	0
The Netherlands	2300	4[g] (0.6%)	0	4[g] (0.6%)	0	2[g]
Portugal	2271	1771 (78%)	0	1771 (78%)	0	11[h]
Spain	10500	2610 (25%)	112.6	2497.4 (24%)	1	28
Sweden	1450	16 (1%)	0	16 (1%)	0	1
Switzerland	1341.9	8.85[i] (1%)	8.85[i]	0	1	0
The United Kingdom	3476	580 (17%)	0	580 (17%)	0	3

* "Public" means controlled by the state and/or a local government.

[a] Liefkenshoek Tunnel.
[b] Including 18 kilometers of the Great Belt Link Seeland and Funen and 16 kilometers of Oresunf Link between Denmark and Sweden.
[c] Figures include two international tunnel companies (ATMB and STRF).
[d] Rostock Tunnel.
[e] Including 30.2 kilometrs of tunnels under concession.
[f] The term "concession" is used in its broadest sense, as Norwegian companies have an exclusively revenue collection function.
[g] Including 2 kilometers of Noord tunnel and 2 kilometers of Wijkertunnel (shadow tolls).
[h] Including Lusoponte (operating two 24-kilometre-long bridges).
[i] Grand Saint Bernard tunnel.

Austria presents a different model, whereby the primary road network is managed by a 100 % publicly owned company. This company, the Motorway and Expressway Financing Co. Ltd (ASFINAG), is responsible for construction, upgrading, operation, maintenance and tolling, although the right to set the tolls is retained by the Republic of Austria. The ASFINAG does not get any grants from the federal budget; its operating income results exclusively from user fees

that are legally tied to expenses in the network. The company also makes selective use of PPPs for elements of the network.

These examples highlight that a number of models are being used around Europe to provide road network infrastructure in a way that is independent from government control over fundamental operational tasks associated with the provision of road networks, including financing. Furthermore, while these are not likely to account for the majority of road infrastructure in any given country, they usually include very important roads that carry a high proportion of the country's traffic. At the same time, where such networks are tolled, they are often — but not always — accompanied by alternative routes that are not tolled.

Concessioning in some European countries is focused on a minimum of projects, while the rest of the motorway network is in public hands. Public–private partnerships are obviously an important means for supplying motorways in some countries, as witnessed by the percentage of the motorway network in the hands of private firms, notably in Italy (64 %, including the major network concession described above), Portugal (78 %), Spain (24 %) and the United Kingdom (17 %). This does not mean that PPPs provide most of the road network in these countries. However, they often provide key routes within that network, in terms of traffic use or strategic importance. This perhaps defines the current role of PPPs under most circumstances in the case of roads: PPPs tend to provide high-profile and important (but not most) road infrastructure.

A final example is provided for contrast, showing that innovative mechanisms can be developed for specific links without private involvement, although this is rare. The Oresund Bridge between Denmark and Sweden that opened in 2000 is a PPP. The bridge, which provides for both road and rail traffic, is operated and maintained by Oresundsbro Konsortiet, which is owned by the Danish and Swedish States, and was established on the basis of a bilateral agreement between the two Governments. The bridge's construction cost was financed by loans raised on national and international capital markets, but guaranteed by both States. The company charges tolls to road users, and charges the national railways of both countries based on pre-established rates, with a view to ultimately paying all construction and operating costs.

2.4 Steps in enacting funding sources for road construction programmes

There have been wide-ranging and successful efforts in recent years to raise funding for public transportation at the national, local and regional levels as the current and future importance of road transport has become more widely recognized. From these experiences it is clear that raising funding for a given road network development programme (like that for the roads/motorways in the TERN and TEM projects) must be viewed as a "campaign" in all senses of the word. Virtually all of the road network development funding campaigns that have been carried out successfully in Europe have used the series of steps listed below.

1. Develop a consensus on the scope of current and future transportation and transit needs and on the importance of actions to address them.

2. Develop a specific programme of investments for which additional funding is needed, providing a clear and credible demonstration of the benefits expected, and detailing a campaign plan for pursuing the use of new funding sources.

3. Identify the roles, responsibilities and procedures for carrying out the campaign plan and implementing the proposed improvements.

4. Describe in detail the proposed revenue sources to be used and the rationales for their selection and use.

5. Determine who must act officially and unofficially at the state, regional and local levels, through what processes and on what timetables, and also determine what their particular familiarity and interest is in advancing (or deterring) a road programme funding campaign.

6. Design, raise resources for, and carry out a comprehensive public education and advocacy campaign through multiple media, communications and involvement strategies.

7. Develop broad-based community leadership and demonstrable sustained support for the initiative.

8. Lay out a reasonable timetable, work programme, and management scheme for action.

To undertake these steps, particularly in pursuit of large longer-term funding commitments, it has proven necessary to consult with, if not engage formally, an individual or firm experienced in directing public advocacy campaigns. Such expertise can be essential in framing stakeholder interests through polling and other public opinion processes, in exploring varied political perspectives, in understanding the precise and often arcane procedures for establishing the legal authority to raise and invest public funds, and in shaping and delivering messages that will both resonate with essential constituencies and counteract contrary opinions where necessary.

3. CURRENT ROAD FUNDING PRACTICE AND PROBLEMS

3.1 Financing road infrastructure in selected Western European countries

For the purpose of the study, a questionnaire (see chapter 3.2) was sent out to all UNECE member countries (including TEM member/associated countries), aiming to receive up-to-date information about their road financing practices and possible proposals for its improvement. No answers were received from several Western European countries and therefore their funding practices are summarized briefly below.

The State budget finances transport infrastructure in France too, but important contributions are provided by other sources such as tolls, transport duties, special funds, and regional or local budgets. Special funds dedicated to co-financing infrastructure are periodically established and regularly emptied or abolished by the Finance Ministry, defending the principles of indivisibility and annual approval of the State budget. The French system of concessions, which allows private companies to provide public services (e.g. building and operating toll motorways), has made it possible to develop an extended motorway network within a reasonable time period. Money borrowed regularly (under sovereign guarantee) from the internal financial market (bond issues), as well as the steadily increasing toll revenue, were the main sources of financing of these "concession motorways", providing an actual alternative and replacing direct budgetary allocation. At the end of the concession period the successful privatization of some motorway concessions has recently yielded considerable revenues for the State budget.

In Germany, road infrastructure is financed traditionally from the federal budget. In 2000, however, considering the important amount of public debt, the Government envisaged the implementation of some tolled road projects to be co-financed by private capital. The idea encountered serious political, social and legal obstacles. As a consequence, since 2005, private concession companies have to be remunerated half by the State (budget) and half by the proceeds from distance-based tolls levied on HGVs. The collection of the distance-based toll has been assigned to a private company (Toll Collect).

In Italy, the financing of the construction and operation of the motorway network is also based on tolls, while the tariffs are determined by the state. It is intended that new motorways that are built and operated by private companies will be co-financed (possibly subsidized) by a recently established public institution (Infrastrutture SpA). The preparation of some motorway projects is being realized through the use of conventional PPP schemes.

In the Netherlands, the general budget of the State is the main source of road financing. The budget contains a dedicated chapter for the allocation of funds to road infrastructure. Some projects were implemented as PPPs based on real or shadow tolls. The preparation of a distance-based ETC system has been under way for several years. This scheme intends to scrap all road and vehicle taxes and to replace them with charges based on the distance driven. If it happens, the Netherlands will be the first country to pursue such a scheme, which may become a model for other countries, provided that it is implemented in 2012 [Source: FT, 2009].

In Portugal, a considerable part of the toll motorway network has been financed, built and operated by the private sector. Nevertheless, the State either guaranteed a minimum traffic level (i.e. shadow toll revenue) or regularly paid an agreed availability fee to the private concession

companies. These put such a heavy burden on the State budget that the programme had to be slowed down and the bulk of the new transport infrastructure projects are expected to be financed mainly from the State budget and EU contributions.

The development of the motorway network in Spain was mainly financed from the State budget, but private sector participation also remains considerable under a concession scheme. According to plans approved for 2000 to 2010, it was expected that around 20 % of the funds needed to finance further infrastructure development would be garnered from the private sector.

In Sweden, transport infrastructure is funded from the general budget of the State, with the exception of the tolled Øresund Bridge (classified as a PPP project and co-financed by the EU).

Although the United Kingdom is the homeland of the private finance initiative (PFI) and is among the leaders in terms of the number and value of the various PPP contracts, the share of private capital in road financing remains moderate (M6 toll motorway concession near Birmingham and several road reconstructions under the umbrella of the toll/concession scheme). The implementation of a network-wide, distance-based ETC system (intended first of all to levy truck tolls and to increase road users' participation in road financing) has recently been dropped (after several years of preparation) due to fierce public opposition.

3.2 Assessment and summary of the answers given to the questionnaire

Answers eligible for evaluation were received in due time from 16 countries (Azerbaijan, Belarus, Belgium, Bulgaria, Georgia, Germany, Hungary, Iceland, Lithuania, the Republic of Moldova, Norway, Poland, Romania, Serbia, Slovenia and Switzerland).

The 12 questions posed in the questionnaire related to the following main topics:

Topic 1: the general situation and funding practice;

Topic 2: financial issues and the availability of funds;

Topic 3: improving the effectiveness of road financing.

The questions posed and the answers received are summarized below.

Q1.1 What methods are used traditionally for road financing? Is there a medium- or long-term transport strategy, or road network development plan (including EU-TEN and UNECE-TEM projects), approved by relevant authorities? If yes, how are appropriate public resources allocated to secure the timely implementation of road projects included in the strategy or development plan? What are the main principles and methods of prioritization/ranking for resource allocation?

In most countries the main (or often exclusive) source of road financing (including costs of new construction, operation and maintenance) is the public budget, fed by general and special taxes and duties. Among these sources of funding, public revenues collected as fuel taxes and vehicle excise duties are considered to be the most appropriate sources for road financing. Although special funds exist in some countries, the straightforward earmarking of these road-related taxes and duties for road expenditures is non-existent.

Several countries reported that road development is based on strategic and medium-term road network development plans (Belgium, Germany). Norwegian practices seem to be very attractive in this respect, where every fourth year the Government publishes the national objectives and strategies for transport, including a long-term plan (10 years) and a medium-term plan (4 years) for the funding of administration, operations, maintenance, upgrading and investments. These strategies and plans are prepared by professionals on the basis of cost–benefit and financial analyses

and political assessment. The programme is approved by the Parliament, while the allocation of appropriate resources is made by the annual budget.

Priorities are established in most countries on the basis of a forecast of future demand for transport services and a macroeconomic evaluation using uniform standards (including cost–benefit ratio, environmental acceptability, spatial impact, etc.)

The new EU Member States prepared in due time national development plans for the 2007 to 2013 EU financial perspective (budget), which eventually included some important road projects (among them some TEM projects). It is expected that a considerable amount (60 % to 85 %) of these projects will be financed from non-reimbursable EU contributions (CF and ERDF), while only the remaining part need be provided by the state budget. These projects were prepared in compliance with stringent EU rules and all of them are based on appropriately prepared feasibility studies.

In most countries, however, medium-term road network development plans are seldom based on or justified by duly prepared project feasibility studies (including preliminary cost–benefit and financial analysis). Therefore these "plans" mostly reflect professional estimations derived from a somewhat optimistic transport demand forecast, supported by political will and expectations, instead of a sound economic and financial evaluation. As a consequence, the funding of these road projects (although included into and scheduled by a development plan or programme) remains uncertain and needs to be secured case by case during the regular (annual) budgetary allocation procedure, receiving preferential treatment over other competing public infrastructure or public service provision projects. As a consequence of this, projects frequently have to be postponed and long-term road development plans are most often carried out with substantial delays, or have to be cancelled (or revised and renewed).

Q1.2 What are the main principles underlying the budgetary allocation of public resources aimed at financing road expenditure? How is funding allocated to the following:

(i) development/construction of roads;

(ii) rehabilitation/upgrade of roads;

(iii) maintenance/repair of roads;

(iv) operation/administration of roads?

Has the relative share/importance of certain areas changed recently within the road budget, and if yes, how and why?

The main principles and methods for the prioritization/ranking of projects for resource allocation are heavily dependent on the overall economic and political situation. As a consequence of this and due to the current economic and financial crisis, some countries (Belgium, Germany, Hungary, Norway, Poland, and Switzerland) have not changed the measures they implement to help mitigate the impact of the crisis, or have not even improved the position of road projects from the point of view of public resource availability. In the majority of countries, however, the public funding sources allocated to road projects have been severely cut, so ongoing projects have slowed down while several others that were under preparation have been postponed (e.g. in Iceland, Romania, Lithuania and the Republic of Moldova).

There are no palpable principles determining the proportions of funding resources allocated to construction/rehabilitation and maintenance/repair. In countries where the construction of the backbone TEM network is progressing well or is close to completion (Hungary, Poland and Slovenia), the major part (50 % to 60 %) of available funding is spent on financing the construction

of new (mainly TEM) motorway and expressway sections. The bulk of available EU contributions are used for that purpose too. As an obvious consequence, resources dedicated to maintenance and repair works are lagging behind technically required minimum levels (i.e. the deterioration of the existing road network is accelerating). On the other hand, in countries heavily hit by the world economic and financial crisis, a major portion (65 % to 80 %) of the available (substantially reduced) resources are currently being allocated to road maintenance and repair.

It has to be mentioned that no answer reported that the allotment of resources is currently being determined through the use of an approved road management system (RMS), or that resources destined for road maintenance and repair are being determined and allocated using an appropriate (multiannual) pavement management system (PMS). Governments and road administrations apparently consider it to be premature to implement such systems or that it is too risky under the prevailing conditions.

Q1.3 What is the role of private capital (if any) in road financing? Are there any successfully implemented road PPP projects (in particular TEM projects)? Have any road PPP projects failed or been postponed because financial close was not reached? If so, what were the main causes of the failure?

In most countries private capital is not used for road financing. Meanwhile, the role of private capital is considerable in financing motorway projects (including TEM projects) in Croatia, Greece, Hungary and Poland. Several motorway PPP projects have been completed successfully and are functioning well in these countries (e.g. the M5 and M6 motorways in Hungary, and the A1, A2 and A4 motorways in Poland).

Some other countries have been struggling for several years and have so far failed to implement motorway projects with private sector involvement under a PPP scheme (Bulgaria, the Czech Republic, Germany, Romania and Serbia). Most often, legal hurdles or non-compliance with internationally acknowledged procurement rules applied when selecting the private partner/concessionaire, or the exaggerated size of the project and/or risks associated with it, made it impossible to reach a financial close. The current world economic and financial crisis has made the preparation (especially the private funding) of PPP projects even more difficult.

Q1.4 Describe briefly the effect of the financial and economic crisis on potential road project strategy. How do budgetary constraints impact on transport sector investment and, in particular, on TEM projects? How are Government road development strategies changing with the crisis? How are they planning to fund road projects that are currently in the pipeline?

The economic and financial crisis has apparently had a positive impact on road development strategy in Belgium, Germany and Norway, where the resources allocated to infrastructure development have increased in line with an attempt to revitalize the economy and relaunch economic growth. In several NMS of the EU (Bulgaria, Lithuania, Romania and Slovenia), only those road construction projects receiving substantial EU contributions are forecast to be completed on schedule or with slight delays; all others are postponed temporarily. All other countries are reporting a serious slowdown of ongoing road projects and the postponement of all projects currently under preparation.

Q2.1 What income sources are used to finance the road sector? What is their estimated share within total road financing resources?

Not surprisingly, in most countries general tax revenues (including fuel tax and vehicle excise duties) are used primarily to finance road expenditure (60 % to 100 %) under the annual budgetary allocation procedure. The share of sovereign loans borrowed from the financial markets

or loans provided by international financial institutions is also considerable (5 % to 40 %) in several countries (Hungary, Lithuania, the Republic of Moldova and Poland). In the NMS of the EU, the EU's contribution to road funding is also considerable (10 % to 35 %). In countries where tolled motorways and roads exist (Germany, Hungary, Poland, Serbia and Slovenia), toll revenues also constitute quite a considerable portion (5 % to 45 %) of road expenditure.

Q2.2 What is the balance between road-use-related taxes, fees and public expenditure spent in the road sector? Can the distribution of funding charges between taxpayers and road users be considered fair and equitable? Are there any plans to modify that distribution in the future?

In most countries, road-use-related taxes and duties paid into the State budget exceed (by far) public road expenditure. Where total road expenditure (including the construction of motorways on certain well-defined sites) is financed by the taxpayer, the distribution of funding charges between the taxpayer and the actual road users (the main beneficiaries of the improved quality of road transport services on motorways) cannot be considered to be fair and equitable. Under the prevailing conditions, cars are paying disproportionately more and trucks/buses are paying much less than the road-related costs incurred by their runs. Countries introducing *vignette*-type (time-based, flat-rate) motorway tolls (e.g. Hungary) made the first step towards improving that situation, while countries implementing distance-based toll collection (with toll barriers in Croatia, Poland, Serbia and Slovenia, or with electronic devices in Austria, the Czech Republic, Germany, Slovakia and Switzerland) have made real progress towards a distribution of charges that is considered to be fair and equitable. EU rules strongly recommend the implementation of an ETC system (for HGVs no later than 2012) with toll rates calculated in compliance with an approved methodology. Accordingly, in most NMS of the EU, the introduction of an ETC system is on the agenda. In other countries (Azerbaijan, Georgia and the Republic of Moldova) the implementation of a road toll system has not yet been studied.

It is therefore important that in return for paying these levies, road users are able to enjoy a well-developed transport infrastructure. The aim is to create modal "user-pays" funding cycles in order to make road funding even more transparent, effective, fair and independent of the annual budget.

Q2.3 How has the availability and cost of funds changed due to the world financial and economic crisis (e.g. budgetary constraints imposed by the Maastricht criteria; limits on public borrowing; increased cost of debt financing; private sector seeking an increased risk premium and/or return on equity)? How do you see the effect of the crisis on the capacity of Governments/implementing organizations for road projects, particularly TEM road projects?

Because the world economic and financial crisis is currently affecting most countries, the public budget deficit and public debt have both been substantially increased, sometimes far beyond the limits (3 % and 60 % of the GDP respectively) allowed by the EU Stability Pact (Maastricht criteria). As a consequence, governments (especially those of the EU's NMS) will be obliged to implement strict fiscal and monetary policies aiming to improve their balance sheets. The amount of public money (including sovereign loans) available for road expenditure was severely reduced in 2010. Accordingly, road projects currently in the pipeline (including TEM projects) had to be postponed by several years, causing serious delays in the implementation schedule of the revised TEM Master Plan (Azerbaijan, Georgia, the Republic of Moldova and Serbia,).

However, in some countries (Belgium, Germany, Norway and Switzerland) the crisis may have a positive impact on road construction and rehabilitation, since mitigation measures aiming to relaunch economic growth include an increase in road construction and rehabilitation expenditure.

Q2.4. What is the impact of Government changes and political interventions on the availability and amount of funds allocated to road network development?

In some answers, this question was skipped, probably by those countries who considered it to be too sensitive. Meanwhile, the majority of answers showed that in most countries, Government changes and political interventions have little or no impact on the financing of road projects already under construction (except in Lithuania, where political influence is considered to be important). Some changes (the redistribution of public resources taking into consideration priorities modified according to political will) that influence the implementation schedule of planned road projects are carried out regularly in most countries, when long-term road network development programmes are revised and/or medium-term road network development plans are finalized.

Q3.1. Which factors do you consider to have, or would have had, the greatest effect on improving road project (especially TEM road project) start-ups and successful financing? What are go/no go issues?

The factors mentioned most frequently were the following.

- Improving the preparation of road projects, requiring appropriate feasibility studies (including economic and financial cost–benefit analysis, environmental impact assessment, etc.) to be carried out in due time, allowing reliable and professionally-founded (rather than politically-founded) decision-making related to the selection and prioritization of projects for strategic road network development programmes and medium-term plans.
- Developing and implementing well-defined legal instruments (laws, guarantees, security instruments) to prevent or limit any substantial modification (proposed traditionally by the Finance Ministry in relation to the worsening economic conditions, or by other ministries in relation to the growing importance of other social needs) of already approved medium-term road funding plans during the regular (annual) budgetary allocation procedure. Specific institutions (funds) dealing with road financing may contribute to the success of these mitigation measures.
- Dividing the burden of road sector financing between taxpayers and road users (primarily motorway and expressway users) by introducing an appropriate (fair and equitable) tolling system (starting with HGVs and preferably allowing the free flow of traffic, with toll rates based on costs incurred — i.e. proportional with the distance travelled).
- Making efforts to increase the amount of resources allocated to road expenditures by attracting private capital into the road sector (on top of the public money needed to keep the existing road network in an appropriate condition to enable a leverage effect) under a carefully selected PPP scheme in compliance with the economic, legal and financial environment (if possible).

Q3.2. What is your perspective on how the world financial and economic crisis has impacted on road financing in the medium term (i.e. when the crisis is over, what will the long-term changes be?)

As a consequence of the world financial and economic crisis, ongoing road projects have slowed down or frozen, the number and value of new construction contracts has been drastically reduced, and the rate of unemployment has increased in the road sector in some countries (Bulgaria, Iceland, Lithuania and the Republic of Moldova). On the other hand, in other countries (Belgium, Germany, Norway, Romania and Switzerland) the crisis may even boost infrastructure development. Yet other countries reported no impact (Georgia, Hungary and Poland). In several

Central Eastern European countries, however, it is expected that in the medium term (i.e. in the 2013 to 2015 period) only road projects co-financed by the EU or by international financial institution (IFI) loans may be completed, with some delays. It is generally assumed that strong economic growth will be rekindled beyond 2012, which will have a beneficial impact on road funding and therefore road network development (including TEM projects).

Q3.3. How should Governments prepare new road projects now (i.e. those not yet in the bidding phase), including approval and financing? How should they gain the support of professionals (road hauliers) and car owners, as well as the public at large, to overcome the funding difficulties encountered to date?

It has to be emphasized that preparatory measures related to road projects should be improved. The projects in the pipeline (i.e. those already included in strategic and medium-term development plans, like the TEM Master Plan) must be justified by appropriate feasibility studies based on reliable traffic analysis and forecasting, economic and financial cost–benefit analysis, environmental impact assessment, etc. The existing EU guidebooks and related Directives provide good guidance in this respect. In countries where this practice has not yet been applied (Belarus, Georgia, Hungary and the Republic of Moldova), it should be a prerequisite that feasibility studies be prepared in due time, before investment and funding decisions are taken. As a consequence, large-scale road projects should be implemented in phases (Serbia and Slovenia). Funding in the road sector must be transparent and easy to grasp by users. One way of achieving this is by means of closed funding cycles (like those used in Germany).

Q3.4. What measures would you recommend to increase the effectiveness of road financing, aiming at accelerating the implementation of road projects, in particular those in the TEM Master Plan?

The following measures were recommended (they are closely connected to the factors listed in the answers for Q3.1).

- Simplify and shorten the time period of the administrative procedures required for road project approval (Belgium), with special emphasis on the provision of information and the participation of all interested parties (stakeholders).
- Improve procurement procedures by applying the EU rules aimed at making them more transparent, fair and fail-safe (Iceland).
- Increase the share of fuel tax revenues allocated (earmarked) to the road sector (Bulgaria and Lithuania).
- Increase revenues related to road usage by transition from *vignette*-type (time-based, flat-rate) toll collection systems to ETC (rates based on distance travelled, reflecting cost responsibility) systems (Bulgaria and Hungary).
- Establish special road funding mechanisms and institutions (the Republic of Moldova and Serbia) and make the funding line as constant as possible and at as high a level as possible (Germany).
- Establish a long-term road network development programme (Germany, Norway and Switzerland).
- Apply multiannual budgets tied to medium-term road development plans, including TEM projects (Romania and Serbia).
- Create a legal framework that prevents intervention in approved road funding plans (Serbia).
- Implement PPP road projects when it is appropriate and justifiable (Germany and Slovenia).

4. CONCLUSIONS AND RECOMMENDATIONS

The progress made in meeting the implementation schedule for the projects of Governments participating in the TEM Master Plan has slowed and become more uncertain due to funding difficulties caused by the severe budgetary constraints and worsened borrowing terms and conditions brought about by the deepening financial and economic crisis of 2008. Several TEM projects considered earlier to have had their funding "secured" and their implementation time frame fixed have apparently had to be postponed due to a lack of appropriate funding.

Financing (i.e. the provision of money at a time and in a quantity needed to meet society's infrastructure needs) is a fundamental element of the overall task of providing surface transport infrastructure. Deciding on the amount of resources to be dedicated to the financing of road infrastructure and to which specific projects the funding should be directed is the responsibility of governments. Taking into consideration this responsibility, this annex presents an international overview of the instruments and methods used mainly in Europe for road financing (based on accessible publications) and presents a summary of the answers received from 16 countries in this respect.

It has become obvious that there are ultimately two primary sources of road infrastructure financing — the road user and the taxpayer — although the choice of which source(s) to employ is, for the most part, independent of the model used to provide infrastructure. However, the choice has profound implications for the functioning of that model, including for the availability of financing and the use of the infrastructure.

In most countries, fuel taxation and other charges on road users provide a large chunk of revenue for the public sector budget. Typically, this revenue is not earmarked for use within the sector, and resources allocated to road expenditures (aiming to cover construction, maintenance and operation costs) are generally determined during annual budgetary allocation procedures. Direct user charging is used sporadically (although there is rising interest around the world) with a view to providing for funding needs while promoting discipline in the use of road infrastructure.

The choice of the source (i.e. the road user and/or the taxpayer) is a key sovereign task that must be undertaken prior to the time when the decision is made on the model to be employed for providing the infrastructure. The instruments by which tax revenues and user charges can be channelled into spending on infrastructure include public subsidies, public and private borrowing, user charging, and revenues from activities and property associated with the infrastructure. There is great variation internationally regarding the extent to which infrastructure costs are covered by users.

However, raising funds for specific road projects by way of borrowing or user charging is an operational task that can be delegated. There is a great variation internationally regarding the extent to which transport infrastructure costs are covered by road users. The key justification for the use of any alternative financing mechanism is the extent to which it provides efficiency gains in comparison with other financing mechanisms. The extent to which infrastructure funds (if any) lead to a more rational allocation of financing of road infrastructure is largely based on their governance structures and the nature of financing sources.

Whatever the models chosen for financing transport infrastructure (including roads), governments will retain key responsibilities, particularly with regard to establishing the policy

frameworks under which financing occurs and with regard to regulating this activity. However, the nature of a government's role will be fundamentally transformed by the use of alternative financing, and governments must develop appropriate structures (technical, institutional, legal and financial frameworks) to manage this.

The primary concern of governments must be to ensure that the model chosen for financing surface transport infrastructure (including roads, railways and inland waterways) provides for relative allocative efficiency in terms of the best overall use of resources. Road, railway and waterway investments should be undertaken when a project's economic benefits, taken over its lifespan, exceed the costs for building and maintaining the facility (i.e. when their Net Present Value is calculated to be positive and appropriate funding can be secured). This means that rigorous ex ante feasibility studies (including economic and financial cost–benefit analysis, environmental impact assessment, etc.) should be applied to all potential new transport infrastructure projects (including road projects), examining whether these expenditures provide greater net benefits than other potential uses (e.g. implementing either railway, inland waterway or other non-transport infrastructure projects) of limited resources, the costs and benefits of different means of carrying out the projects and the impact of different pricing schemes.

The following recommendations can be made on the basis of the international overview of current road funding practices, the answers received to questions concerning experience gained on road financing in different countries, as well as the conclusions summarized briefly above (which aim to facilitate and accelerate the funding and timely completion of road projects incorporated into the TEM Master Plan).

1. As a consequence of fierce competition for scarce public resources (during annual budgetary allocation procedures) and the world financial and economic crisis, the level of public resources (general, or hypothecated tax revenues and sovereign loans) allocated traditionally to road financing (primarily road network development, i.e. construction of new roads/motorways) has been severely reduced, jeopardizing the timely implementation of projects incorporated into the TEM Master Plan. Governments (road administrations) are therefore encouraged

- to make serious efforts (in cooperation with relevant other authorities, e.g. economic and finance ministries) to diversify the instruments and sources traditionally used for road financing, taking into consideration the various opportunities and experiences gained in countries that have recently managed to successfully extend and upgrade their road network (including TEM projects), and
- to consider the opportunity of sharing the costs of roads and road transport services between taxpayers and road users in a fair and equitable manner (reducing the extent of cross-subsidization, while at the same time safeguarding the competitiveness of road hauliers in a reasonable manner), introducing and/or gradually developing appropriate toll collection systems (preferably electronic systems that allow free traffic flow, with rates based on costs incurred that are proportional to distance travelled; first for heavy goods vehicles, then for other trucks, and last (but not least) for cars).

2. Transport infrastructure projects, including road projects, are not always properly prepared and investment decisions within the transport sector are often influenced by political interference. To prevent the inefficient allocation of extremely limited public resources while aiming to make road investment decisions more reliable, appropriate feasibility studies should be conducted for each road project in the pipeline (including road projects in the revised TEM Master Plan). The costs of these feasibility studies are reasonably low when compared to the

investment costs of road projects in general. Governments (road administrations) are therefore strongly encouraged

- to order and finance appropriate feasibility studies for each project (including traffic analysis and forecasting, economic and financial cost–benefit analysis and environmental impact assessment, etc.) as soon as possible, even if their implementation is not expected in the near future,
- to establish a long-term (strategic) road network development plan based on the results of these feasibility studies, determining the expected schedule of implementation and containing a tentative financing plan, both of which serve as a base for regularly revised (rolling) medium-term road investment and financing plans (with clearly defined sources and instruments of funding), and
- to make efforts aimed at simplifying lengthy bureaucratic project approval procedures, and to establish appropriate legal and administrative measures that guard against substantial interference into or modification of already approved medium-term financing plans during the annual budgetary allocation procedure.

3. It is widely acknowledged that there is a close correlation between applied road financing models and the institutions introducing and/or using them. The successful development of any road financing system depends heavily on the efficiency of the systems belonging to the public institutions that deal with road development, maintenance, operation and funding. This relationship is even more important when plans exist to redistribute road-related fiscal charges (e.g. preferring road-use-related taxes against vehicle ownership duties) or to attract private capital into road financing under various PPP schemes. In this respect governments are encouraged

- to make efforts to develop and/or rearrange the system governing the institutions that deal with the road sector (increasing the efficiency of their functioning and cooperation) when opting for the renewal and reorganization of road financing practices, and
- to carefully prepare the legal, financial/banking and economic environment when preparing road PPP projects intended to be co-financed by the private sector and to set up appropriate rules in this respect (requiring a public sector comparator, competitive procurement, detailed financial analysis, etc.).

Appendix IV.1 Expenditures for highways in the United States of America [Source: NCSL, 2006]

IV.1.1 Capital outlay

States spend approximately 48 % of their highways budgets on capital outlay. Capital outlay costs for highways and roads are those associated with improvements to the physical highway infrastructure. These include costs for the following: land acquisition and right-of-way; preliminary engineering; construction engineering; construction; reconstruction; resurfacing; rehabilitation; restoration; environmental impact mitigation; wetland and stream preservation; installation of traffic service structures and facilities such as guard rails, fencing, signs and signals; safety improvements; installation of intelligent transportation system technologies and devices.

IV.1.2 Maintenance, highway and traffic services

States spend approximately 25 % of their highway budgets on maintenance and highway and traffic services. Maintenance costs are those costs needed to keep a highway or road in usable condition, such as costs to fill pot holes. These do not include costs for activities such as resurfacing that are intended to extend the life of the highway or road beyond its originally intended design. Highway and traffic service costs are those associated with highway and road operations, and management techniques that are designed to improve traffic flow, relieve congestion, reduce environmental impact and improve aesthetic appeal. These include expenses for operating highway management centres, traffic surveillance and control systems, snow and ice removal, highway beautification activities, litter control, vegetation management, erosion control, and air quality programs. In some states this also may include the construction and operation of visitor centres and rest areas.

IV.1.3 Administration

States use approximately 8.4 % of their highway budgets for administration costs, which are general expenses not attached to a specific project for administering a state or local highway programme. These include costs for overheads, engineering, research, highway planning, litigation, publications and revenue collection activities.

IV.1.4 Highway law enforcement and safety

States use approximately 9.4 % of their highway budgets for law enforcement and safety. These include costs to support state highway patrols, highway safety programmes, state driver education and training activities, vehicle safety inspections, vehicle size and weight enforcement, and motorcycle safety programmes.

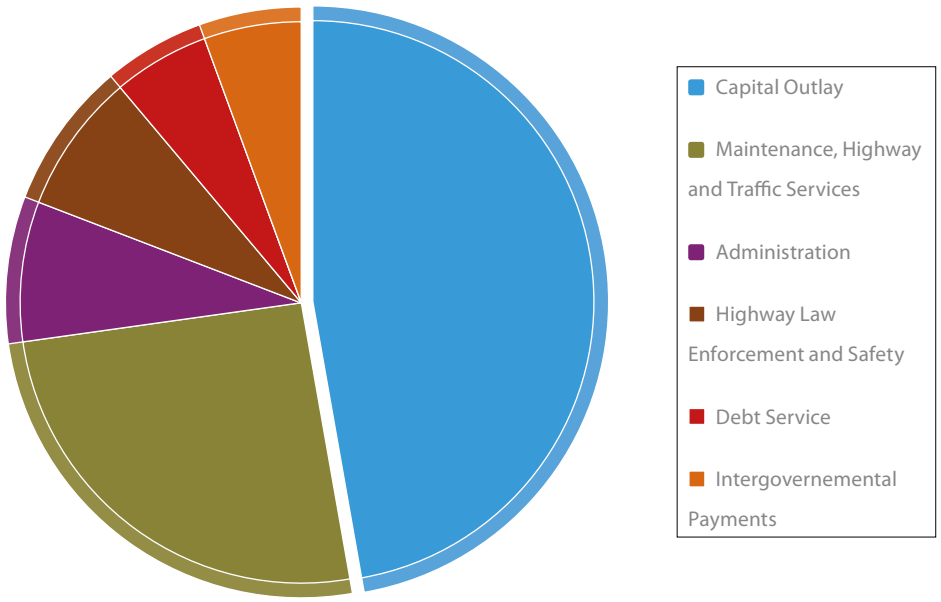
IV.1.5 Debt service

States use approximately 4.6 % of their highway budgets to cover debts. These include expenses from borrowing funds for highway, road and street projects. The costs are the expenses incurred from the sale of highway bonds, bond administration, and repayment of interest and principal.

IV.1.6 Intergovernmental payments

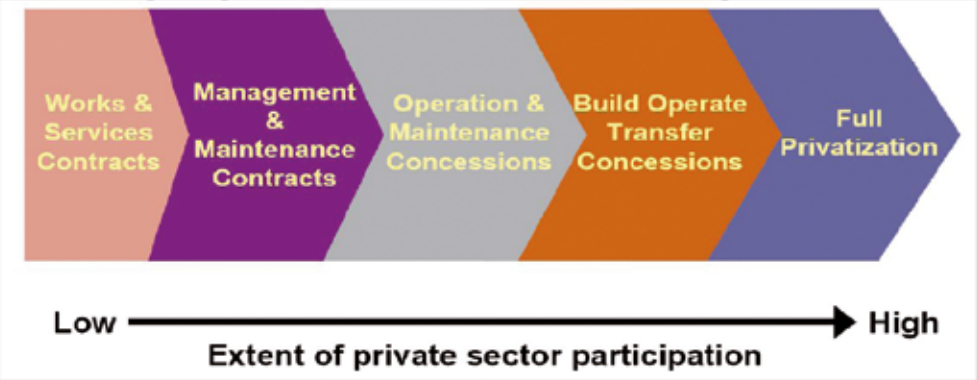
States transfer funds amounting up to 4.6 % of their highway budgets to local Governments for many highway, road and street projects. Counties, cities and smaller municipalities receive funding from state Governments.

Figure IV.1.1



Appendix IV.2 Public–private partnerships (PPPs)

There are numerous ways in which the private sector may invest in public infrastructure. Depending on the level of risk, the variety of arrangements range from public procurement (where a contractor does not assume any project risk) to privatization (where public assets or shares in a public company are acquired by an investor assuming all the risks). The most complex arrangements lie between traditional public procurement (service and work contracts) and privatization:



A PPP is a contractual agreement between a public sector agency and a private sector entity. By way of this agreement, the skills and assets of each sector (public and private) are shared in delivering a facility and/or service for the utilization of the public. In addition to sharing of resources, each party shares in the potential risks and rewards in the delivery of such service and/or facility. The UK was the first to take concrete steps to create exemplary PPP models. This was mostly due to establishing PPP models and Private Finance Initiative (PFI), by mitigating the obstacles that would cause the private sector not to get involved in public sector affairs.

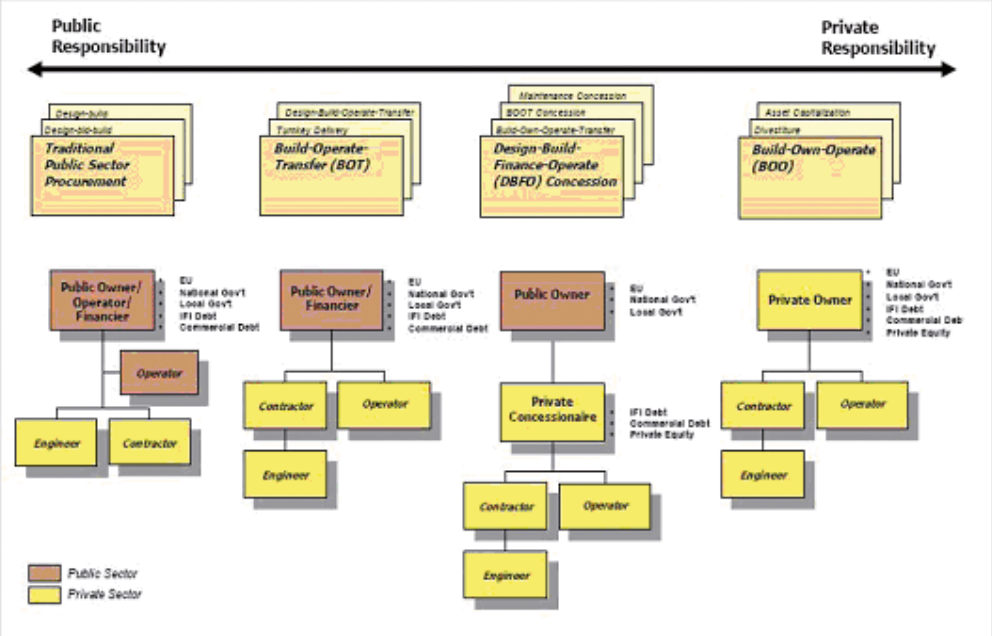
The benefits of PPP's in general is to provide high quality public services effectively and cost efficiently avoiding extending construction time and to remove cost increases frequently encountered in projects executed in the public sector. The benefits of PPP's for the public sector are: (i) Realization of complex projects in time and within budget, obtain innovation and efficiency from the private sector; (ii) Acceleration of public infrastructure development, delivery of services using limited budgetary resources and off-budget accounting; (iii) Procurement of public services under market conditions (requiring quantity and good quality); (iv) Identification & mitigation or transfer of risks (fair and equitable allocation); (v) Comparison and control of costs (through public sector comparator); (vi) Maintaining public ownership of strategic infrastructure assets.

The benefits of PPP's for the private sector are: (i) Enlarging the scope of activity and increasing profitability of the company; (ii) Increasing corporate revenue and profit; (iii) Maintaining projects off-budget by using concession and project-finance schemes (limiting corporate borrowing); (iv) Transfer of certain risks (e.g. to lenders); (v) Full control over a given project from planning to operation (with special emphasis on risk management); (vi) Opportunity to use negotiating skills aiming to obtain best position.

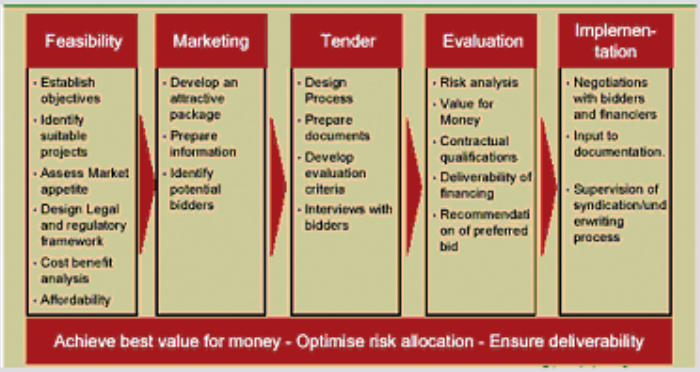
There are various PPP models that are implemented. Some of the PPP models are as follows:

- **Build-Operate-Transfer Model (BOT)** The private sector partner finances the project, constructs and operate it, and at the end of the designated time, will return the property back to the administration;
- **Build- Rent-Transfer (BRT)** The private sector partner finances the project, constructs, rents the property to the administration for a designated period and returns the property to the administration at the end of the rental period.
- **Build-Operate (BO)** The private sector partner finances the project, constructs and operates it, after which the ownership of the property will eventually belong to the private sector partner.

- **Transfer of Operating Right (TOR)** The administration transfers its assets or one of its units to the private sector in consideration for payment and in order to transfer operation for a designated period of time. The ownership shall continue to belong to the administration.



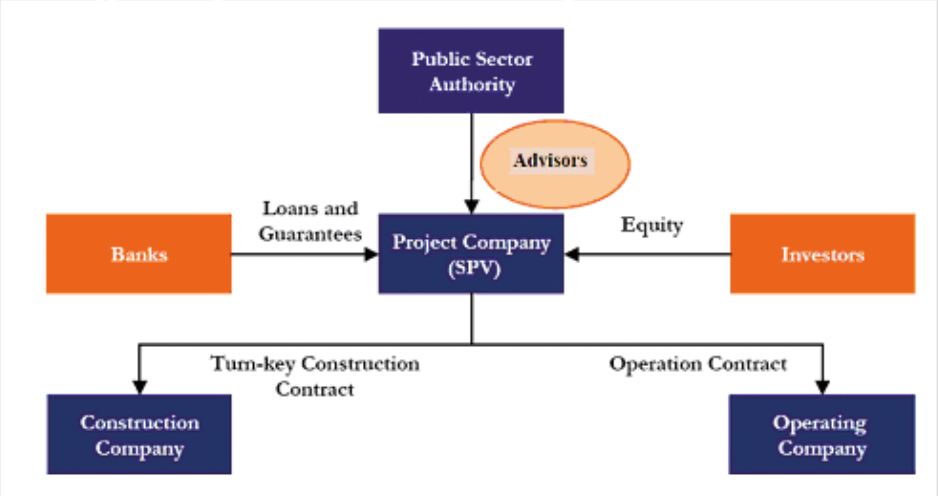
Structuring PPP projects by the public sector includes carrying out the following main tasks:



Structuring PPP projects by the private sector includes carrying out the following main tasks:

PPPs are well established worldwide, although represents less than 10% of all investments in public infrastructure worldwide. nevertheless, PPPs are becoming an accepted means of delivering a wide variety of services and associated infrastructure which have previously been provided by the public sector. As a consequence, they are now an important tool for the public sector to secure much needed capital investment into public infrastructure in an efficient manner.

The most often applied, simple PPP structure is the following:



The main problems encountered upon implementation of the PPP projects to date were: (i) lack of political, economical, legal stability; (ii) the lack of experience of the public sector in drafting the PPP agreements and different applications by the public sector entities; and (iii) unbalanced risk distribution between the public and the private sector; (iv) the absence of a single responsible state authority governing PPP Projects.

A more detailed analysis of transport sector PPP projects is provided by a recent publication of the World Bank:

Cuttaree, V. / Humphreys, M. / Muzira, S. / Strand J-P. – 2009

Private Participation in the Transport Sector – Lessons from Recent Experience in Europe and Central Asia. The World Bank, Transport Paper TP-24. Washington, D.C. June 2009, p.81.

Some critical remarks concerning PPPs is provided by the following publication:

CEE-Bankwatch – 2008

Never mind the balance sheet - The dangers posed by public-private partnerships in central and eastern Europe. CEE-Bankwatch Network, November 2008. p. 60.
http://bankwatch.org/documents/never_mind_the_balance_sheet.pdf

Appendix IV.3 Accounting for infrastructure in the public budget

[Source: OECD/ITF, 2008]

Both in the construction of new infrastructure and in the maintenance of existing assets, real resources are employed, meaning plant, staff, land and equipment. Considering the large costs involved for new infrastructure, some type of borrowing may be necessary. Governments can choose between different ways to pay for these costs — i.e. "up front", using existing resources; using public sector (sovereign) borrowing; using an intermediary agent such as a private partner in a PPP arrangement. Each option has different budgetary consequences.

One way to handle both investment in new infrastructure facilities and ongoing maintenance is to consider all activities as if they were consumed during the year of the expenditure. An implication of this approach is that new investments depend on the availability of financing from the government's overall budget, sourced from annual taxes. Another consequence is that ongoing spending on future upgrading and maintenance of projects is not guaranteed, since it must be approved in future budgets. This makes it difficult to commit to a life-cycle approach to infrastructure spending. In this model, the overall investment is inherently consolidated with the state budget; in other words, the investment is "on budget".

An alternative is for governments to borrow in order to pay for the investment. This means that the government pays back the loans over the lifespan of the project or some other period of time. In this way, it is feasible to spend more than is raised in tax and other revenue during a given year. Borrowing can be considered on budget since the state debt increases.

A third way to handle the investment cost is to place it "off budget". Outsourcing and devolution models can be used for this purpose. For example, a PPP arrangement may be established whereby a private partner or special purpose vehicle assumes debt related to the project, and is compensated by the government and/or directly by users over the project's life cycle, thereby allowing it to amortize this debt. In this case, the government makes payments not directly to the original lender, but rather to an intermediary company that assumes the debt. Under some circumstances, it is also feasible to place investment spending by government-owned enterprises outside the public budget.

The panels in figure IV.3.1 illustrate how costs show up in the public sector budget in each of the models. A hypothetical situation is created in which an investment of 100 units of currency is required to construct a new asset. In addition, 5 units each year are required for maintenance after the initial investments. The project lifespan is 5 years. All financing is assumed to come from the public budget, and not from direct user charging. Figure IV.3.1a) shows the initial investment paid for by the government, after which it makes additional payments to maintain the asset. Figure IV.3.1b) shows the budget consequences of the government borrowing to pay for the infrastructure asset that is being built. Initially, it balances a debt of 100 units of currency. In each year there is a set payment of the principal loan and a corresponding reduction in the debt, as well as payment for maintenance. There is also a payment of interest, which is assumed here to be 5 %. These two approaches to on-budget accounting for costs can, of course, be combined with some investment costs being paid immediately and the remaining being activated via debt. Figure IV.3.1c) illustrates the impact on public finances of the private sector taking up debt to undertake an initial investment. This debt is not made part of the public sector's budget. Rather, the public sector makes payments to the private partner to pay off this debt and resulting interest, which here is assumed to be 6 %, noting that private lenders must often pay a higher interest rate than the government itself to raise debt. Payments are also made to cover maintenance costs. Thus,

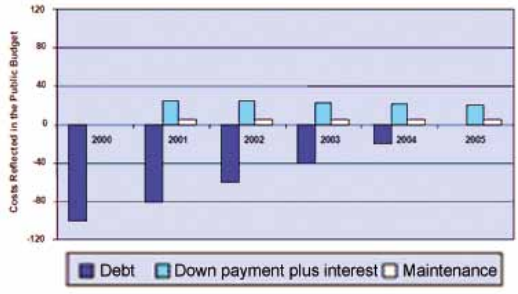
government payments to compensate the private partner over the life cycle of the project are only reflected in the budget in the year in which the payment occurs. However, these payments are the same, or (as in the example) even slightly higher, than they would be if the debt were on budget.

When borrowing, it can appear as if the government's scope for spending increases. This is, however, a purely transitional phenomenon, since, in the long run, there may be no budget difference between treating investments as current spending or as assets that are financed by loans. For example, a government may assume a need to spend 100 currency units per year overall on road building and maintenance, and finance this with a borrowing programme over several years. As a result, it may only need to spend 20 units in the first year to pay down principal on the first year's loan of 100 units. In the second year, it would have to pay 20 on the first year's loan, plus an additional 20 on the second year's loan. After 5 years of borrowing, the government will be paying 100 units per year to pay down the principal on its loans — the same amount that it would have been paying had it financed the needed infrastructure directly from the budget — as well as additional interest. This could become problematic if the government interprets the lower expenditure on roads in the initial years as creating greater scope for making other investments, either in roads or elsewhere in the economy. As obvious as this sounds, such errors are not uncommon.

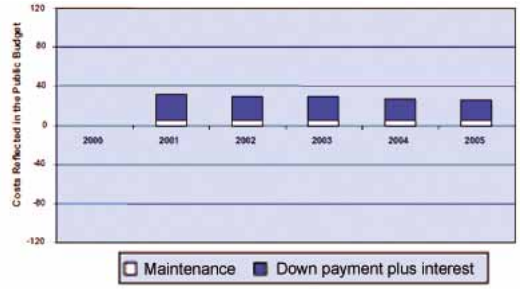
Figure IV.3.1 - Impact on the public budget of different means of financing infrastructure

a) Traditional financing from the public budget

b) On-budget investment spending



c) Off-budget investment spending



Appendix IV.4 Budget treatment rules in the European Union

[Source: OECD/ITF, 2008]

The convergence criteria for the European Monetary Union — the "Maastricht Criteria" — are defined in terms of national account data. The EU Member States are subject to, inter alia, the following rules for public budgets:

- the overall public debt shall remain under 60 % of the GDP;
- the annual new deficit shall remain under 3 % of the GDP,
- Member States shall achieve a mid-term balanced budget.

These rules obviously have implications where new investments are concerned, because placing investment debt off budget would make it easier to meet these criteria. This is the background for Eurostat's rules regarding this issue.

Public investmenTt in infrastructure projects is accounted for in the "general government" section of the public accounts and, where borrowing is involved, results in increased government deficit and debt, meaning that the project is on budget. However, investment made by a publicly owned corporation can be considered off budget as long as at least 50 % of the costs are covered by revenues.

In 2004, Eurostat defined how PPPs should be treated in national accounting. The paper discusses how contracts signed by government units in the framework of partnerships with non-government units should be dealt with. In this paper, Eurostat emphasized that it did not examine the motives, rationale and efficiency of these partnerships, but rather sought to provide guidance on their treatment in national accounts.

The core of the paper established that assets controlled by a PPP body can be considered to be off the public books only if there is strong evidence that the partner is bearing most of the risk attached to the specific partnership. In particular, Eurostat recommends that the assets involved in a PPP should be classified as non-government assets if both of the following conditions are met:

1. the private partner bears the construction risk;
2. the private partner bears at least one of either the availability or the demand risk.

Risk transfer, in reality, is complex in the sense that not all of a given type of risk can easily be (or should be) transferred. This is perhaps particularly the case where demand risk is concerned, inasmuch as this type of risk is especially complex for the private sector to manage, and is thus not usually fully transferred.

The consequences of Eurostat's criteria can be examined in the context of the actual models for the provision of road infrastructure that are common in Europe, which involve tolls and shadow tolls, as well as state-owned companies. In these models, construction and availability risk are typically borne by the private partner. Furthermore, in user-financed concession projects, such as the German A- and F-Models, and within a shadow toll scheme (but not within an availability fee scheme), the private partner also has to bear the demand risk. Thus, a priori, it seems clear that these PPP models should be considered as off budget according to the Eurostat criteria.

ANNEX V

Financing the railway infrastructure in the revised Master Plan

The scope of this study was to develop an up-to-date review for funding railway infrastructure on the basis of both the literature and practical experience. It provides an overview of the present and future ways of funding railway infrastructure, and the identification of possible sources, criteria and frameworks to receive the needed funds. Information from interested countries was collected by means of a survey. It provides conclusions and recommendations, some of which are formulated from the authors' point of view.

1. MAIN CONSIDERATIONS ABOUT FINANCING RAILWAY INFRASTRUCTURE

This annex provides an overview of the costs, purposes and sources of railway expenditure, as well as the instruments of railway financing. During the last decades, governments of almost all countries have faced the challenge of financing railway infrastructure. In general, in practically every country, railway companies have not been able to collect sufficient revenues to enable them to finance new railway infrastructure entirely from their own resources. Furthermore, in most countries, the revenues are not sufficient to satisfy the financial needs of infrastructure maintenance and operation. The reasons are manifold, but the two most important relate to the fact that in the transport market, railway transport is in a weaker competitive position than is road transport. On the one hand, railway and road transport show significant differences concerning the payment of external costs: the external costs of road transport are about five times higher than those of railway transport (see table V.1). This means that road users — both for passenger and goods transport — do not pay for the main share of their environmental-, social- and accidents-related costs. On the other hand, for historical reasons, the organization and management structure of railway operations and infrastructure is much less efficient than the structure of the road transport.

Table V.1 - **Comparison of external costs of road and railway transport in Austria and Germany** [Source: INFRAS/IWW 2004, DIW Berlin 2009, Hirte 2008, Pischinger 1997]

External cost	EUR x 10-2 / passenger-km plus tonne-km			
	Austria 2005		Germany 2000 to 2007	
	Road sector	Rail sector	Road sector	Rail sector
Noise	2.6	0.2	1.1	NA
Air pollutant	0.7	0.1	0.9	NA
Greenhouse gas	5.4	0.4	1.3	NA
Sum of environmental costs	8.6	0.6	5.1	NA
Accident cost	3.1	1.5	1.0	NA
Total external costs	≈ 11.7	≈ 2.1	≈ 9.4	≈ 2.0

It is therefore necessary to overcome both deficiencies, because no new or improved financing system can compensate for these two main problems. This should be borne in mind while reading this annex.

In the context of this annex, financing is defined as the provision of money at the time and in the quantity that is needed to meet the railway infrastructure and supply needs of the society in order to provide successful economic, social and environmental development [Source: Timar 2010].

1.1 Purposes and responsibilities for railway expenditure

The purpose of railway expenditures relates to a large list of tasks. The responsibility for each task is given to the state or to private bodies depending on the type of task and the responsibility assignment of the particular state. The following list distinguishes between three types of task and is given for information.

a) Railway sovereign and administrative tasks

- development of high-level transport policy harmonized for all modes, and development and operation strategy for infrastructure and operation as well as of railway-related services;
- organization and definition of the political, legislative and administrative framework of decision-making, planning procedures, etc.;
- assignment of responsibilities;
- assurance of quality, safety and security, and sustainable development (guidelines and regulations as well as supervision of works);
- regulation of the activities for the railway sector (acts of parliament, permits, licenses, etc.);
- organization of and regulations relating to training, education of railway experts;
- organization of research and development activities;
- provision of the necessary budget and budget distribution for the tasks listed above.

b) Railway management, works and maintenance-related tasks

- of the tasks listed in a) above, outsourced tasks which are not necessarily sovereign tasks of the state;
- planning and decision-making for new railway projects and lines in order to increase the capacity and quality of service or to promote intermodality;
- planning and decision-making for upgrading of existing railway infrastructure and services;
- provision and operation of infrastructure statistics;
- maintenance and major repairs of infrastructure.

c) Railway-operation-related tasks

- provision of a safe and efficient service;
- railway service operation including supervision and quality management;
- operation of intermodal services with road-related public transport (timetabling, ticketing, revenue distribution, marketing, information provision, etc.);
- travel demand survey and data provision.

The tasks outlined in item a) are mainly sovereign oriented. This means that the government and state is responsible and in charge, and the financial responsibility should be allocated within the public sector. The other tasks should be managed in some form of private body having a clearly defined framework of goals, obligations and rights; in such cases, a strong and competent supervision agency is a must. The ownership of the private body is a political decision, which reflects different ideological backgrounds of the democratic system of the state. The government is responsible for the distribution of the available public resources amongst the different tasks.

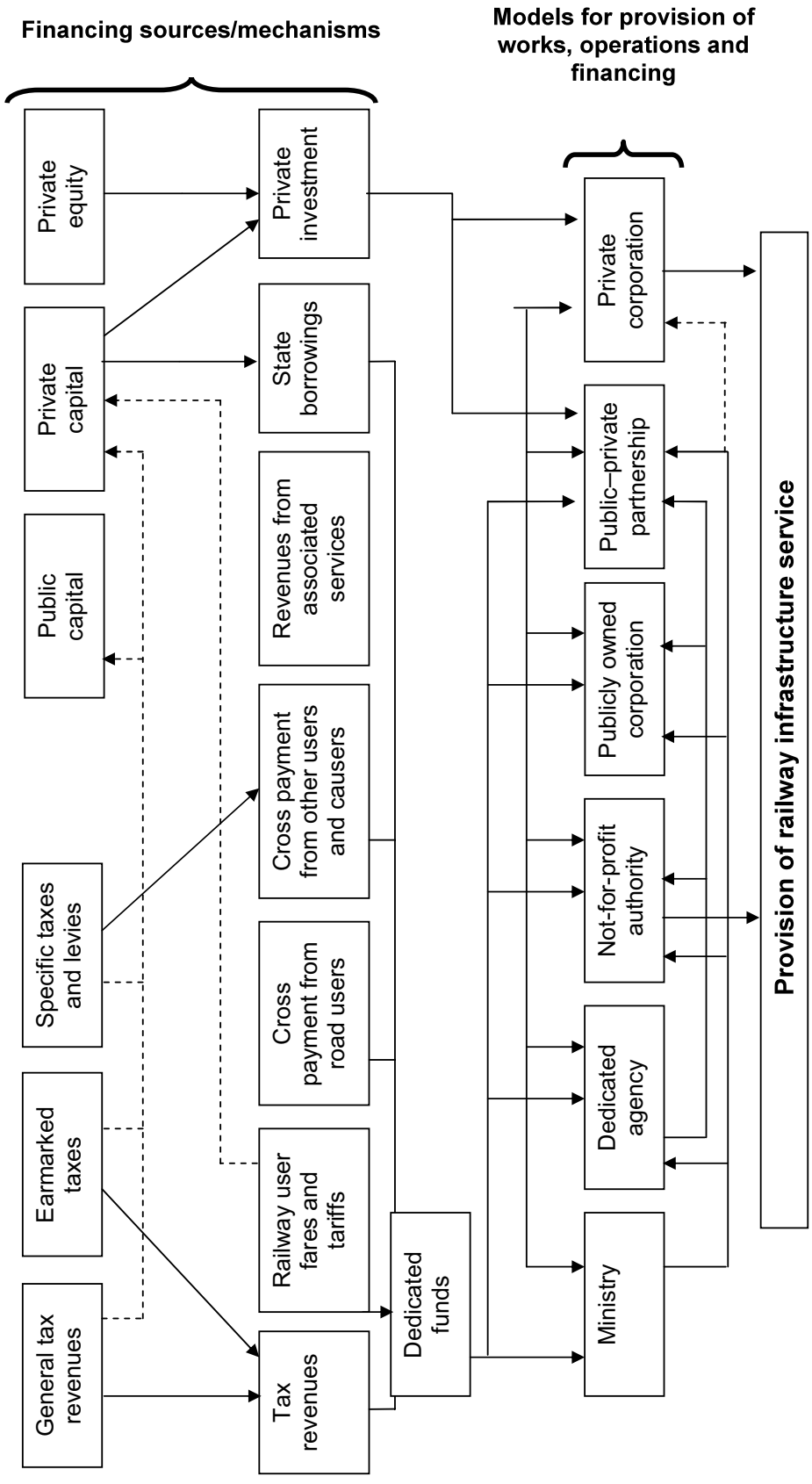


Figure V.1 - Overview and framework for the provision and financing of railway infrastructure and related services [Source: Revised version based on OECD/ITF 2008]

1.2 Sources and instruments for financing railway infrastructure

This chapter is mainly focused on considerations of how to finance new railway infrastructure, how to allocate the public resources available, how to obtain private funding and what possible and appropriate financing instruments exist. A framework for the provision and financing of railway infrastructure and related services is provided in figure V.1, which gives an overview of the initial public and private sources as well as the available financing, equity and debt instruments. It also indicates various possibilities of organizational model for the provision of the railway infrastructure development, maintenance and operation. The continuous lines indicate the financial flows; the dashed lines indicate the possible repayment flows of debt instruments. Figure V.1 illustrates well that a given railway financing mechanism is not intrinsically linked to a specific organizational model for the provision of the railway infrastructure service. The interrelationship between these mechanisms and instruments is very complex, and a great variety is possible. Which source and instrument is the most appropriate depends on the environment and the framework.

Chapter 1.2.1 deals with the funding sources, and is followed by the financing instruments of railway infrastructure and operation.

1.2.1. Funding sources

The following main sources are available for the financing of (new) railway infrastructure: taxpayers, railway transport users, cross payments (subsidies) from road users or other user and causer groups, and associated non-railway-related services of railway companies. The first two sources are called "primary sources" and the others are called "secondary sources".

Taxpayers - Taxpayers contribute through different types of tax, which is used for any type of the railway expenditure. Although the needs of railway investments are growing, the public revenues from taxes for railway expenditure are becoming more and more uncertain and are not keeping pace with inflation in many TER member countries. These resources are experiencing a strong decline in value and purchasing power, often stronger than the contribution for the road infrastructure. In the future, the bottleneck of budgets will increase in most of the TER member countries which means a substantial increase cannot be expected. A special form of indirect taxpayer contribution is the social fare subsidy, e.g. free rides for students and subsidies for handicapped people. Taxpayers do not necessarily benefit directly from the railway infrastructure but they do benefit indirectly through the economic improvements caused by improved railway access. Taxpayers' revenues are part of the national, regional or local budget. The taxes can be general or earmarked (see figure V.1 and chapter 2.1).

Railway transport users - Railway transport users contribute by paying passenger fares and transport tariffs for goods. In most countries, the revenue gained from fares and tariffs does not cover the railway operation costs [Source: UNITE Consortium 2003]. In the last few years, most railway companies have received decreasing revenues from passenger fares and goods tariffs. The decreasing revenues from goods tariffs was caused mainly by the economic crisis. In the short- and medium-term future, we cannot expect that this type of source will contribute anything towards new railway infrastructure. The main goal is that this type of source provides a higher coverage of the operation costs of railways. An indirect railway transport user charge is the infrastructure usage fee for a railway service provided by a railway company. Railway transport users are directly benefitting and their contribution is compensation for a service which users consume. If the contribution of railway users does not cover the railway expenses, it is evident that users from other countries (e.g. transit transport) are being subsidized by the taxpayers of the country where the railway infrastructure is located. Railway transport user revenues are part of the budget of the railway company which provides the railway operations and/or infrastructure service. If the

railway infrastructure and operation service are provided by two separated corporations, then at least the user fee is transferred from the operation service corporation to the infrastructure corporation via an infrastructure usage fee (see figure V.1).

Cross payments from road users - Some countries (e.g. Austria and Switzerland) finance railway infrastructure through an earmarked part of the fuel tax. This procedure can be justified because road transport causes much higher external costs than does rail transport (see table V.1). Another source can be road tolls, which can be partly used as a cross payment (see figure V.1 and chapter 2.3).

Meanwhile, it must be mentioned that the European Directive 2006/38/EC of the European Parliament and of the Council amending Directive 1999/62/EC on the charging of heavy goods vehicles for the use of certain infrastructures limits this possibility. On 16 October 2010 the European Member States agreed a compromise on an update on the Directive, which allows the inclusion of noise, local emissions and congestion cost in the charging scheme in the future (whereas accident and climate change costs are not considered in this update) [Source: diepresse.com 2010].

Cross payments from other users and causer groups - In principle, other users and causer groups can also contribute to the funding of the railway infrastructure. An example of this is a beneficiary levy, e.g. for land owners who benefit from the railway infrastructure through improved access which increases the level of rental fees that can be charged (see figure V.1 and chapter 2.1).

Revenues from associated non-railway-related services - This type of source can comprise an ancillary service, e.g. the renting of space to service providers in railway buildings and land, advertizing services, etc. This source is generated by third-party funding.

The main question that arises is how the different funding sources should contribute in order to enable sustainable funding and development of the railway service and infrastructure. The contribution of the different sources is a political decision, but the following principles can be identified.

- The contribution of railway users ensures a cause-related cost allocation. Therefore high cost coverage from this source should be achieved. Social subsidies should be designed in the form of subject-oriented support for the relevant person.

- The contribution of the taxpayer should be kept as small as possible, because the taxpayer does not necessarily directly benefit from the railway service and infrastructure. In principle, the taxpayer should contribute to the share of overhead costs which are not caused by any particular user group. Subsidies for social fares and common costs belong to this group of costs.
- Contributions of cross payments from road users can be justified if the road users do not pay for their external cost in order to achieve a fair competition on the transport market between rail and road. In this case, the amount of cross subsidy should be calculated to be about 50 % of the difference between the external costs of the road and rail sectors (see table V.1).
- Contributions of cross payments from other user and causer groups make sense if there is a specific relationship between the railways sector and the given user group.
- Contributions from associated non-railway-related services make sense in order to reduce the taxpayers' contribution.

1.2.2. Financing instruments

Two main categories of financing instrument can be identified which are used to finance the expenditure for railways: equity and debt instruments.

In general, **equity instruments** represent ownership interests. This means that in principle dividend payments have to be made, when declared, but there is no specific right to a return on capital as a specific ownership risk. Contributions from public budgets, subsidies and grants of public bodies are specific equity instruments without obligations of reimbursement in the form of dividend payments or return of capital [Source: Timar 2010]. The basic form of equity instruments is common stock, which represents an ownership and earning interest. Common stock holders (or share holders) have the opportunity to share in the profitability of a company but they also bear the risk of loss because they are generally subordinate to all other creditors. Another form of equity instrument is preferred stock, which represents a hybrid in the sense that it is an equity interest with certain features resembling debt. Equity instruments can be based on public or private capital (see figure V.1 and section 1.2).

In general, **debt instruments** are fixed obligations to repay a defined amount at a specific date in the future, together with interest to the creditor. The risk of insolvency is shared between the creditor and the debtor, depending on the type of debt. Debt instruments such as notes, bonds and debentures are entitled to receive payments which have priority in comparison with preferred or common stockholders. Debt instruments are as a rule secured by a certain asset of the company. They have fixed or variable interest rates and they are variable in their currency. Debt instruments can be based on national or international bank loans, or on EU grants etc. They can represent several advantages for investors, such as predictability of payments, voting power and no dissolution, as well as less risk of loss. But disadvantages also exist, such as limitations on the use as working capital due to debt service obligations and potential restrictions on operations.

Within the two main categories of financing instrument a wide range of possible arrangements exists, which define the rights, obligations, privileges and limitations for the borrowing and the crediting entity. They are described in the following chapters. When considering any financing instrument for railway infrastructure investments, the respective advantages and disadvantages of each type of instrument should be taken into account from the different viewpoints: from the viewpoint of the government or public entity, as well as that of the taxpayer, the investors and the borrowers. All arguments should be considered and made public.

1.2.2.1. Grants from the EU

The EU defined a Trans-European Railway network, consisting of conventional and high-speed rail. It is part of the EU's Trans-European Transport Network (TEN-T) and was defined by the Council Directive 2001/16/EC of 19 March 2001. It defines priority axes and a general network for railways. The aim of this EU Directive is to achieve interoperability of the European conventional rail network at the various stages of its design, construction and operation. In the EC Directive, the conventional rail network is subdivided into the following categories: lines for passenger services; lines for mixed traffic (passengers and freight); lines specially designed or upgraded for freight services. It includes passenger hubs, freight hubs and intermodal terminals. The infrastructure also includes traffic management, tracking and navigation systems.

The Trans-European Transport Network (TEN-T) is co-financed by several financing instruments of the EU, which can be considered to be equity and debt instruments from the financing point of view (see table V.2):

- grants from the Trans-European Transport Network (TEN-T) budget of the EU;
- grants from the Cohesion Fund (CF) budget, in countries which are eligible for intervention by the fund;
- grants from the European Regional Development Fund (ERDF) with priority for Convergence objective regions;
- loans and guarantees from the European Investment Bank (EIB).

Grants from the TEN-T budget are mainly allocated for co-financing priority projects. Funding from the Cohesion Fund is focused on support for the poorer regions of Europe and for integrating European transport infrastructure as well as environmental interventions. The funding priority of the ERDF comprises research, innovation, environmental protection and risk prevention, addressing infrastructure, regional development, economic change etc. For the structural funds, the priorities are defined in the Community Strategic Guidelines.

Table V.2 - **Planned cost and funding sources of the Trans-European Transport Network in the EU for the period 2007 to 2013**

	EUR x10^9	%
Cost of TEN-T basic network in total	390	100
New Member States (EU12)	72	18
Old Member States (EU15)	318	82
Community contribution in total	105	27
TEN-T programme	8	2
Cohesion Fund	35	9
ERDF (convergence objective regions)	9	2
EIB loans and guarantees	53	14
Other sources (e.g. national)	285	73

1.2.2.2. Borrowing instruments

Railway infrastructure normally has huge investment costs and a very long life cycle, which lasts up to more than 100 years and is thus used by several generations. This fact mitigates in favour of borrowing the necessary capital. Borrowing means that the payment is deferred and

distributed over several generations. Today, public borrowing is a common method of financing public expenditures, taking into account the original idea to distribute the investment costs for long-term projects to the beneficiary users of the project.

The investor, who uses borrowing instruments for his project, has to consider whether he or she is able to repay the borrowed money, inclusive of interest. Therefore preconditions are necessarily fulfilled when using a borrowing instrument for financing an infrastructure project:

The economic benefit of the project realized should be significantly higher over the period under consideration than the investment, maintenance and operation costs. The benefit comprises the direct benefit to the users, the impact on the non-users (including environmental effects) as well as the indirect effects, e.g. the regional economic benefit, etc.

The borrowing institution must be able to repay the debt (debt retirement) and the interest over the period of repayment, including all financing costs. This means that it must have appropriate revenues, coming from user payments or other sources. Both preconditions need accurate preparation and transparency.

Referring to figure V.1, the borrowing can be undertaken by the sovereign government or by an independent entity (in some cases a private corporation) if it is the railway infrastructure provider. Sovereign governments have to take care of their long-term solvency and their short-term liquidity. They have to consider and assess their situation very carefully before making any decision about the financing instruments. The Growth and Stability Pact (in particular) defines the fiscal policy of the EU member countries. Since the spring of 2010, when there was a risk of insolvency of Greece, there has been a huge awareness of this problem.

Agencies and alternative corporate structures dealing with railway infrastructure can be entitled to undertake independent borrowing. But borrowing can affect the cost of infrastructure projects if the independent corporation has higher interest rates than do the sovereign states or national agencies. In addition to general public borrowing instruments, the public sector has the option of special financing instruments with better conditions than does the private sector.

1.2.2.3. Private sector involvement

Because of the shortage of public budgets, some governments search for additional financial resources in the form of private capital, mainly through various public–private partnership (PPP) schemes for infrastructure projects related to airports, seaports, railways and roads. PPP schemes are mainly used for financing airports, for which there is a long experience, and roads; railway projects are in the minority (see table V.3). Sources of private financing are equity. The capital is held by the project company's shareholders or is provided by lenders. Private investors rely on the commitment that the performance of the infrastructure project will enable timely revenues. The revenues should cover the repayment, including interest, and will normally come from user charges as track usage fees of railway operators, but they can also come from periodical fee payments (related to the performance and quality of the service provided) paid by the public authority, or a mixture of both sources.

The main important advantages of PPP schemes are the following:

a) involvement of private capital, which is not registered on the public balance sheet, although it can create obligations for the state;

b) more efficient implementation management of infrastructure projects with lower managerial transaction effort and costs; if private investors also have the responsibility for the maintenance of the infrastructure, they are highly motivated to ensure greater efficiency in the management of construction costs, faster constructional performance and the observance of deadlines;

c) fragmentation of capital risk between the private and public sectors;

d) highly profitable projects where a high ratio of benefit and costs can be achieved and where revenues are secure.

Current experiences also indicate that some disadvantages of PPP schemes can exist, depending on the project and framework conditions.

(i) Private investors rely on the performance of the infrastructure project. The revenue of a private investor is reliant on passenger demand and good transport as a consequence of the railway infrastructure project in operation. In practice, the passenger demand is dependent on the transport policy which is enacted by the government, while the private investor has no or only limited influence on it. This means that the private investor is faced with an extra risk (in addition to that related to economic development) which can be influenced by the political power.

(ii) Private investors do not normally invest in long-term investments such as infrastructure projects with a life cycle of up to 80 years. This means that the increased risk must be taken over by the public sector, for example in the form of long-term financial guarantees. Increased risks make the financing instrument, which is charged to the public sector through the taxpayer, more expensive.

(iii) When borrowing capital from banks, private investors often receive a higher interest rate than do sovereign states, their sub-national governments or their own public corporation.

Recent approaches try to combine the possible advantages of the lower interest rate and better credit rating of public corporations [list item (iii)] with the advantage of the more efficient implementation management offered through private construction [list item b)]. That means that the construction company takes on more responsibility for the construction and has a greater freedom in the type and nature of construction for the infrastructure project. This effect can be achieved by so-called "functional bidding". Experience has been gained using this approach in the PPP projects of the Wiener Außenring Schnellstraße S1 and the Nordautobahn A5 [Source: Prem and Sammer 2010].

TABLE V.3 - Project and investment commitments to transport projects with private participation in Europe and Central Asia between 2005 and 2008
[Source: World Bank and PPI project data Base, Timar 2010]

Number of infrastructure projects	35	%
Project costs in total	USD 135 x 10^9	100
Airports	USD 82 x 10^9	61
Railways	USD 8 x 10^9	6
Roads	USD 28 x 10^9	21
Seaports	USD 17 x 10^9	12

1.2.3. Alternative funding sources, financing instruments and supporting activities

The shortage of budget for railway infrastructure creates the need to search for additional and unconventional funding sources and financing instruments. The examples given in 1.2.3.1 to 1.2.3.3 describe funding sources as well as financing instruments which could be considered to fall within the categories defined in chapters 1.2.1 and 1.2.2, but they are worth mentioning separately.

Alternative rail infrastructure funding measures try to involve new target groups in the financing plan. In general, however, the use of these target groups can be expected to be low since we are accustomed to the fact that the financing of rail infrastructure is a public task through tax revenues of the federal state.

1.2.3.1. Beneficiary tax or levy

This approach includes a segregation of funders of rail infrastructure projects, in addition to the taxpayer. This can be justified if the funder target group benefits from the supply of the new infrastructure. In such a case, the introduction of a **beneficiary tax** is a logical consequence. The positive effect of a rail infrastructure can be delineated in spatial terms. From this perspective, a beneficiary tax can be introduced on the basis of the location of employers/companies having a high proportion of the transport demand (whatever the mode). The calculation can be based on wages, the number of employees, the proceeds, the floor space, etc. Investors or developers can be included in the beneficiary tax as well, either through a tax on land acquisition or on the basis of any appreciation in the value of the land.

1.2.3.2. Cross financing by road users

Another option is **cross financing** between transport modes. The first such approaches are included in the Directive 2006/38/EC, in which Member States levy tolls or user charges for the use of roads forming part of the complete Trans-European Transport Network, in the interest of achieving a balanced and sustainable development of all transport networks (Directive 2006/38/EC). This type of tool creates cross financing through for example a lorry traffic **road pricing** scheme. Of course it is possible to expand such an initiative to all types of road-based traffic and to all types of road link. In parallel, this would contribute to internalization of the external cost. The pricing scheme can be differentiated by load factor, patronage or vehicle emissions. Current systems prefer road tolls as a practical solution. An additional charge on fuel cost (i.e. **fuel tax**) could be an alternative, but in this case differentiation in terms of occupancy or other criteria is not possible. The only differentiation that can be made through fuel tax is in terms of the volume of use and the type of fuel (i.e. diesel, petrol, gas). Most countries have already implemented a fuel tax for a different purpose, e.g. for road maintenance, general state income or new road investments; therefore the transaction costs for implementing a dedicated share for cross financing are relative low. Cross financing from the aviation sector towards long-distance rail corridors could also be considered, especially as the kerosene used for airplanes is currently not included in the fuel tax system in most countries.

1.2.3.3. Supporting activities

Another approach to finance railway infrastructure projects is to decrease the investment costs in order to reduce the demand of financial resources. The following policies are able to support such goals.

New approach for the bidding and tendering process - Recent infrastructure projects confirm that a more flexible bidding (e.g. "functional bidding") and tendering process could serve this goal. Instead of defining all technical solutions in the call for tender, only the relevant framework conditions and the quality required over the life cycle of the infrastructure are defined. Construction companies can select concrete construction technologies and solutions based on their know-how (e.g. tunnelling method or bridge construction) which can lead to a reduction in the construction costs.

Limiting cost overruns - Another relevant topic is cost overrun of projects. In general, costs in the start phase of a project are strategically underestimated by project supporters and

construction companies in order to receive a positive decision. Once the project has been launched and investments made, cost overrun has to be more-or-less accepted since a stop to the project is usually out of the question. This means that cost overrun needs to be considered already during the decision phase of the project, either by adding a worst-case factor based on the results of the risk analysis (considering all issues which could lead to a cost overrun) or by including a contractual sharing of the risk of cost overrun with the construction companies, which would create the effect that the initial cost estimates already include such risks.

Transport policy : internalization of external costs - Analyses still show that the external costs of traffic are not or only partly included in the prices for transport [e.g. Herry et al. 2003, and Maibach et al. 2007!. The external costs of rail and road transport are different. This situation leads to disadvantages for the rail sector, which reduces its market share and therefore reduces its revenues from operational activities, which in turn reduces the financial resources for new projects in this sector. In order to tackle this problem, the first steps have already been set in motion in several countries and the EU, but further action is still needed.

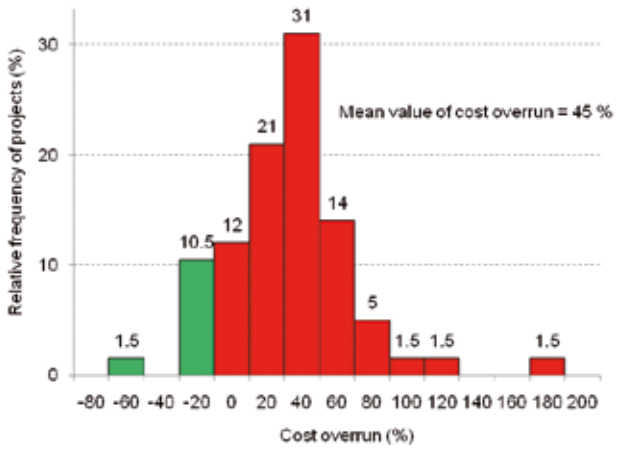
1.3 Experiences and problems with project funding

The ex-ante ex-post analysis of infrastructure projects enables a very interesting insight. Some repeating patterns can be recognized which should be considered for future projects. The following results are based on a literature review [Flyvbjerg 2003, Alario 2003] and the personal experience of the authors. Two main patterns can be recognized as discussed in chapters 1.3.1 and 1.3.2.

1.3.1. Overrun of construction costs

Figure V.2 shows an analysis of the difference between the actual and (before) estimated construction costs for 58 railway projects. The mean value of cost overrun is +45 % of the estimated costs. Only 12 % of the analysed projects had no cost overrun. It is interesting that a comparable analysis of cost overrun in road projects indicates a mean value of "only" +20 % and for tunnel and bridge projects about +34 % [Flyvbjerg 2003]. It can be interpreted on the one hand that the construction of road projects is less complex and, because of the much higher numbers of road projects carried out, that much more experience exists for their cost estimation and realization. On the other hand, this would mean that the risk of overestimation of construction costs for railway projects is much higher and therefore greater care is necessary.

Figure V.2 - Analysis of the difference between the actual and (before) estimated construction cost for 58 railway projects [Source: Flyvbjerg 2003]



The reasons for the cost overrun are manifold, but two main categories can be identified. The first category is the lack of serious preparation in the planning and information provided for the decision-making and the second concerns the tactics of local policy makers and interest lobby groups, who want to gloss over the possible project risks.

The first category of reasons can be summarized as follows:

- absence of realism regarding the real construction and maintenance costs;
- underestimation of the duration and cost of delays during the planning, evaluation, design and construction phases;
- little consideration of and accounting for unexpected events;
- inadequate consideration and observance of the specification, and changes in the project during the design phase;
- geologic and construction risks, as well as changes in prices and cubic capacity;
- compulsory acquisition and transfer fees of land needed for construction;
- increasing requirements regarding safety, security and environment quality during the planning, environmental assessment and design phases;
- technical innovations during the planning and construction phases;
- the fact that every state has its own technical guidelines and regulations for railway construction, maintenance and operation.

The second category can be summarized as all the activities of the local policy makers and lobby groups which result in an underestimation of costs for the reasons listed above. These activities are based on the principle that expensive local interest in a project can be best represented if an external sponsoring body and investor can be found.

Cost overrun can be reduced through the following actions.

- Careful planning, evaluation, design and construction.
- Selection of independent consultants for the planning and evaluation phases.
- Use of an online peer review process to accompany all phases of the planning procedure.
- Allowance for an additional cost component dependent on and decreasing with the progress of the planning procedure. For example, in order to take into account unexpected expenses, the Austrian "Cost–Benefit Analysis Guidelines" recommend an additional cost component expense of between 3 % and 6 % for projects having a risk analysis and between 20 % and 40 % for projects without a risk analysis [FSV 2010]. The Swiss guidelines have a similar approach in their cost–benefit analysis [SN 2006].
- Standardization of the technical guidelines and regulations for railway construction, maintenance and operation. Apart from the possible cost reduction because of the reduction in the transfer effort, trans-national simplification would lead to greater competition and production efficiency of the railway infrastructure, maintenance and operation.
- Obligatory risk analysis, which includes the identification of potential risks ("What can happen, how, when, where and why"), the analysis of the nature and characteristics of the identified risks, the assessment of the risks and of the risk levels, as well as the ranking of the priority and importance of the risks, the development and evaluation of compensating measures and, at a minimum, the development and implementation of an appropriate concept of how to deal with the identified risks.
- Transparency and participation of all relevant stakeholders in each phase of the planning steps.
- Use of a new type of bidding and tendering for the construction work of the construction firm. Instead of defining the exact construction details, the experience of the construction firms and the efficient implementation management of private construction firms should

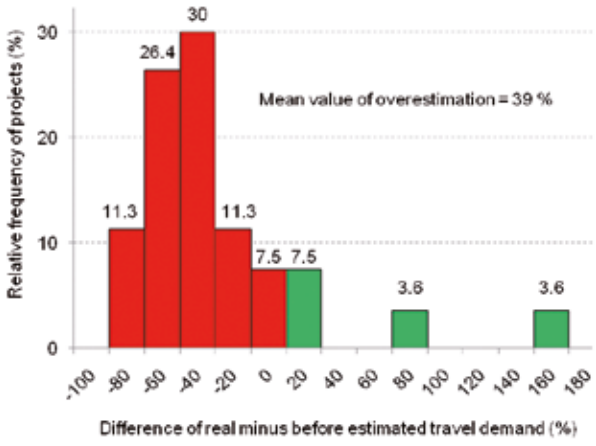
be used. This means that the construction company takes more responsibility for the construction and has greater freedom in the type and nature of construction for the infrastructure project. The bidding does not define the construction details but rather the level of quality of the end product in terms of precise quality indicators. In this way, the construction firms can choose how to achieve the requested quality and to offer alternative construction details if they can achieve the same or better quality with less financial effort ("functional bidding").

A frequently expressed argument against such actions is the high cost and the long duration of planning. Meanwhile, experiences indicate that such actions would lead to cost and time saving effects in total.

1.3.2 Overestimation of travel and transport demand forecasts

The overestimation of travel and transport demand biases the result of a cost–benefit analysis. Therefore it can lead to erroneous results and in a wrong consecution and decision. Figure V.3 shows an analysis of the difference between the actual and the (before) estimated travel demand for 57 railway projects. The mean value of overestimation is +39 % of the estimated travel demand. Only 15 % of the analysed projects showed no overestimation of the demand. It is interesting that a comparable analysis of travel demand overestimation for road projects indicates a mean value of "only" +9 %. It can be interpreted on the one hand that the travel demand forecast of road projects is less complex and, because of the much higher numbers of road projects carried out, that much more experience exists for their cost estimation and realization. On the other hand, this would mean that the risk of travel and transport demand overestimation of railway projects is much higher and therefore greater care is necessary.

Figure V.3 - **Analysis of the difference between the actual and (before) estimated travel demand for 57 railway projects** [Source: Flyvbjerg 2003]



Many reasons for the demand overestimation can be identified but two main categories stand out. The first category is the lack of serious preparation of the travel and goods demand modelling task for the decision-making, and the second concerns the tactics of local policy makers and interest lobby groups, who want to gloss over the possible project risks [Sammer 2006, Sammer et al. 2010].

The first category of reasons can be summarized as follows.

- Although complex software for travel and goods demand modelling exist on the market, the experience and training of users is often insufficient and results in inadequate knowledge of the software. Also, some travel and goods demand software is not well documented.
- Lack of willingness and absence of methodologies to disclose the expected accuracy of the modelling results.
- Reliable and satisfactory travel and transport data as well as data of a spatial structure (e.g. population, employment and economic data) are frequently not available to carry out the transport modelling work with great accuracy.
- Unexpected development of external influencing factors that affect the accuracy of the results (e.g. increase in energy prices, changes in the economy and transport policy).
- Absence of an appropriate peer review process of the modelling procedure by independent experts.
- High cost and time pressure on the consultant by the client.
- Pressure on the consultant by the client to achieve the travel and transport demand results requested.

The second category can be summarized as all the activities of the local policy makers and lobby groups which result in an overestimation of the travel and transport demand in order to achieve the travel and transport demand results requested. (Overestimation of the travel and transport demand supports the importance and necessity of the requested railway infrastructure project.)

The problem of overestimation of travel and transport demand can be reduced through the following actions.

- Introduction of quality and validation management practices for travel and transport demand modelling.
- Definition of the required accuracy of the travel and transport demand forecast results.
- Use of an online peer review process to accompany all phases of the travel and transport demand modelling procedure.
- Provision of travel and transport demand data of the requested quality.

2. INSTRUMENTS AND SOURCES OF FUNDING OF THE RAILWAY INFRASTRUCTURE INVESTMENTS

This chapter is based on a survey carried out for this final report. The results do not cover all countries since not all participating countries responded in time. Meanwhile this chapter provides a usable overview of the current practices of rail infrastructure funding. Some key figures about the custom practices of rail infrastructure funding were collected. It should be mentioned that the results represent an estimation of the status at the time of the survey up to the year 2010. They show the share of the total amount of rail infrastructure investments within financing instruments (see chapter 1 and figure V.1), in which common instruments for all countries (as requested in the survey questionnaire; see chapter 2.1 and beyond) were summed up. On the basis of the allocated estimations from all countries, the financing instruments in current use are the following (see also table V.4):

1. general tax revenues;
2. private sector involvement;
3. cross payments from the road transport sector;
4. borrowing instruments;
5. grants from the EU.

Table V.4 - **Share of financing instruments for rail infrastructure investments in the participating countries in % of the current investment budget**

Financing instruments	Armenia	Austria	Bosnia and Herzegovina	Croatia	The Czech Republic	The former Yugoslav Republic Of Macedonia	Hungary	Lithuania	Poland	Romania	Serbia	Slovakia	Slovenia	Turkey
General tax revenues	0	62	10	65 to 90	47	23	16	7	10	20 to 25	10	18	32	69
Private sector involvement	100	0	0	0 to 5	0	72	0	0	5	0	10	7.6	0	0
Cross payments from the road transport sector	0	NA	0	0	0	0	0	0	15	0	0	0	47	0
Borrowing instruments	NA	13	90	0 to 20	12	0	7	12	0	NA	50	0.4	0	31
EU grants	NA	25	0	10	41	5	77	81	70	80 to 75	30	75	21	0
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100

2.1 General tax revenues

General tax revenues can be extracted from national, regional and local general budgets and also from earmarked taxes, except those transferred from the road transport sector which are handled as a separate instrument. The emphasis regarding the actual situation of the participating countries is on national general budgets as shown in table V.5. In contrast with the period prior to 2004 (when many Central and Eastern European countries were not members of the EU), the largest amount of funding no longer comes from the public funding of the countries, although current non-members are still very dependent on their national budgets or on other international sources (see the following chapters for details). In particular, since the financial and economic crisis of 2008 (when all European countries followed austerity programmes), countries have aimed to slow down the implementation of large rail infrastructure investments or to try to keep public funding as low as possible. For EU member countries, the most popular alternative funding source for the remaining rail infrastructure investments, which do not fall victim of austerity programmes, are EU grants (see chapter 2.5). There seems to be a tendency to prioritize these projects over those that have only a national priority and need to be funded out of public sources.

Table V.5 - Share of sources from where general tax revenues are extracted for rail infrastructure investments in the countries, in % of the current investment budget (estimates by experts, self-survey), ranked by share of the total investment budget

Sources	Croatia	Turkey	Austria	The Czech Republic	Slovenia	The former Yugoslav Republic of Macedonia	Romania	Slovakia	Hungary	Bosnia and Herzegovina	Poland	Serbia	Lithuania	Armenia
National budget	65 to 90	69	62	47	32	23	20 to 25	18	16	10	10	0	7	0
Regional budget	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local budget	NA	0	0	0	0	0	0	0	0	0	0	10	0	0
Earmarked tax except from the road transport sector	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	65 to 90	62	69	47	32	23	20 to 25	18	16	10	10	10	7	0

Table V.5Table V.5 shows that the highest share of public funding is in the EU candidate countries Croatia and Turkey (in both cases, this share is exclusively from the national budget). The third candidate country, the former Yugoslav Republic of Macedonia, provides a significantly lower share than do the two others. The main activities of public funding are directed towards maintenance of the relatively small railway network, and only a small effort is directed towards comprehensive renewal. However, the entire public budget of the former Yugoslav Republic of Macedonia is too small to cover larger investments, whereas a corridor between Greece and the Central European EU member countries through the former Yugoslav Republic of Macedonia could attract external funding. Such a corridor is currently not a TEN-T axis, although the distance of this planned connection is much less than that of the currently planned axis via Romania and Bulgaria (i.e. the railway axis Athens – Sofia – Budapest – Vienna – Prague – Nuremberg/ Dresden). The EU candidate countries Bosnia and Herzegovina and Serbia have a very special status. Only 10 % of their funding comes exclusively out of their public budgets. In the case of the EU member country Romania, the reasons for the small public funding are similar. Meanwhile, due to its membership of the EU, Romania has broader access to international funding to fill the gap in funding from the national public budget (see chapter 2.5).

The share of the other EU member countries Austria, the Czech Republic, Hungary, Lithuania, Poland, Slovakia and Slovenia is very similar except for that of Austria. Economically Austria is the strongest of these seven EU member countries, and thus it can withstand more funding out of the public budget than the economically weaker countries. The tax revenue in Austria is very high, due to a traditionally high tax ratio. For similar reasons, the Czech Republic has the second highest share. Armenia has no national public funding, because Armenian Railways is presently under concession management of the Russian Railways ("South Caucasus Railway Joint-Stock Company"), which means that 100 % of all infrastructure investments are made by them; thus they have a function similar to that of a private sponsor, but with international political influence. Earmarked taxes from other sectors, except the road transport sector, actually play no role in the participating countries.

2.2 Private sector involvement

In Western Europe, privately funded rail infrastructure projects have had a certain tradition for decades during modern times; the best-known privately funded rail infrastructure project is the Channel tunnel (see chapter 4.1). Owing to the eastwards enlargement of the EU towards Central and Eastern European countries, private funding became slowly but surely relevant for those countries as well (see table V.6). It is also desirable in the context of market liberalization in transportation services.

Table V.6 - Share of sources of private sector involvement for rail infrastructure investments in participating countries in % of current investment budget (estimates by experts, self-survey), ranked by total share

Sources	Armenia	The former Yugoslav Republic of Macedonia	Serbia	Slovakia	Poland	Croatia	Austria	Bosnia and Herzegovina	The Czech Republic	Hungary	Lithuania	Romania	Slovenia	Turkey
Railway infrastructure companies	100	72	10	7	5	0 to 5	0	0	0	0	0	0	0	0
Earmarked bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Earmarked stocks	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Public–private partnership	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	100	72	10	7	5	0 to 5	0	0	0	0	0	0	0	0

Railway infrastructure financing in Armenia is completely done by Russian Railways, which is linked to Armenian Railways via the "South Caucasus Railway Joint-Stock company" (see chapter 2.1). Armenia did not provide detailed information about the sources from Russian Railways, and therefore the amount shown in table V.6 may not correspond exactly with the definition of the source of the other countries. The former Yugoslav Republic of Macedonia has a very high share of private funding. Nearly half of the amount shown is caused by high losses produced by the national PE MR Infrastructure Company. The financing of those losses is not secured.

2.3 Cross payments from the road transport sector

In 2008, Slovenia introduced cross payment from the road transport sector to finance rail infrastructure which led to a share of 47 % of all railway investments in 2010 (see table V.7). This cross-financing instrument works via a toll road charge for motorways. Motorway users pay the charge via a vignette. In 2009, this system was modified owing to the fact that the initial system was declared to be non-conformant with the European rules, since it only offered one-year and half-a-year vignettes. In January 2010, the EU Commission declared new European rules specifying the use of short-term vignettes. Cross-financing rail infrastructure from the road transport sector

is indirectly dependent on EU regulations concerning toll charges in the road sector which are declared in Directive 2006/38/EC (see chapter 1.2.2 for details). In Poland, a so-called railway fund exists which is financed from fuel charges, and the current share of funding investments of that category is about 15 %. In Austria, part of the fuel taxes is used for financing the operation and vehicle investments for short-distance transport via a tax transfer to the Austrian provinces. In general this source of funding is not very common in the EU countries.

Table V.7 - Share of cross payment from the road transport sector for rail infrastructure investments in the TER member countries in % of the current investment budget (estimates by experts, self-survey), ranked by share

Sources	Slovenia	Poland	Armenia	Bosnia and Herzegovina	Croatia	The Czech Republic	The former Yugoslav Republic of Macedonia	Hungary	Lithuania	Romania	Serbia	Slovakia	Turkey	Austria
Cross payment from the road transport sector	47	15	0	0	0	0	0	0	0	0	0	0	0	NA

2.4 Borrowing instruments

This category is roughly divided into national bank loans, which are mainly small loans for very specific issues in rail infrastructure funding (as for example small real estate at railway stations), and international bank loans. The latter include mainly the World Bank or, on the European level, the European Investment Bank (EIB) and the European Bank for Reconstruction and Development (EBRD) (see table V.8).

Table V.8 - Share of national and international bank loans for rail infrastructure investments in countries in % of the current investment budget (estimates by experts, own survey), ranked by total share

Sources	Bosnia and Herzegovina	Serbia	Croatia	Turkey	Austria	The Czech Republic	Lithuania	Hungary	Slovakia	The former Yugoslav Republic of Macedonia	Poland	Slovenia	Armenia	Romania
National bank loans	0	0	0	0	13	0	12	0	0.2	0	0	0	NA	NA
International bank loans	90	50	0 to 20	31	0	12	0	7	0.2	0	0	0	NA	NA
Total	90	50	0 to 20	31	13	12	12	7	0.4	0	0	0	NA	NA

National bank loans do not play a significant role except in Austria and Lithuania. Austria's Railway Infrastructure Building Corporation (ÖBB Infrastruktur-Bau) receives most of the requested capital for rail infrastructure from the federal state (i.e. the national budget). It raises

the rest of the money needed from the capital market but the federal state takes over the interest expenses of those loans. Lithuania compensates its very low investment in rail infrastructure from the national budget, predominantly through EU grants and secondly through national bank loans. National bank loans are the second most important funding instruments. Very small national bank loans are used in Slovakia.

As in other categories of instrument for rail infrastructure funding, the main differences that exist between countries are between potential EU candidate and candidate countries on the one hand and EU member countries on the other hand. Bosnia and Herzegovina (an EU candidate country) allocates 90 % of its rail infrastructure funding from international bank loans and Serbia 50 %. Croatia (main investment from 2001 to 2003 for Corridor 5c, a branch of the 5th Pan-European corridor from Hungary to the Adriatic Sea, allocated by the European Investment Bank) and Turkey allocate about one fifth and one third respectively from the international bank loans category. The EU member countries the Czech Republic and Hungary finance mainly from the European Investment Bank and the German Kreditanstalt für Wiederaufbau/Reconstruction Credit Institute. Via cooperation with Russian Railways through the "South Caucasus Railway Joint-Stock company" (see chapter 2.2), Armenia allocates loans from international financial organizations and grant programmes which are always project based and therefore cannot be specified as a share of total investments.

2.5 EU grants

This financing instrument is the most important one for those participating countries which are member countries of the EU (see table V.9).

Table V.9 - Share of EU grants for rail infrastructure investments in the TER member countries in % of the current investment budget (estimates by experts, self-survey), ranked by share

Sources	Lithuania	Hungary	Romania	Slovakia	Poland	The Czech Republic	Serbia	Austria	Slovenia	Croatia	The former Yugoslav Republic of Macedonia	Bosnia and Herzegovina	Turkey	Armenia
EU grants	81	77	80 to 75	75	70	41	30	25	21	10	5	0	0	NA

Complementary to Slovenia's national public funding (see chapter 2.1), the funding from EU grants is the lowest of the EU member countries; this is due to the economic strength of Slovenia compared to that of other Eastern European member countries. The same is the case for Austria. There are big differences in the share of EU grants between EU candidate countries. Serbia, an EU candidate country, allocates nearly a third of its funding through EU grants. Croatia gets 10 % of its rail infrastructure funding mainly from the "Transport Corridor Europe – Caucasus – Asia" project funds. These funds provide a long-term investment in the restoration of the "Silk Route" from China via the Black Sea to Western Europe. The former Yugoslav Republic of Macedonia allocates 5 % of its funding from the European fund "Instrument for Pre-Accession Assistance". Bosnia and Herzegovina receives no funding from EU grants.

2.6 Future trends of rail infrastructure financing in TER member countries

Most of the countries are planning to adapt their rail infrastructure funding schemes in the future. Tables V.10 to V.14 show the planned future adjustments of the shares of the most relevant financing instruments as listed in chapter 2. Bosnia and Herzegovina, Croatia, the Czech Republic and Slovenia plan to decrease the share of resources from the national budget very strongly (see table V.10), while other countries plan to increase that share slightly with the exception of Slovakia which plans to give a high priority to investments in rail infrastructure regardless of any forthcoming austerity programmes.

Table V.10 - Change in share of sources, from where general tax revenues are extracted in % of the current investment budget up to 2010 to a future situation after 2010 (estimates by experts, self-survey), ranked by change in share

Countries	Current (up to 2010)	Future (after 2010)	Change
Slovakia	18	31	+13
Turkey	62	70	+8
The former Yugoslav Republic of Macedonia	23	30	+7
Lithuania	7	9	+2
Hungary	16	17	+1
Poland	19	20	+1
Romania	20 to 25	20 to 25	0
Austria	62	62	0
Bosnia and Herzegovina	10	5	-5
Slovenia	32	21	-11
The Czech Republic	47	31	-16
Croatia	65 to 90	50 to 65	-15 to -25
Armenia	0	NA	NA
Serbia	10	NA	NA

Bosnia and Herzegovina plan to force the involvement of the rail infrastructure company, which should reinvest its own revenues from infrastructure usage fees (see table V.11). Poland wants to focus on PPP models in the future. The former Yugoslav Republic of Macedonia has to decrease private involvement via the PE MR Infrastructure Company to avoid the heavy economic burden of the past.

Table V.11 - Change in share of sources of private sector involvement in % of the current investment budget up to 2010 to a future situation after 2010 (estimates by experts, self-survey), ranked by change in share

Countries	Current (up to 2010)	Future (after 2010)	Change
Bosnia and Herzegovina	0	25	+25
Poland	5	15	+10
Croatia	0 to 5	5	0 to 5
Armenia	100	100	0

Countries	Current (up to 2010)	Future (after 2010)	Change
Austria	0	0	0
The Czech Republic	0	0	0
Hungary	0	0	0
Lithuania	0	0	0
Romania	0	0	0
Slovenia	0	0	0
Turkey	0	0	0
Slovakia	7	6	-1
The former Yugoslav Republic of Macedonia	72	25	-47
Serbia	10	NA	NA

Bosnia and Herzegovina plans to implement cross payments from the road transport sector and Poland plans to increase its share of fuel charge on the fuel price (see table V.12). Slovenia plans a lower share of financing through its earmarked toll road charge.

Table V.12 - Change in share of cross payments from the road transport sector in % of the current investment budget up to 2010 to a future situation after 2010 (estimates by experts, self-survey), ranked by change in share

Countries	Current (up to 2010)	Future (after 2010)	Change
Bosnia and Herzegovina	0	20	+20
Poland	15	25	+10
Armenia	0	0	0
The Czech Republic	0	0	0
The former Yugoslav Republic of Macedonia	0	0	0
Hungary	0	0	0
Lithuania	0	0	0
Romania	0	0	0
Serbia	0	0	0
Slovakia	0	0	0
Turkey	0	0	0
Slovenia	47	39	-8
Austria	NA	NA	NA
Croatia	0	NA	NA

Bosnia and Herzegovina plans to decrease the allocation of resources from borrowing instruments dramatically (see table V.13), and Turkey as well as Hungary will do the same to a less extent, while some other countries plan future investments with a higher share of those resources.

Table V.13 - Change in share of borrowing instruments in % of the current investment budget up to 2010 to a future situation after 2010 (estimates by experts, self-survey), ranked by change in share

Countries	Current (up to 2010)	Future (after 2010)	Change
The former Yugoslav Republic of Macedonia	0	35	+35
The Czech Republic	12	22	+10
Poland	0	10	+10
Croatia	0 to 20	10	+10 to -10
Lithuania	12	14	+2
Austria	13	13	0
Slovenia	0	0	0
Slovakia	0.4	0	-0.4
Hungary	7	0	-7
Turkey	31	20	-11
Bosnia and Herzegovina	90	50	-40
Armenia	NA	NA	NA
Romania	NA	NA	NA
Serbia	50	NA	NA

Table V.14 - Change in share of resources from EU grants in % of the current investment budget up to 2010 to a future situation after 2010 (estimates by experts, self-survey), ranked by change in share

Countries	Current (up to 2010)	Future (after 2010)	Change
Croatia	10	20 to 35	10 to 25
The former Yugoslav Republic of Macedonia	5	19	14
Slovenia	21	35	14
Turkey	0	10	10
The Czech Republic	41	47	6
Hungary	77	83	6
Austria	25	25	0
Bosnia and Herzegovina	0	0	0
Romania	80 to 75	80 to 75	0
Lithuania	81	77	-4
Slovakia	75	63	-12
Poland	70	30	-40
Armenia	NA	NA	NA
Serbia	30	NA	NA

EU candidate countries in particular plan to increase the share of contributions from EU grants for their rail infrastructure investments (see table V.14), while some economically better situated EU member countries such as Slovakia and Lithuania expect to reduce their dependency on EU grants because of the reduced possibility of receiving such contributions in the future owing to their increasing economic wealth.

The major changes planned with regard to railway infrastructure financing in the future are the following.

Bosnia and Herzegovina is strongly interested in shifting the responsibility for rail infrastructure investments from the national budget and external sources (on the European and international levels) (1) to direct beneficiary and earmarked taxes of other national public sectors (e.g. from road transport) and (2) to the private sector (e.g. public–private partnerships). Croatia and Slovenia are planning to substitute funding through national resources by funding through EU grants, while the Czech Republic plans to give international bank loans a stronger role than EU grants to substitute for the decreasing funding from the national budget. Hungary and Turkey plan to shift most of their funding from international bank loans to EU grants. Turkey in particular shows a strong motivation to speed up negotiations regarding EU membership and plans to request more EU grants.

2.7 Other trends regarding railway policies in the future

All funding sources from outside the countries require detailed cost–benefit analyses (CBAs) and risk analyses (RAs). For the EU member countries they are obligatory when applying for EU grants, and must be carried out in accordance with the "Guide to cost–benefit analysis of investment project in transport sector" of the EC. For potential candidate and candidate countries to the EU, CBAs are also obligatory for receipt of any of the specific funds of the "Instrument for Pre-Accession Assistance" and other international financial institutions. If project funding is exclusively from the national budget, in most countries large projects require CBAs; it is an initial part of the feasibility study. National laws, which force even state-owned rail infrastructure companies to elaborate CBAs, guarantee also opportunities for easier allocation of international funding sources.

Cost–benefit analysis is used for estimating the total economic costs and benefits of projects. In principle, all important impacts are assessed — financial, economic, social and environmental — thus identifying and monetizing (where possible) all relevant impacts in order to determine the project costs and benefits. Costs and benefits are evaluated on an incremental basis by considering the difference between the project scenario and an alternative scenario without the project. It has to be mentioned that most of the CBA techniques used have some disadvantages which should be overcome in the future (see chapter 3). A Risk Analysis (RA) investigates different types of risk and enables a better understanding of why some key project variables may be different from those expected, and shows the probability with which this change may occur.

In all participating countries except Slovenia and Turkey, the formal organization of railway infrastructure and operation are separated. In Turkey it is planned to confirm their separation within the next few years in accordance with EU legislation. In most cases (e.g. Austria and Bosnia and Herzegovina) infrastructure and operation companies are organized within a holding company. Rail regulators exist in all countries, which in most cases are state owned.

3. PREREQUISITES TO ENSURE SOURCES OF FUNDING FOR BANKABLE PROJECTS

For infrastructure projects in general, and especially for railway infrastructure projects, four phases of project lifetime, known as investment life cycle, have to be distinguished (see figure V.4).

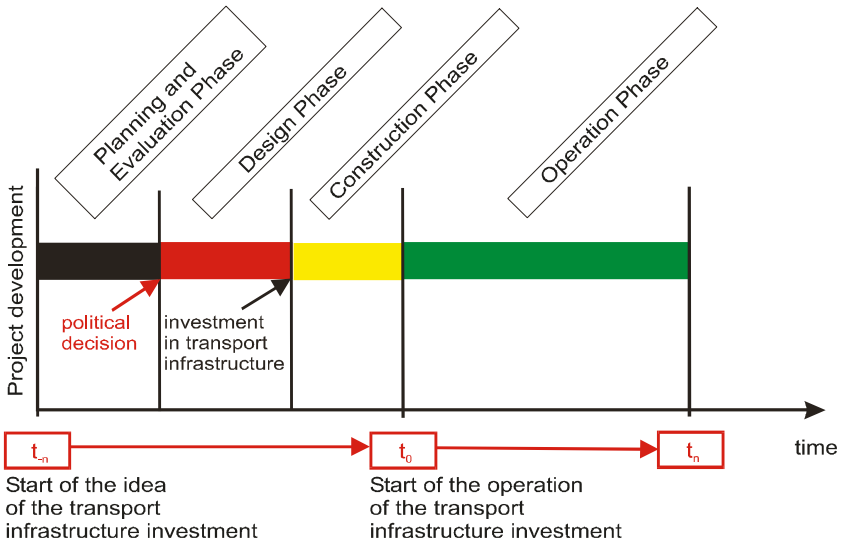
Planning and evaluation phase - Alternative possible investments are developed and discussed in order to select one alternative at the end of this phase; one alternative is "do nothing". This phase comprises feasibility studies, the investigation of all relevant alternatives (including alternative modes as well as infrastructure investments and organizational measures), the strategic environment impact assessment [Sammer et al. 2006], cost–benefit analysis and strategic risk analysis.

Design phase - The infrastructure project is developed in detail and comprises also the environment impact assessment as well as a detailed risk analysis and a detailed financing plan. At the end of this phase all planning details are fixed including all permissions, and the financing plan is approved as a pre-condition for starting the construction phase. At this stage, the infrastructure investment is fixed with a specific uncertainty. This means that private developers begin to take into account the planned infrastructure when considering future developments of their business.

Construction phase - The infrastructure project is under construction. At the end of this phase the infrastructure project starts operation. At this stage, the infrastructure investment is normally fixed and developers take into account the planned infrastructure when considering and making decisions about future developments of their business.

Operation phase - The infrastructure project is opened to the public, i.e. transport users and the regional economy are able to increase their benefit.

Figure V.4 - Investment life cycle of transport infrastructure projects [Source: TRANSECON 2004]



Planning and evaluation phase

All projects have to include a sound **planning and evaluation phase** as a basis for the political decision and for the financing concept, which is developed in detail during the design phase. This includes a user and revenue forecast, and a cost estimation and economic analysis of the impact of the project in comparison with a "business as usual" scenario. As the main pillars of the analysis, answers have to be provided to following questions, as a minimum:

1. The strategic perspective of the project: How does the project support the existing local/national/international master plans and is it in accordance with the environmental and other strategic master plans on the different levels of the territorial units?
2 What is the expected economic success or change in economic situation of the companies/operators/authorities involved in the project?
3 What is the total economic cost–benefit ratio for the public, including externalities?
4 What is the ecological and socio economic impact?
5 Which types of risk can occur?

Design phase

During the **design phase** the alignment of the infrastructure, the technical solutions and the financing concept need to be specified. The detailed financial information must include an accurate breakdown of the project costs. It is important and a prerequisite (especially if any bank or other external organization is financing the project) to detail how their financial resources are used. Additional sources of funding need to be identified since most of the co-funding organizations require a national/private share of funding to be declared. External financiers need some further information for any decision regarding their involvement. This includes background information on the applicant, including operating experience and financial status (this is usually only an issue where smaller rail operators carry out projects; national railways usually have a sufficient reputation). Beside the financial figures, further issues need to be clarified in the design phase. The definition and involvement of stakeholders and affected residents is an important milestone in the project development, which is different to the consultation and participation process of the planning and evaluation phase. A summary of the implementation requirements needs to be specified, including the appointment of contractors and an overview of the procurement process. Environmental issues need to be decided, including an environmental audit. An impact assessment is mandatory in all cases. The receipt of any governmental licenses or permits required is a further important task. A risk analysis, detailed the financing concept and the utilization of any drivers (either circumstances or framework conditions, or people or groups of people) rounds up the design phase.

Prerequisite for funding by the EBRD

As an example, the European Bank for Reconstruction and Development (EBRD) documents in its guidelines the following criteria as prerequisites for funding, and these can be considered to be general prerequisites for bankable projects [EBRD 2005]:

- significant growth potential (regional value added, GDP and regional income) with a relatively modest capital investment;
- experienced sponsors and management with a proven track record;
- a sound financial basis and well-structured financing plans;
- a well-developed and specific business plan;
- a clear programme for project implementation within a relatively short timespan;
- strong competitive prospects in relevant local/regional markets;
- understanding of equity investment and independent valuation;
- a realistic exit strategy;
- prospective investment returns which are commensurate with equity risk and based on sound conservative financial and operational projections;

- limited exposure to local government policy;
- a simple and cost-effective investment structure.

In addition, there should be

- no need for restructuring or for significant technical assistance,
- no involvement in high-risk environmental activities, and
- no unresolved post-privatization issues.

Sustainable development

Usually railway projects, like other infrastructure projects, are settled within the triangle of economic, social and ecological interests (see figure V.5). All three cornerstones are relevant for the project impacts. Whereas in the past the economic aspect was the main driver of infrastructure developments, the social and ecological dimension have become more and more important in the last decades. All three dimensions of sustainability need to be considered in the design phase of the project. The definition which is used for a so-called "sustainable development" is based mainly on two decisions of the United Nations, which indicate that a sustainable development is a kind of optimization concept [Sammer 1997]:

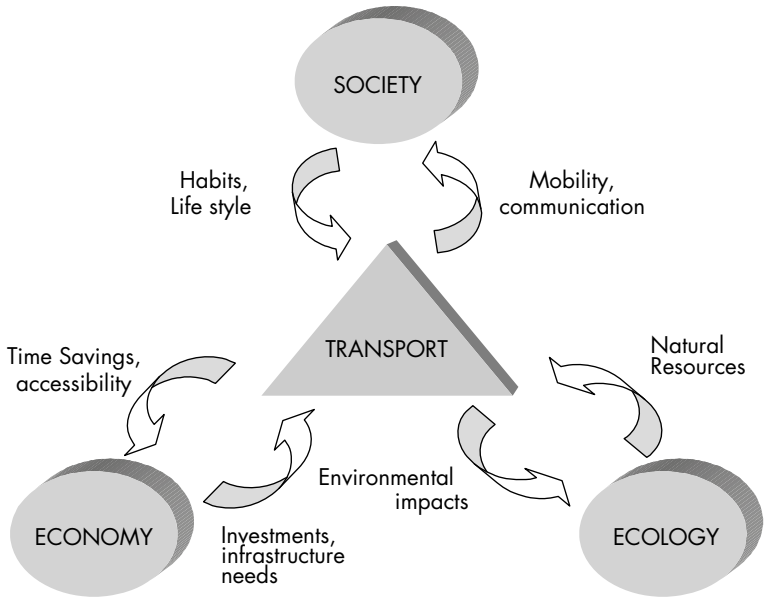
1. World Commission on Employment & Development (1987):

   "Sustainable development (SD) means to satisfy the needs of the current generations keeping options open for future generations and their needs";

2. Rio Conference (1992) of UNCED:

   "Sustainable development is based on a balance between the three sectors of ecology, economy and social society".

Figure V.5 - Transport system within the dimensions of sustainability [Source: Schade, Rothengatter 1999]



Sustainable development is being considered by the financing sector as well, and aspects of sustainability are included in the guidelines for applicants for funding. For example, the European Bank for Reconstruction and Development (EBRD) expects that projects to be financed meet good international practice related to sustainable development. Therefore, the bank has defined specific performance requirements (PR) for key areas of environmental and social issues and

impacts. Details of these performance requirements can be found in the related document published for applicants for funding [EBRD 2008). The areas are as follows:

PR 1: Environmental and Social Appraisal and Management

PR 2: Labour and Working Conditions

PR 3: Pollution Prevention and Abatement

PR 4: Community Health, Safety and Security

PR 5: Land Acquisition, Involuntary Resettlement and Economic Displacement

PR 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

PR 7: Indigenous Peoples

PR 8: Cultural Heritage

PR 9: Financial Intermediaries

PR 10: Information Disclosure and Stakeholder Engagement

All these issues are addressed in the first two phases, but it is also important to monitor the sustainable development during the **construction and operation phases**. Continuous analysis of the monitoring results enables the identification of critical developments at an early stage. Frequent meetings with the internal project team, stakeholders and residents concerned give immediate feedback. Relevant indicators also need to be defined and monitored to be able to control the project implementation. After some years of operation, in order to learn for future project implementation, an ex post analysis is worthwhile to clarify whether the forecast developments became reality.

Pitfalls of conventional evaluation tools

Traditional evaluation methods have a lot of disadvantages which can be described in the following way [Sammer, 2009]: The results of conventional CBAs are based on the total costs and benefits of the investigated alternatives in the study area. The social and spatial distribution of the cost and benefit are neither calculated nor taken into account for the political decision. Existing disparities are not considered and can be extended by a decision based on such an evaluation tool. Conventional CBAs do not take into account indirect third-party effects caused by regional and local economic developments as well as re-urbanization which is induced by new infrastructure or new employment. Another weakness of conventional evaluation tools consists of the not-very-valid reflection of all relevant environmental and social impacts. Even when the formal political decision doesn't require some of these results, it is important for the preparation of the political decision to disclose all necessary information, welcome or unwelcome, to the decision-maker and the public. In Austria, a new set of tools for strategic impact assessment is under development which tries to overcome the above-mentioned problems. This set comprises, in addition to some conventional assessment tools, the so-called Extended Cost–Benefit Analysis (eCBA), the Sustainable Development Analysis (SDA) [Sammer et al. 2005] and Quality Management Standards [Sammer et al. 2010] for the input data from transport modelling, including estimations of the confidence intervals for the dimensioning of traffic volume. On the upper level of decisions, the investigated alternatives must comprise intermodal alternatives of infrastructure and organizational measures for all relevant modes.

The SDA makes the holistic term of the sustainability operable for the impact assessment of alternatives. At least the result of the analysis ends in an index of sustainable development, which

derives the contribution of each alternative to the sustainable development on a scale between 0 % and 100 %. A value over 100 % can be interpreted as a stable sustainable development. The value 0 % describes the worst case possible. The technique is based on a multi-criteria analysis with specific inputs. Following the holistic definition of sustainability of the Brundtland Report (World Commission of Environment and Development, 1987) the three sectors of ecological, economic and social development are equally weighted. Each sector is subdivided into relevant criteria. One of the most challenging issues of this technique is the definition of the scale of the sustainability for each criterion, or clusters of criteria, in order to take into account synergetic effects. The list of criteria includes energy consumption, noise, exhaust gas emissions, greenhouse gas emissions, economic indicators such as the ratio of external and internal cost effects, and social effects such as the distribution of costs and benefits, as well as minimum standards of accessibility etc. If we want to operationalize the term "sustainable development", it is necessary to develop a set of criteria, which comprises each single input and output of the transport system (see figure V.6) including the synergetic effects. The whole set of effects has to be synthesized to an index of sustainable development. In figure V.7 the sustainability criterion and its mathematical formulation for the greenhouse gas emission is shown. If this criterion is fulfilled, the part-index of sustainability gets the value of 100 %. The value of 0 % fulfilment is defined by the worst-possible case of greenhouse gas emission for the study area.

Figure V.6 - Input and output effects of the transport system

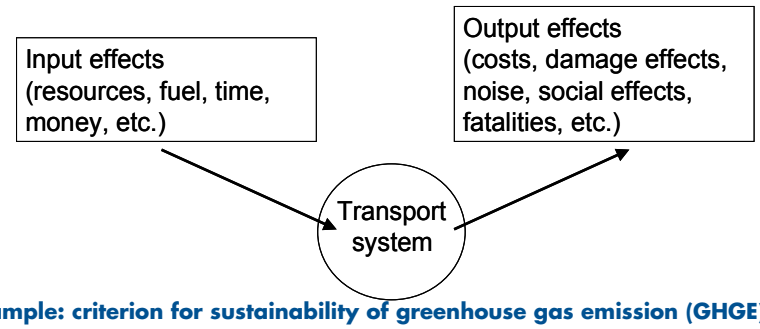


Figure V.7 - Example: criterion for sustainability of greenhouse gas emission (GHGE)

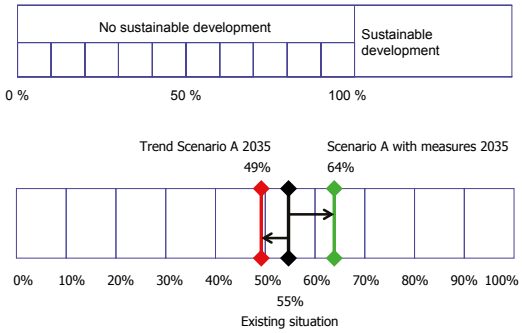
$$AP \leq \int_{t_0}^{t_1} NR(t) \cdot dt - \int_{t_0}^{t_1} NP(t) \cdot dt + AR$$

Steps of the sustainable development analysis (SDA)

The concept of the SDA consists of the following six steps and results in the index for sustainable development:

1. definition of objectives (upper and sub-goals);
2. definition of criteria for sustainable development;
3. definition and quantification of indicators and thresholds;
4. definition of value functions, calculation of part-index;
5. synthesis of part-indices of SD;
6. index for sustainable development (SD-index, figure V.8).

Figure V.8 - **Index for sustainable development and example of its result for three scenarios in the Vienna Region** [Source: Sammer et al. 2004]



Extended cost–benefit analysis

The development of the eCBA closes some gaps and is a promising extension of the conventional CBA with three elements as follows.

1 The regional economic value added is estimated independently of the change in accessibility by the investigated measures. The accessibility is measured in a standardized way and is based on the change of travel time or generalized costs.

2 The economic effect of induced/suppressed travel demand caused by an increase or decrease in the generalized user cost is assessed; the consumer surplus of the induced travel demand ranges up to 10 % of the total benefit.

3 The distribution of costs and benefit is disclosed: who wins or loses what, when, where, how much?

The eCBA is a very useful assessment instrument which should be used for the assessment of railway projects.

4. SELECTED EXAMPLES OF CURRENT EUROPEAN RAIL FUNDING EXPERIENCE AND PRACTICES

In the last few decades several mega projects of rail infrastructure were realized in Europe. Four of them are discussed briefly in this chapter to illustrate different approaches of financing and funding. All of these financing models are interesting examples for railway infrastructure projects of the future. Beginning with the first project in 1986, it also shows a history of the experimental phase in the allocation of rail infrastructure funds. These examples demonstrate the advantages and potential pitfalls of different financing models.

4.1 Channel Tunnel and Groupe Eurotunnel S.A.

The Channel Tunnel is a 50.5 km undersea rail tunnel, beneath the English Channel at the Strait of Dover, linking Folkestone, Kent near Dover in the United Kingdom with Coquelles, Pas-de-Calais near Calais in Northern France. The Groupe Eurotunnel S.A. (Société Anonyme) was formed in 1986 with the objective of financing, building and operating the Channel Tunnel. The construction of the tunnel was performed by TransManche Link Company. It started in 1988 and was finally finished in 1994. The project was privately financed partly from investment by shareholders and mostly from debt. The total investment cost was estimated at GBP 2,600 x 10^6 (1985 prices). After completion, the project cost turned out to be GBP 4,650 x 10^6 (1985 prices).

The construction cost overrun was in total 79 %, but the financing cost was estimated even 140 % higher than the estimated investment cost (about GBP 6,000 x 10^6). During the construction of the tunnel, the value of shares increased up to three times the issue value, but in 1989, when the first estimates of the cost overrun came out, the value fell nearly to its original level. During the first years of operation, the company was struggling to achieve arrangements with the 225 banks and 750,000 shareholders, and finally the British and French Governments provided help by extending the concession to operate the tunnel [Flyvbjerg 2003]. During this period, the value of the shares decreased down to 20 % of the issue value. In 2006, the company was placed into bankruptcy protection but after a 6-month period a bank consortium agreed to provide GBP 2,800 x 10^6 of long-term funding which was balanced by exchange of equity [BBC 2007]. After this, the share value increased considerably again but then consolidated at around 10 % higher than the issue value. The actual debt structure consists of the following [Eurotunnel 2009] (see table V.15):

- GBP 1,500 x 10^6 and EUR 1,965 x 10^6;
- 6 tranches (3 in EUR and 3 in GBP) with an average life of 25 years to 41 years were granted (total amount, see above);
- interest payments including payments on hedging contracts: EUR 201 x 10^6 in 2009.

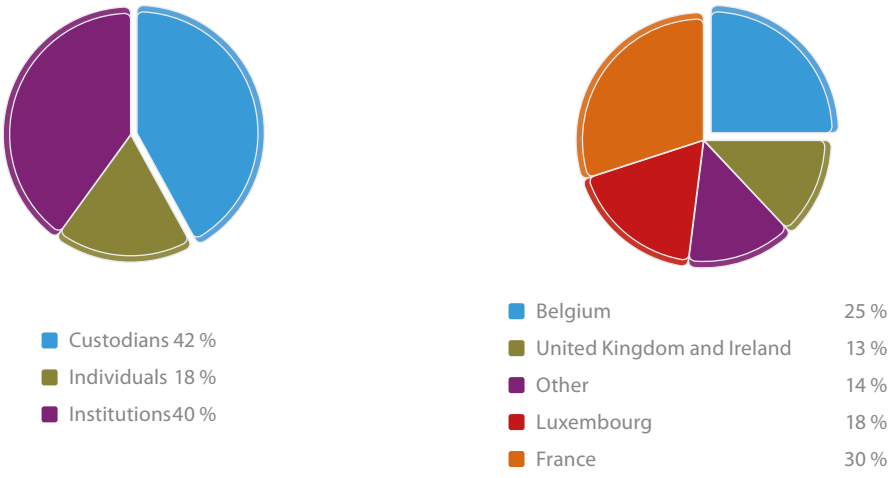
Table V.15 - Current term loans (nominal values at 31 December 2009[a])
[Source: Eurotunnel 2009]

	EUR x10^6	GBP x10^6	Total amount[b] EUR x10^6
Fixed-rate loans, indexed or inflation	367	750	1,212
Fixed-rate loans	645	400	1,095
Floating-rate loans[2]	953	350	1,347
Total loans	1,965	1,500	3,654

[a] Based on an exchange rate of GBP 1 = EUR 1.126 at 31 December 2009.
[b] Floating-rate tranches are fully covered by interest-rate hedging contracts.

The joint stock corporation Groupe Eurotunnel S.A. consists of around 350,000 shareholders which are composed as shown in figure V.9.

Figure V.9 - Composition of shareholders [Source: Eurotunnel 2010]



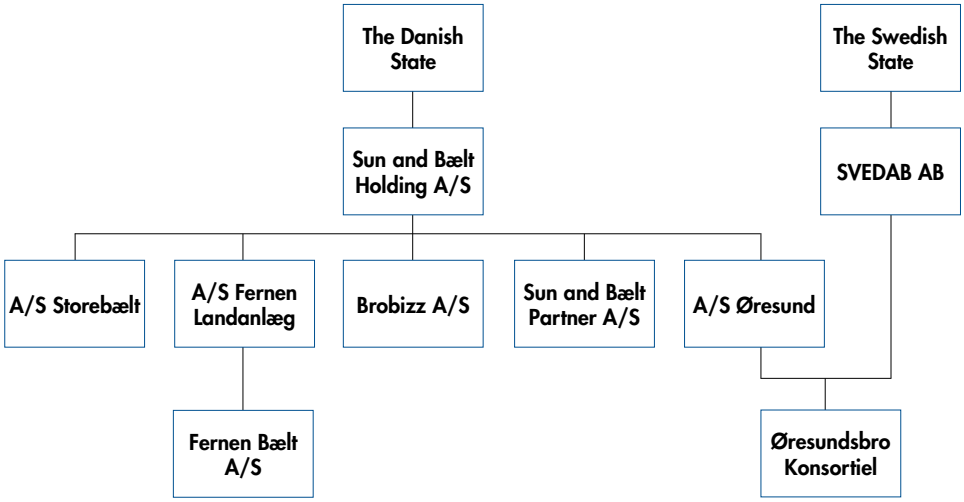
The following two main lessons have been learned from the Channel Tunnel project [Flyvbjerg 2003].

1. When building a private consortium, there needs to be intensive consideration of short-term (construction) and long-term (operation) interests. Modern methods are the so-called build-operate-transfer agreements with the concessionaire, or securing rights of the government to terminate the agreements under certain circumstances.
2. There needs to be identification of all types of risk from the beginning and allocation to the parties involved. In particular, political risk cannot be carried and managed by private investors but has to be allocated to those responsible for politics, namely the State.

4.2 The Øresund Bridge and Øresundsbro Konsortiet

The Øresund Bridge is a combined twin-track railroad and four-lane highway bridge-tunnel across the Øresund strait. It connects Sweden and Denmark and is the longest highway and railroad bridge in Europe to date. The construction work started in 1995 and was finished in 1999. The consortium responsible for construction and operation of the bridge is Øresundsbro Konsortiet. One company of the consortium, A/S Øresund, is wholly owned by Sund and Bælt Holding A/S which, in turn, is owned by the Danish state. In addition to A/S Øresund, this holding consists of other Danish companies such as the A/S Storebælt, which is also responsible for the operation of the Great Belt Fixed Link. The second company of the consortium, SVEDAB AB, is owned by the Swedish State. The consortium exists on behalf of the construction law by the Danish Parliament of the year 1991. By this law, the total investment cost was estimated at DKK 11.7 x 10^9 (1990 prices) for the bridge and DKK 3.2 x 10^9 for the access links on the Danish side. After finishing both parts of the project, the cost for the access links had increased to DKK 5.4 x 10^9 and for the bridge to DKK 14.8 x 10^9 (1990 prices). The cost overrun was in total 35 %. The cost was totally funded by loans and bond issues in the domestic as well as in the international capital markets, guaranteed by the Governments of Denmark and Sweden. Both States hold 50 % stakes on the consortium.

Figure V.10 - Ownership structure of Øresundsbro Konsortiet [Source: Oresundsbron 2010]



Toll charges are the only revenues of the consortium. Amongst the public, many people considered the tolls to be much too high for a bridge since a single fee for a car in October 2010 is EUR 39. A railway ticket between the two nearest stations either side of the bridge costs EUR 9

in October 2010 (Kopenhagen Airport Kastrup – Malmo C). The first figures of revenues are only 40 % of the forecasts at the time when the decision for building the bridge was made. The result shows that careful demand forecasting is essential. Since traffic increased from around 7,000 vehicles per day in the first half of 2001 to around 12,000 per day in the first half of 2005 [Oresundsbron 2010] it is expected that loans can be paid back within 30 years [Øresund Bridge 2010].

The Øresund project (and also the Great Belt Fixed Link project) have been set up institutionally as public joint-stock companies with full state ownership and financing backed by sovereign guarantees [Flyvbjerg 2003]. For this reason, the transparency of public control is absent, which placement in the public sector proper would necessitate. It also lacks the pressure on performance and risk reduction that placement in the private sector would also necessitate. The following lessons can be drawn.

1 Public sector involvement should be **strengthened**:
   - by engaging stakeholders and the public;
   - by identifying public interest objectives;
   - by defining regulatory regimes;

2 Public sector involvement should be **weakened**:
   - no total sovereign guarantee should be given to lenders (to enforce their pressure on performance);
   - government should not only promote, but should also critically assess a project's performance;

3 Private sector involvement should be **strengthened**:
   - by involving a degree of private risk capital;
   - by involving private consortia in performance-based project design;

4 Private sector involvement should be **weakened**:
   - lobby groups should be given less opportunity for rent-seeking behaviour.

4.3 Channel Tunnel Rail Link (High Speed 1)

The Channel Tunnel Rail Link (CTRL), also known as High Speed 1 (HS1), is a 108 km high-speed railway line running from London through Kent to the British end of the Channel Tunnel. The project was initially procured as a full-risk transfer public–private partnership in 1996. However, traffic forecasts proved to be overly optimistic and the British Government had to step in and restructure the project and refinance it. A client vehicle under the leadership of London & Continental Railways Ltd. (LCR) was created. The Government provided to LCR guarantees, which allowed it to raise finance from the bond markets at a very competitive rate of 5.5 % cost of capital. This had the effect of making LCR a public company and the debt was classified as part of the Government's borrowing. Following the successful completion of the project on time in 2007 and within budget, the Government wished to return HS1 to the private sector. As a preparatory measure, the Government assumed the debt that had been raised for the project.

HS1 is now in the process of being offered for sale to the private sector holding a Concession Agreement until 2040 to receive the revenues from track and station access charges plus retail income at the stations. In return it is subject to asset management and asset stewardship obligations linked to hand back the railway in 2040. The Government continues to own the asset and may let a further concession post 2040. The Government will receive income from the sale of HS1 Ltd. In preparation for the sale, HS1 Ltd has sought indicative ratings from Fitch and Moody's, which have both given the company investment grade status. A bridge to bond staple finance package has also been made available to bidders offering GBP 1.1 x 10^9 of debt capacity [Chapman 2010].

High Speed 1 illustrates a development which tried to follow the recommendations (mentioned in chapter 4.2) concluded from the Øresund project. It started as a full-risk transfer PPP to gain a maximum of performance of efficiency. After troubles arose, the Government helped but tried to keep its influence low by selling HS1 to the private sector again. HS1 has not been in operation long enough yet to evaluate whether that approach was successful.

4.4 New Railway Link through the Alps (NRLA) – Neue Eisenbahn-Alpentransversale (NEAT)

The NRLA project, also known as AlpTransit, is a Swiss federal project aimed at building faster north–south rail links across the Swiss Alps by constructing four base tunnels: the Gotthard, the Ceneri and Zimmerberg as part of the Gotthard axis, and the Lötschberg as part of the correspondent axis. The total construction cost of the AlpTransit project is currently [Bundesamt für Verkehr 2007] estimated to reach CHF 16.9 x 10^9 (1998 prices) (approximately EUR 13 x 10^9). The estimated additional cost is CHF 1.8x 10^9 to CHF 2.8 x 10^9 as risk calculation and CHF 4.0 x 10^9 as the cost for inflation, VAT and the interest rate for buildings. That leads to a total funding cost of CHF 23 x 10^9 to CHF 24 x 10^9 (2007 prices) (approximately EUR 18 x 10^9) until the estimated finish in 2017. The Lötschberg base tunnel was opened on June 17 2007. The Swiss population accepted the NRLA project by vote on 27 September 1992 and re-approved it, accepting its new financing structure by a new public transport fund (FinöV), in 1998. This fund of a total amount of about CHF 30 x 10^9 is comprised as follows:

- 55 % from Swiss earmarked heavy traffic road charges;
- 20 % from national VAT income;
- 10 % from earmarked petroleum tax;
- 15 % from public debt.

In addition to the NRLA, the public transport fund finances other Swiss rail projects. The allocation of money for the next years is planned as shown in table V.16.

Table V.16 - Allocation of money from Swiss public transport funds as planned from 2010 to 2012
[Source: Bundesamt für Verkehr 2010]

Allocation	Expenditure (CHF x10^6)		
	2010	2011	2012
Total funds contribution	1,810	2,072	1,878
Earmarked income	1,475	1,512	1,469
Public debt	335	560	409
Total funds spending	1,810	2,072	1,878
NRLA	1,304	1,420	1,201
Rail 2000	48	57	59
Connection to European high-speed network	127	193	191
Noise protection	140	160	170
Interest rates	191	242	257
Actual level of total advance money	7,844	8,404	8,813

A heavy traffic road charge in Switzerland has to be paid for all vehicles above 3.5 tonne gross weight on all roads (not only on highways) and is related to three classes of pollutant emission (Euro 0 to Euro 2, Euro 3, and Euro 4 to Euro 6). One third of the revenues of the road charges is used by the cantons for the maintenance of their roads, the other two thirds are used for large public transport investments as described above [EFD 2010]. In 2007, the total revenues mounted to CHF 1,336 x 10^6 (equal to approximately EUR 980 x 10^6 per year).

The NRLA is nowadays the most relevant role model for cross payments from the road transport sector in Europe. Their revenues are strictly earmarked and the share of other sources for funding NRLA remains very low. As shown in table V.16, the financing situation seems to be stable for the near future although the project also faces problems of cost overrun. Long-term revenues from operation cannot be estimated at present, which is a big weakness of such publicly financed projects. Anyway, although private involvement is completely excluded (contrary to the recommendations above) it is one of the few projects where earmarked taxes from road transport provide a relatively secure financing via public capital.

5. CONCLUSIONS AND RECOMMENDATIONS

The provision of money for the needed railway infrastructure at the right time is a fundamental element of a successful transport policy and of a successful economic development. Independently of which model of financing is chosen, governments have the key responsibility to establish the policy frameworks for the financing task and to regulate this activity. It is important that the government develop appropriate organizational structures in terms of a legal, financial, institutional and technical framework. The principle of infrastructure development is based on two main objectives. Railway and other transport infrastructure investments should be realized only if firstly, for a considered project, the overall economic benefit exceeds the cost for construction, maintenance and operation over the lifetime of the project, and secondly, if an appropriate funding inclusive of the funding cost can be secured. This means that reliable feasibility studies including all required information of economic and financial cost–benefit as well as environmental impact assessment have to be carried out for all potential new transport infrastructure projects of railways, roads and waterways. The decision as to which transport infrastructure projects should be realized should be taken by considering all modes of transport (corridor perspective), depending on the benefit–cost ratio. This procedure alone ensures the most efficient use of the limited financial resources. It has to be mentioned that any deviation from this procedure can only be justified by the argument that an infrastructure project has the goal to ensure the minimum quality level of access for a specific region. But such a deviation has the consequence that the financial resources are not used in an efficient way in terms of economic cost–benefit.

The following recommendations have been formulated on the basis of the preceding analysis about railway financing.

a) **Financial sources for railway infrastructure**

The scarceness of public resources, which is intensified by the current economic crisis, leads to continued and severe reduction in railway financing in most of the participating countries. Therefore many railway infrastructure projects incorporated in the TER Master Plan are jeopardized, especially their implementation according to schedule. No simple recommendation can be stated, but the Governments are invited

- to develop practical ways of financing for the railway projects of the TER Master Plan, always keeping in mind that infrastructure investments are one of the important preconditions in order to ensure a successful development of the economical future,

- to make use of the experiences gained in countries which successfully improved and financed their railway network recently,
- to establish a fair sharing of cost between taxpayers and transport users, taking into account the current biased distribution of external cost between rail and road users (the current unequal distribution of the external cost between rail and road causes unfair competition and leads to an unsustainable transport system in total; as long as external costs are unbalanced, this situation can be compensated by cross payment from the road users to railway users), and
- to keep the long-term goal in mind that the contribution of railway users should cover at least all operation costs and as much as possible of the infrastructure cost, except the share of the cost which is summarized under the term non-profit and social costs. That means that as a first step, the operation cost should be covered in total by the railway users.

b) **Improvement of planning and decision preparation for railway infrastructure to achieve greater efficiency**

Infrastructure investments in general, and especially those in the transport and railway infrastructure sector, are very cost intensive. They also strongly determine future economic development, but they are often influenced by political interference and lobbying interests. In order to ensure an efficient allocation of the limited financial resources, a new planning culture is needed which prevents wrong decisions. This means that the planning and decision preparation need more care and the public decision-makers should pay more attention to the results. One precondition for an improvement in planning and decision preparation is a clear national transport master plan and the provision of reliable feasibility studies. The planning authorities and decision-makers are strongly encouraged:

- to establish national transport master plans which comprise the infrastructure and transport policy for all modes, with clear objectives for a sustainable transport policy;
- to develop and approve a long-term strategy of the railway infrastructure in accordance with the national transport master plan, based on economic, ecological and social considerations as well as appropriate feasibility studies; this long-term strategy should include a schedule of implementation and a manageable financing plan and should include only infrastructure projects which demonstrate a significant cost–benefit ratio; one key factor of a sustainable long-term strategy should be the goal to internalize the external costs of road and railway transport; as a first step, the external cost of road transport should be internalized on the same level as railway transport;
- to establish an appropriate project management system which avoids systematically biased underestimation of projects costs and overestimation of travel and transport demand, and which ensures appropriate risk assessment, quality and validation management of the projects as well as approbation of economically efficient projects, which achieve a public reasonable benefit (see chapters 1.3.1 and 1.3.2);
- to introduce new assessment instruments (Sustainable Development Analysis) in order to ensure a sustainable transport development;
- to enable and support the procedure of European standardization of national construction and operation guidelines as quickly as possible; it is evident that this essential step enables a significant reduction in the infrastructure construction, maintenance and operation costs for railways, which has an important influence on the financing task;
- to ensure an efficient priority completion of railway infrastructure network; the current established practice in many countries pursues the strategy of extending the completion

time of several parallel-running infrastructure projects because of financial short comes; such a strategy leads to decreased economic benefit and should be avoided.

c) **Organizational model for provision of infrastructure, operation and financing**

Experiences in several countries indicate that the success and the efficiency of financing and implementation of railway infrastructure are strongly dependent on the organizational model which is responsible for the provision of infrastructure planning and development, maintenance, operation and financing. No single solution exists which guarantees efficiency and success, because there are a lot of external influences and the main important framework conditions have to be taken into account. Therefore the relevant decision-makers are invited

- to consider carefully the political, legal, institutional, financing and economic framework conditions which are influencing the railway sector, and if necessary to develop a revision of the organizational structure,
- to discuss and make transparent all advantages and disadvantages of public–private partnership models for the development of railway infrastructure before making any decisions; experiences indicate that some advantages of PPP models can be achieved also by other interventions such as a revised organizational model and tendering procedure, and
- to consider successful organizational models for the provision of planning and financing activities in their countries (whether a public or a private corporation is the more successful form of model is dependent on time and other criteria, e.g. which form gets the lower interest rate and better credit rating); the advantage of more effective planning and construction management can be achieved also through new ways of "functional bidding" (see chapters 2.2.1 and 2.2.3).

As a minimum, it must be stated that a successful railway infrastructure financing is not a kind of kismet which cannot be influenced. In fact it is an indication of the political willingness in the political competition of priorities. But it must also be stated that making no political decision for financing railway infrastructure is a decision against railway development.

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ANNEX VI

Funding considerations for railway infrastructure projects in the Master Plan

The scope of activities for elaboration of the part of the analysis presented in this annex is focused on the TER part of the Master Plan and, in particular, on the following aspects:

- identification of possible sources of funding for the projects;
- assessment of the application of the criteria for project evaluation on the socio-economic return on investment and on financial feasibility prioritization;
- addressing funding considerations for non-secured or partly secured TER Master Plan projects;
- the prerequisites for the bankable projects and the steps to be followed for ensuring funding;
- establishment of technical and institutional actions required to secure missing funds.

1. IDENTIFICATION OF POSSIBLE SOURCES OF FUNDING FOR THE PROJECTS

1.1 Overview of projects

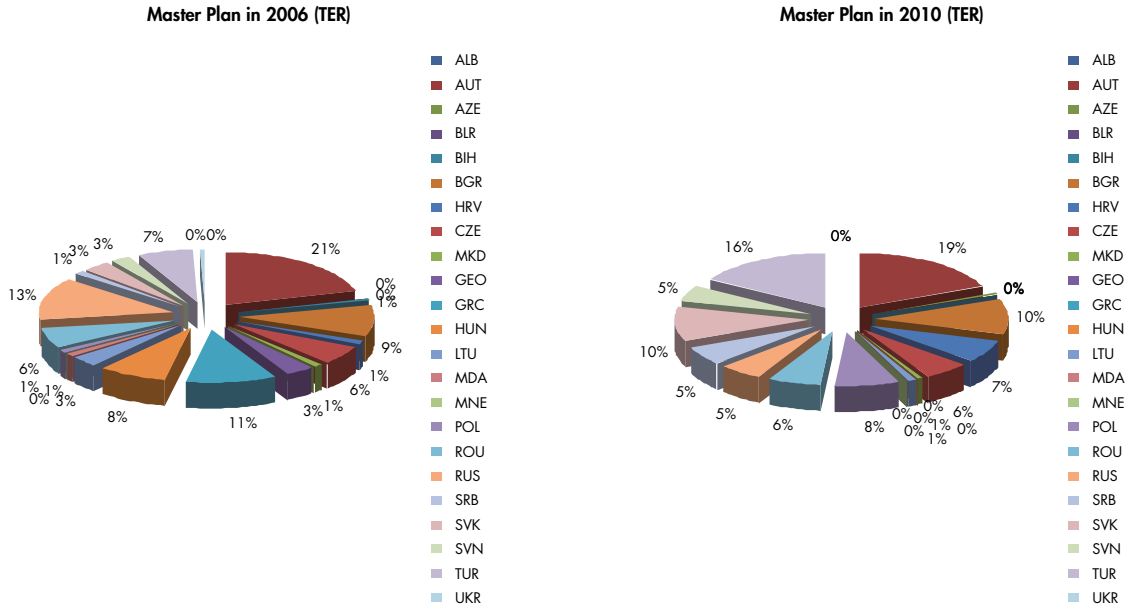
On the basis of the latest data available for revision of the Master Plan, the total number of railway projects is 191 with an overall cost estimate at around EUR 70.3 x 10^9. Table VI.1 presents the summary of projects per country, including the number of projects and their cost estimates as indicated in 2006 at the time of publication of the original "TEM and TER Master Plan Final Report".

Table VI.1 - Summary of projects and their cost estimate per country

No.	Country	2006		2010		Note
		No. of projects	Cost estimate (EUR x 10^6)	No. of projects	Cost estimate (EUR x 10^6)	
1	**Albania (new)**			2	29.00	
2	**Austria**	6	10,900.00	17	13,639.00	
3	**Azerbaijan (new)**			2	319.00	
4	**Belarus**	1	0.57			No update
5	**Bosnia and Herzegovina**	7	354.10	7	70.00	5 projects without cost estimate in 2010
6	**Bulgaria**	8	4,969.00	8	7,665.00	
7	**Croatia**	16	595.60	16	4,839.00	1 project without cost estimate in 2010

No.	Country	2006		2010		Note
		No. of projects	Cost estimate (EUR x 10^6)	No. of projects	Cost estimate (EUR x 10^6)	
8	**The Czech Republic**	8	3,042.92	4	4,053.00	
9	**The former Yugoslav Republic of Macedonia**	5	511.60	4	555.00	3 projects without cost estimate in 2006
10	**Georgia**	2	1,826.37			In 2006, 2 projects beyond 2020 No update for 2010
11	**Greece**	12	5,626.43			No update
12	**Hungary**	23	4,405.35			No update
13	**Lithuania**	22	1,803.10	32	685.00	9 projects without cost estimate in 2010
14	**The Republic of Moldova**	2	482.31			In 2006, 2 projects beyond 2020 No update for 2010
15	**Montenegro (new)**			1	33.00	
16	**Poland**	6	594.50	20	5,652.00	
17	**Romania**	4	3,072.10	5	4,747.00	
18	**The Russian Federation**	19	7,000.00	18	3,790.00	
19	**Serbia**	13	465.10	11	4,021.00	
20	**Slovakia**	5	1,820.51	13	7,559.00	
21	**Slovenia**	7	1,314.60	9	3,401.00	1 project without cost estimate in 2010
22	**Turkey**	4	3,534.80	20	12,055.00	
23	**Ukraine**	2	239.80			No update
Totals		**172**	**52,558.76**	**191**	**73,112.00**	

Figure VI.1 - Share of projects by country in 2006 and 2010
[Source: "TEM and TER Master Plan Final Report", July 2006 and the latest available updates]



As can be seen from table VI.1, the total number of TER projects in 2010 increased by 10.5 %, whereas their total cost estimates increased by 39.1 % compared to the status in 2006. There are three main reasons for these differences:

- changes in the number of TER participating countries,
- changes in the TER nominated projects by most of the countries;
- different considerations with respect to the status of a project in the different countries.

In 2006, there were 20 TER countries which participated in activities for drafting the "TEM and TER Master Plan". Four years later, TER included three additional countries Albania, Azerbaijan and Montenegro (which separated from Serbia and Montenegro in June 2006). However, this change did not influence substantially the total number or the cost estimate of the TER projects, since it contributed only five extra projects at around EUR 381 x 10^6, which represents only 0.73 % of the total estimated costs in 2006.

On the other hand, numerous TER countries changed the nominated projects both in total number and cost estimates. In the case of TER nominated projects, Austria moved from 6 to 17, Lithuania moved from 22 to 32, Poland moved from 6 to 20, Romania moved from 4 to 5, The Russian Federation moved from 19 to 20, Slovakia moved from 5 to 13, Slovenia moved from 7 to 9, and Turkey moved from 4 to 20. The extreme cases in the changes of the cost estimates are the following:

- Austria increased the cost estimate by EUR 2.7 x 10^9 (11 more projects);
- Bulgaria increased the cost estimate by EUR 2.7 x 10^9 (the same number of projects);
- Croatia increased the cost estimate by EUR 4.2 x 10^9 (the same number of projects);
- The Czech Republic increased the cost estimate by EUR 1.0x 10^9 (4 projects less);
- Lithuania decreased the cost estimate by EUR 1.1 x 10^9 (9 more projects);
- Poland increased the cost estimate by EUR 5.0 x 10^9 (14 more projects);
- Romania increased the cost estimate by EUR 1.7 x 10^9 (1 more project);
- The Russian Federation decreased the cost estimate by EUR 3.2 x 10^9 (1 more project);
- Serbia increased the cost estimate by EUR 3.6 x 10^9 (2 projects less);

- Slovakia increased the cost estimate by EUR 5.7 x 10^9 (8 more projects);
- Slovenia increased the cost estimate by EUR 2.1 x 10^9 (2 more projects);
- Turkey increased the cost estimate by EUR 8.5 x 10^9 (16 more projects).

Thus, Croatia, Poland, Slovakia and Turkey contributed mostly to the increased cost estimates, including the number of nominated TER projects.

Also, the participating countries considered differently the status of implementation of their projects and changed the cost estimates accordingly.

Austria

In 2006, Austria nominated 6 projects with total cost estimate of EUR 10.9 x 10^9. These projects were not defined with details referring to a railway line; rather there was a broad scope of activities foreseen to be completed by 2013. In the revision from 2010, Austria nominated 17 specific projects with a total cost estimate of up to EUR 13.6 x 10^9. 16 out of 17 projects are foreseen for completion by 2011, whereas 1 project only is foreseen for completion by 2021.

Bosnia and Herzegovina

In 2006, Bosnia and Herzegovina nominated 7 specific projects with a total cost estimate of EUR 354.1 x 10^6. These projects were foreseen to be completed by 2015. In the revision from 2010, one modification was made in order to split 1 relatively large project into 2, and 5 projects have no related updated cost estimate information (which has therefore been assumed to be at the same level as before).

Bulgaria

In 2006, Bulgaria nominated 8 specific projects with a total cost estimate of EUR 4.9 x 10^9. These projects were foreseen to be completed in three different periods, according to the priority groups. In the revision from 2010, Bulgaria nominated 8 projects also. These projects are foreseen for completion by 2020 and their total cost estimate is EUR 7.7 x 10^9, which is 1.6 times higher than in 2006.

Croatia

In 2006, Croatia nominated 16 specific projects with a total cost estimate of EUR 595.6 x 10^6. These projects were foreseen for completion by 2010. In the revision from 2010, Croatia nominated again 16 projects but 7 of them are new. Some of these projects are foreseen for completion beyond 2020 and the total cost estimate is EUR 4.8 x 10^9, which is 7.5 times higher than in 2006.

The Czech Republic

In 2006, the Czech Republic nominated 8 specific projects with a total cost estimate of EUR 3.0 x 10^9. These projects were foreseen for completion by 2020. In the revision from 2010, the Czech Republic nominated 4 projects. The remaining projects now have a cost estimate of EUR 4.0 x 10^9, which is 1.3 times higher than in 2006.

The former Yugoslav Republic of Macedonia

In 2006, the former Yugoslav Republic of Macedonia nominated 5 specific projects with a total cost estimate of EUR 511 x 10^6 (3 projects did not have a cost estimate). In the revision from 2010, it nominated 4 projects (1 of the previously mentioned projects has been split into 2 projects, and 1 project is no longer mentioned). The remaining projects now have a cost estimate of EUR 555 x 10^6.

Lithuania

In 2006, Lithuania nominated 22 specific projects with a total cost estimate of EUR 1.8 x 10^9. These projects were foreseen for completion by 2015. In the revision from 2010, Lithuania nominated 32 projects, of which 23 are new and 8 projects are the same as before. The 2010 projects have a cost estimate of EUR 685 x 10^6, which is 2.6 times less than that in 2006. These projects are foreseen to be completed in three different periods, according to their priority group (2015, 2020 and beyond 2020).

Poland

In 2006, Poland nominated 6 specific projects with a total cost estimate of EUR 594 x 10^6. These projects were foreseen for completion by 2010. In the revision from 2010, Poland nominated 20 projects with a cost estimate of EUR 5.6 x 10^9, which is 9.5 times more than that in 2006. These projects are foreseen to be completed by the end of 2015.

Romania

In 2006, Romania nominated 4 specific projects with a total cost estimate of EUR 3.1 x 10^9. These projects were foreseen for completion by 2015. In the revision from 2010, Romania nominated 5 projects, of which 1 is new and 4 projects are the same as before. These projects have a cost estimate of EUR 4.7 x 10^9, which is 1.5 times higher than that in 2006. These projects are foreseen for completion by 2020.

The Russian Federation

In 2006, the Russian Federation nominated 19 specific projects with a total cost estimate of EUR 7 x 10^9. These projects were foreseen for completion by 2010 but they were mixed up with road projects. In the revision from 2010, the Russian Federation nominated 20 projects having a cost estimate of EUR 3.8 x 10^9. These projects are foreseen for completion by 2015.

Serbia

In 2006, Serbia nominated 13 specific projects with a total cost estimate of EUR 465 x 10^6. These projects were foreseen for completion by 2010. In the revision from 2010, Serbia nominated 11 projects, of which 5 projects are new and 6 projects are the same as before. These projects have a cost estimate of EUR 4 x 10^9, which is 8.6 times higher than that in 2006. These projects are foreseen to be completed in three different periods (2015, 2020 and beyond 2020).

Slovakia

In 2006, Slovakia nominated 5 specific projects with a total cost estimate of EUR 1.8 x 10^9. These projects were foreseen for completion by 2015. In the revision from 2010, Slovakia nominated 13 projects, of which 10 projects are new and 3 projects are the same as before. These projects have a cost estimate of EUR 7.6 x 10^9, which is 4.2 times higher than in 2006. These projects are foreseen to be completed in two different periods (2015 and 2020).

Slovenia

In 2006, Slovenia nominated 7 specific projects with a total cost estimate of EUR 1.3 x 10^9. These projects were foreseen for completion by 2015. In the revision from 2010, Slovenia nominated 9 projects, of which 2 projects are new and 7 projects are the same as before. These projects have a cost estimate of EUR 3.4 x 10^9, which is 2.6 times higher than that in 2006.

Turkey

In 2006, Turkey nominated 4 specific projects with a total cost estimate of EUR 3.5 x 10^9. These projects were foreseen for completion by 2015. In the revision from 2010, Turkey nominated 20 projects, of which 17 projects are new and 3 projects are the same as before. These projects have a cost estimate of EUR 12.0 x 10^9, which is 3.5 times higher than that in 2006. These projects are foreseen to be completed by 2015.

Other countries

Relevant updates were not received from Belarus, Georgia, Greece, Hungary, the Republic of Moldova, and Ukraine. In the case of Georgia and the Republic of Moldova, their projects are foreseen for implementation far beyond 2020 as stated in 2006. In 2006, Greece and Hungary counted some EUR 10 x 10^9 worth of investments, which accounted for one fifth of the total investments in railway projects in 2006.

Overall, the revisions of projects for the railway part of the Master Plan indicate a substantial increase in required investment in the foreseeable period. This highlights the importance of securing the funding for these projects.

1.2. Secured sources of funding

In the original Master Plan, four main groups of funding sources were identified as follows:

- "national" — linked to the national/general budget source in the countries;
- "banks" — loans borrowed from the various banks, mainly international ones [international financial institutions (IFIs)];
- "grants" — linked to contributions provided mainly by the EU instruments;
- "private" — linked to the participation of private capital in various PPP schemes.

Also, it is important to observe the link between the secured sources of funding and the countries involved. This can be seen from the standpoint of the three country groups which are identified in Volume 1, chapter 5.7, of the revised Master Plan. These groups are as follows:

- EU member countries before 1 May 2004 (Austria and Greece);
- EU member countries after 1 May 2004 and acceding countries to the EU (Bulgaria, Croatia, the Czech Republic, Hungary, Lithuania, Poland, Romania, Slovakia, Slovenia and Turkey);
- Non-EU/non-acceding countries to EU (Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia, Georgia, the Republic of Moldova, Montenegro, the Russian Federation, Serbia, and Ukraine).

To reflect the political and economic development which occurred in the period 2005 to 2010 as well as the fact that four more countries — Albania, Armenia, Azerbaijan and Montenegro — decided to join the revision of the Master Plan, it has been necessary to modify the participation in the groups accordingly. For the revised traffic forecast, Croatia (as an EU candidate country) has been transferred to Group 2, while Albania, Armenia, Azerbaijan and Montenegro have been added to Group 3.

An interesting observations, which mainly refer to the EU status of individual countries, because the EU status directly affects possibilities of the countries to implementation projects identified in the project.

Tables VI.2 and VI.3 present the actual funding status of projects, based on the latest updated information.

Table VI.2 - Funding status of projects in EU member countries before 1 May 2004 [Source: "TEM and TER Master Plan Final Report", July 2006 and the latest updates]

Project ID	Cost estimate (EUR x10⁶)	% funding secured from the following source			
		National	Bank	EU grant	Private
AT-R-2	1,123		100%		
AT-R-3	10[9]		100%		
AT-R-4	685		100%		
AT-R-5	105		100%		
AT-R-6	654		100%		
AT-R-7	189		100%		
AT-R-8	348		100%		
AT-R-9	113		100%		
AT-R-10	138		100%		
AT-R-11	2,988		100%		
AT-R-13	116		100%		
AT-R-14	1,339		100%		
AT-R-15	4,784		100%		
AT-R-16	276		100%		
AT-R-17	381		100%		
AT-R-20	95		100%		
AT-R-21	196		100%		
GR-R-1	356	50%		50%	
GR-R-2	505	42%		42%	
GR-R-3	633	24%		24%	
GR-R-4	221	50%		50%	
GR-R-5	826	32%		32%	
GR-R-6	216	50%		50%	
GR-R-7	63	15%		85%	
GR-R-8	101				
GR-R-9	5	50%		50%	
GR-R-10	1,510				
GR-R-11	776				
GR-R-12	415				

Table VI.2 indicates that Austria managed to secure all the funds for the implementation of the specified projects from bank loans. This can be regarded as unique achievement since the total investment costs are substantial and there is no comparable case amongst the other countries.

On the contrary, another EU country member, Greece, did not manage to secure all funds for the specified projects, which were equivalent to 50 % of the total investment costs of those of Austria at that time. Greece used EU grants to secure funds since it was eligible as an EU member country, on the basis of the EC regulations. At the moment of preparation of this final report, Greece has not provided an update about these projects.

Table VI.3 - Funding status of projects in EU member countries and acceding countries after 1 May 2004 [Source: The latest updates for the revision of the Master Plan]

Project ID	Cost estimate (EUR x10^6)	% funding secured from the following source			
		National	Bank	EU grant	Private
BG-R-1	340	11%	44%	45%	
BG-R-2	180	9%	50%	41%	
BG-R-3	40	20%		80%	
BG-R-4	4,800	20%		80%	
BG-R-5	1,600	20%		80%	
BG-R-6	300	20%		80%	
BG-R-7	200	100%			
BG-R-8	85	20%		80%	
BG-R-9	300	20%		80%	
CR-R-3	510	100%			
CR-R-7	65	100%			
CR-R-9	18	17%		83%	
CR-R-15	90	100%			
CZ-R-1	1,400	38%	21%	41%	
CZ-R-3	669	42%	23%	35%	
CZ-R-4	505	42%	35%	23%	
CZ-R-7	1,479	42%	23%	35%	
CZ-R-8	314	38%	21%	41%	
LT-R-1	41			85%	15%
LT-R-2	8			85%	15%
LT-R-3	89			85%	15%
LT-R-4	9			85%	15%
LT-R-5	39			85%	15%
LT-R-8	19			85%	15%
LT-R-9	161			85%	15%

Project ID	Cost estimate (EUR x10⁶)	% funding secured from the following source			
		National	Bank	EU grant	Private
LT-R-10	30			85%	15%
LT-R-11	26			85%	15%
LT-R-12	54	15%		85%	
LT-R-13	3			85%	15%
LT-R-14	7			85%	15%
LT-R-15	21			85	15
LT-R-16	29			85	15
LT-R-17	13			85	15
LT-R-21	20			85	15
LT-R-22	7			85	15
LT-R-23	15			85	15
LT-R-24	25			85	15
LT-R-25	22			85	15
LT-R-26	27			85	15
LT-R-27	47			85	15
LT-R-28	27	73	27		
RO-R-3	802	20	45	35	
RO-R-5	250	15		85	
RO-R-6	199	25		75	
SK-R-1	216	44	10	55	
SK-R-3	363	10		50	40
SK-R-4	53	40		60	
SK-R-5	1,118	30		70	
SK-R-6	564	19		81	
SK-R-9	82	18		82	
SK-R-10	388	18		80	2
SK-R-13	788	16		84	
SL-R-1	95	74		26	
SL-R-4a	145	65		35	
SL-R-5	141	59		41	
TR-R-1	2,400	25	75		
TR-R-2	500	100			
TR-R-3	910	100			

Project ID	Cost estimate (EUR x10⁶)	% funding secured from the following source			
		National	Bank	EU grant	Private
TR-R-5	390	10	90		
TR-R-7	1,700	25	75		
TR-R-8	2,000	10		90	
TR-R-9	140	15	85		
TR-R-10	60	15	85		
TR-R-11	320	15	85		
TR-R-12	100		100		
TR-R-15	130		100		
TR-R-16	50	100			
TR-R-19	10		100		
TR-R-21	166	100			

EU member countries and acceding countries (Croatia and Turkey) after 1 May 2004 used a variety of sources for funding of projects. The situation differs from country to country in this group as described below.

Bulgaria

Bulgaria managed to secure all funds for 9 projects estimated at EUR 7.8 x 10^9. In almost all cases (8 projects), Bulgaria applied for EU grant funding. This included 2 major projects estimated at EUR 6.4 x 10^9. The grants are mostly allocated in the ratio 20 % of the national budget and 80 % of EU grants, whereas 2 other projects have co-financing between the national budget, an EU grant and a bank loan. 1 project has 100 % secured funds from the national budget.

Croatia

Croatia managed to secure funds for 4 out of 16 projects. In almost all cases (3 projects), Croatia secured 100 % of the funding from the national budget, whereas 1 project only is co-financed with EU grants at 83 %. It is important to note that Croatia is an acceding country to the EU.

The Czech Republic

The Czech Republic managed to secure all funds for 5 projects estimated at EUR 4.3 x 10^9. In all cases, the projects are funded through co-financing between the national budget, an EU grant and a bank loan (where the average ratio is 41 %:24 %:35 % respectively).

Lithuania

Lithuania managed to secure funds for 23 out of 32 projects. In most of the cases (21 projects), Lithuania applied for EU grant funding at 85 % of the project value, and the remaining 15 % is co-financed with private capital. This form of project co-financing represents a unique case; it represents a total investment cost estimated at EUR 739 x 10^6. The remaining projects are funded with the assistance of the national budget and a bank loan.

Romania

Romania managed to secure funds for 3 out of 6 projects estimated at EUR 1.2 x 10^9. In two cases, Romania applied co-financing between the national budget and an EU grant (at a ratio of 15 %:85 % and 25 %:75 %). In the third project, Romania also applied co-financing between the national budget and an EU grant (at a ratio of 20 %:35 %), and the remaining 45 % of the funding is through a bank loan.

Slovakia

Slovakia managed to secure funds for 8 out of 13 projects estimated at EUR 3.5 x 10^9. In all cases, this country applied co-financing between the national budget and an EU grant (at a ratio of 25 %:75 % on average). In one case, the co-financing is supplemented by a bank loan and in another two cases by private funding.

Slovenia

Slovenia managed to secure funds for 3 out of 9 projects estimated at EUR 381 x 10^6. In all cases, this country applied co-financing between the national budget and an EU grant (at a ratio of 66 %:34 % on average).

Turkey

Turkey managed to secure funds for 14 out of 21 projects estimated at EUR 8.8 x 10^9. It used a variety of different funding approaches. In 4 cases, Turkey secured 100 % financing from the national budget (EUR 1.6 x 10^9). In 6 cases, it applied co-financing between the national budget and bank loans, whereas in 3 other cases it used 100 % bank loans. One project (EUR 2 x 10^9) is co-financed between the national budget and an EU grant.

The summaries provided above show the strong relationship between the EU membership status and the use of EU grants for the funding of TER projects.

National budgets and bank loans are also being used substantially for the implementation of these projects, whereas private funding is the exception and is only being used by Lithuania (for 21 projects) and Slovakia (for 2 projects).

As regards the non-EU countries, the situation of secured funding for projects can be assessed as being critical. Albania, Azerbaijan, Bosnia and Herzegovina, Montenegro, the Russian Federation and Serbia did not provide any updated information about secured funds for their projects. Moreover, Belarus, Georgia, the Republic of Moldova and Ukraine did not provide any updated information about their projects. In most cases, these countries are facing numerous obstacles in the implementation of their projects, including the securing of funding. The only exception may be the Russian Federation since, although it did not provide the relevant information, other sources of information indicate there is evidence of substantial investments in railway infrastructure in the country.

1.3 Possible sources of funding

In general, it is common nowadays for countries (governments) to face difficulties meeting the financing needs of large projects like the TER projects through the use of "traditional" sources of funding such as the national budget. That is why countries are trying to find other sources of funding.

In principle, there are two major types of source which can be considered for the funding of TER projects: national budget and "off-the-budget" funding. The possibility of using these

sources depends on various factors which may differ from country to country. The main factors are the following:

- the level of political, economic and social development of a country;
- the disposable incomes of the physical and legal persons in a country (i.e. the taxpayers);
- the extent and efficiency of the taxation instruments in a country;
- the flexibility of the financial markets in a country;
- the accessibility of a country to the international financial markets.

Also, no matter which source is used, the funding of such projects should take into account the financial stability of a country, since this influences the financial feasibility and sustainability of the projects. Meanwhile, this chapter is restricted to a review of the possible sources for funding of these projects[7].

1.3.1. National budget

This "traditional" source of funding relates to the direct allocation of funds to a project from the country's budget, whether this be the state, regional or local budget.

Although many experts say that this source of funding is "old-fashioned", the data show that many countries are still using it. On the basis of the latest figures provided by the TER countries (the EU members and acceding countries), it can be seen that the countries are using this source of funding to different degrees. The percentage of national budget with respect to the total project funds usually starts in the region of 10 % to 20 % , which is a minimum for co-financing along with other sources, but it can be as high as 100 % as in Bulgaria, Croatia and Turkey. The extent of the use of such funds is highly dependent on the possibilities of the individual countries. However, it is important to have this source of funding available for TER projects, since co-financing plays a major role in the creation of the structure for the financial feasibility of a project. This is valid for any type of co-financing (EU grants, bank loans from the IFIs, PPPs, etc.).

1.3.2. "Off-the-budget" financing

"Off the budget" financing for the funding of TER projects comprises a variety of funding sources using indirect allocations collected from users and taxpayers. The most common forms of these sources are the following:

- user charges (fees and earmarked taxes);
- debts (loans from development banks and bonds);
- capital markets (various financial tools, PPPs, etc.).

User charges

User charges represents a group of funding components as follows: infrastructure access fee, cross subsidy and earmarked tax.

A fee for access to the railway infrastructure is a tool based on the "the user pays" principle. In practical terms, railway operating companies are paying for the use of the railway infrastructure for the running of their trains (operations). This tool can secure certain funds for the infrastructure management (i.e. the railway infrastructure companies) to invest into the development of the railway infrastructure.

A cross subsidy is a financing tool based on "the polluter pays" principle. It usually comes from the road transport sector but may come from some other sectors also. This tool is highly dependent on a country's power to enforce relevant environmental legislation and instruments

[7] More details about this can be found also in annex V.

for the collection of such funds. The ultimate purpose of this tool is the general promotion of environmentally friendly transport modes, such as railways.

An earmarked tax is a financing tool which the public sector often uses to secure dedicated funds for the implementation of specific projects such as the TER projects. These funds can be collected from a broad range of taxes such as excise duties on fuel, cigarettes alcohol, etc., a land use tax, VAT, etc.

Debts

Debts also represent a "traditional" source of funding for these projects. It is usually based on two types of debt: loans and bonds.

A loan is a financing tool which is broadly implemented over numerous international and domestic financial institutions, such as development banks. The EIB, the EBRD and the World Bank are the main international financial institutions interested in the funding of railway infrastructure.

The basis of this tool is a long-term borrowing of funds (the maturity period is usually not less than 20 years) to be repaid, along with some other "soft-loan" conditions (e.g. a "grace" period during construction, lower interested rates than those in commercial banks, etc.). In essence, the repayment of these loans is based on the operational income of a borrower, which can be related to the funding sources identified above.

As regards the updated figures for TER projects, it can be seen that this source of funding is used to a large extent in many TER countries. The cases of Austria and Turkey are the extreme, with secured funds representing 75 % to 100 % of the funding for their projects. In other TER countries that provided detailed data, this range is 20 % to 50 %. It is important to mention that IFI loans are the main funding source for the development of railway infrastructure in most of the non-EU TER countries.

A bond is a debt-funding tool which is based on the collection of funds from the domestic market of a country, and the repayment is guaranteed by an issuer from the public sector. This financing tool does not seem to be developed in many TER countries and it mainly depends on numerous factors as mentioned above.

Capital markets

Capital markets represents a broad variety of potential funding sources for TER projects. They usually include sources such as stocks from stock exchange markets, PPP schemes and specific funds such as EU grants, etc.

Capital markets can be regarded as an upcoming financing tool for TER projects; at present, Lithuania is the only country which regularly uses "private" capital for the implementation of its projects. Meanwhile, there are interesting tools based on funds created by large financial markets like the EU, the United States of America and the Russian Federation. EU grants, the American Recovery and Reinvestment Plan (with the promotion of PPPs in transport infrastructure) and the Investment Fund of the Russian Federation are interesting examples of possibilities for funding sources of TER projects. Moreover, EU grants have been confirmed as successful tools for securing the funds of TER projects in almost all EU and acceding countries. The main problem exists for non-EU countries which do not have access to these grants.

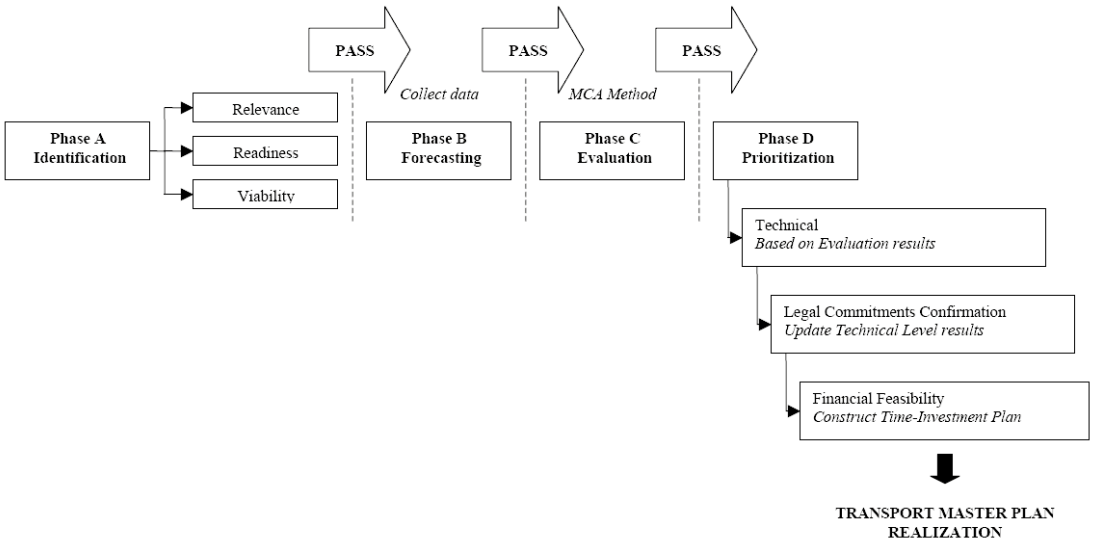
2. ASSESSMENT OF THE APPLICATION OF CRITERIA FOR PROJECT EVALUATION, SOCIO-ECONOMIC RETURN ON INVESTMENT AND PRIORITIZATION

2.1 Overview of the evaluation criteria for railway Master Plan projects

The original Master Plan drafted in July 2006 included an evaluation of nominated individual projects of the participating countries in order to establish of a project prioritization. The evaluation procedure was divided into four phases as follows and as shown in Figure VI.2 :

- identification of projects (Phase A);
- forecasting (Phase B);
- evaluation of projects (Phase C);
- prioritization (Phase D).

Figure VI.2 - **Procedure for evaluation of the projects in the Master Plan of 2006**



Phase A

The identification of the projects was a form of consistency check, looking at the relevance, readiness and viability of the projects.

The relevance of the projects was judged on the basis of the following criteria.

- The project is consistent with the UNECE AGR, AGC, AGTC, and TER technical standards and recommendations.
- The project advances one or more goals of the TER part of the Master Plan.
- The project is located on a recognized network, such as the TEN-T, the Pan-European Corridors, REBIS, the TER, etc.
- The project is contributing to a connection between the TER network and other regions, such as the Euro-Asian Corridors, etc.
- The project reduces bottlenecks and/or completes missing links.
- The project is consistent with the objectives of the TER country plan, the neighbouring countries plans and similar.

The readiness of the projects was judged on the basis of the following criteria.

- The project has been defined and the responsibility for its development has been established and acknowledged (it appears in a country's public investment budget, it has been earmarked by a competent implementation agency and various studies exist).
- The management plan for the project has been approved by the competent implementation agency.

The viability of the projects was judged on the basis of the following criteria.

- The project has a minimum budget of EUR 10 x 10^6.
- There is evidence that the project is potentially economically viable.
- There are no major environmental constraints which could delay the start of project implementation.
- The project includes an expected/forecast traffic demand which justifies the investment.

Once a project met the aforesaid criteria, it passed to the forecasting phase.

Phase B

It is difficult to identify the criteria used in this phase of the evaluation procedure. The description given was that the forecasting was carried out on "a macro level" and was based on the available data from the TER countries along with the various traffic growth scenarios. The status of the data collected from a TER country for the forecasting appears to have been considered to be sufficient for a project to pass to the evaluation phase.

Phase C

The evaluation of TER projects was based on Multi-Criteria Analysis (MCA). The choice of the MCA method was justified by the "very preliminary level of definition of most projects", the lack of detailed information (data), "imperfect knowledge of traffic demand perspectives" and the broad array of project types. In spite of the justification for the use of this method, the criteria selected for the evaluation were rather specific and detailed. These criteria were divided into three "clusters": the socio-economic return on investment, the functionality and coherency of the network, and the strategic/political concerns regarding the network. At this point is unknown what the thresholds were for assigning the "values" from 1 to 5 (representing E to A). The Analytical Hierarchy Process (AHP) was applied for weighting, and scores were obtained for the projects. After the completion of the MCA, the project evaluation passed to the prioritization phase.

Phase D

Prioritization of the TER projects was based on the following:

- technical prioritization resulting from the project scores;
- compliance with previously fixed priorities such as the TEN-T network for EU countries;
- financial prioritization based on the financial capability of a country[8].

Thus, the final priorities were set if a project was compliant with the previously fixed priorities and a country could prove its financial capability. After this, on the basis of their "technical scores",

[8] The most important component under this element of prioritization was the "investment budget on annual basis compared with 1.5 % of GDP (per country) to identify financial feasibility". This is a known threshold elaborated in numerous papers and documents. However, it remains unclear whether the 1.5 % referred to both TEM and TER projects and, if so, what ratio between them was used: 50%:50% or something else?

the projects were split into four categories (I to IV) linking them with the periods of project implementation (by 2010, 2010 to 2015, 2015 to 2020, and beyond 2020 or "in the long run").

2.2 Implications on the financial feasibility prioritization of TER projects

Looking at the criteria employed in the four phases of the evaluation procedure for the prioritization of the TER projects, it can be noticed that major implications for the prioritization occur in Phases C and D.

The procedure employed looks very similar to that used in the TIRS[9]. The criteria for the evaluation were principally based on the ECMT's paper "Transport Infrastructure in Central and Eastern Europe Countries/Selection Criteria and Funding"[10] and they were mainly defined in the same manner as the first two "clusters" in ***Phase C*** of the original Master Plan.

Socio-economic return on investment cluster

This "cluster" had the following criteria in the original Master Plan:

- degree of urgency;
- cost effectiveness;
- relative investment cost;
- level of transport (traffic) demand;
- financing feasibility.

The only distinction between this "cluster" of the original Master Plan and the TIRS is the criterion defined as "environmental effects", which was placed as an additional criterion in the TIRS.

Degree of urgency is the criterion used to indicate whether a project has to be implemented in the shortest possible time period or whether its implementation can be postponed somewhat. This criterion actually reflects the level of economic losses as a function of the implementation period. In the TIRS exercise, this criterion could have the following "values": A - immediate requirement, B - very urgent, C - urgent, D - may be postponed for a couple of years, and E - to be reconsidered later.

Cost effectiveness is the criterion used to indicate the expected level of Economic Internal Rate of Return (EIRR). If the EIRR is not available from the project information, e.g. from a cost–benefit analysis or feasibility study, it is determined through the experience of the consultant on the basis of the type of investment, the importance of the traffic demand and the relative magnitude of the expected advantages of a project. In the TIRS exercise, this criterion could have the following "values": A - excellent (EIRR > 30 %), B - very good (EIRR = 24 % to 30 %), C - good (EIRR = 18 % to 24 %), D - acceptable (EIRR = 12 % to 18 %), E - low (EIRR = 7 % to 12 %), and F - insufficient (EIRR < 7 %).

Relative investment cost is the criterion used to indicate whether a project is oversized in comparison with similar projects and their normal investment costs. In the TIRS exercise, this criterion could have the "values" B to E as follows[11]:

- construction of a new single-track railway line: B - less than EUR 1 x 10^6/km, C - from EUR 1 x 10^6/km to EUR 1.5 x 10^6/km, D - from EUR 1.5 x 10^6/km to EUR 2.2 x 10^6/km, and E - more than EUR 2.2 x 10^6;

[9] TIRS stands for "Transport Infrastructure Regional Study", which was drafted in 2002. This was the exercise of Louis Berger S.A., which included the prioritization of transport infrastructure projects in South-East Europe at that time.

[10] The paper was drafted in 1995.

[11] There was no indication of a "value A".

- rehabilitation or upgrade of a railway line: B - less than EUR 0.45 x 10^6/km, C - EUR 0.45 x 10^6/km to EUR 0.7 x 10^6/km, D - EUR 0.7 x 10^6/km to EUR 0.9 x 10^6 EUR/km, and E - more than EUR 0.9 x 10^6/km.

Level of transport (traffic) demand is the criterion used to indicate the level of expected traffic demand along a railway line of a project. In the TIRS exercise, this criterion could have the following "values": A - unknown, B - more than 100 trains/day, C - 60 trains/day to 100 trains/day, D - 25 trains/day to 60 trains/day, and E - less than 25 trains/day.

Financial feasibility is the criterion used to indicate the potential of a project to the financing institutions in terms of its capability to generate sources from its operations and to facilitate the reimbursement of funds. In the TIRS exercise, this criterion could have the following "values": A - unknown, B - good, C - medium, D - low and risky, and E - unknown.

This "cluster" of criteria clearly indicates the impact of this evaluation on the projects and their prioritization. Since the "values" were not indicated in the original Master Plan report, the impact on the aforesaid "values" is elaborated briefly here.

First of all, the most acceptable source of information for use in this "cluster" in the evaluation procedure is the "package" of documentation available at the Feasibility Study level or at the Pre-feasibility Study level (at least). The content of this "package" commonly includes information on the social-economic impact of a project ("degree of urgency"), the technical design of a project ("investment cost"), the traffic analysis along with the forecast of a project ("traffic demand"), the cost–benefit analysis of a project ("cost-effectiveness") and the financial analysis of a project ("financial feasibility").

Information obtained through a "broad evaluation of the experts", and which is based on their experience, can contribute to creating a completely different "picture" of the priorities amongst the projects, regardless of the analytical tool (technique) used for the evaluation.

Secondly, it is important at this point to focus on the importance of the cost-effectiveness and the financial feasibility.

The threshold of the main cost-effectiveness indicator (the EIRR) largely depends on the policies of the potential financial institutions towards the individual countries. It is related to three main components, which are usually integrated under the discount rate, such as the opportunity cost of the capital, the risks of the country and the risks of the project. That is the main reason why EU members and some acceding countries have better access to funds than do other countries, because EU members and some acceding countries have lower opportunity costs of the capital and lower risks. The usual threshold for EU member countries is EIRR = 6 %, whereas EIRR = 10 % is the common minimum for non-EU countries.

As regards the financial feasibility of a project, the main indicators are the Financial Internal Rate of Return (FIRR) and the Return on Equity (ROE). This is especially important when there are considerations of PPP involvement in the implementation of a project. Many of the proposed railway projects are large in terms of their investment costs and such types of project usually generate a low FIRR. However, if the EIRR is at least at the threshold value, then the development international financing institutions do not focus too much on this indicator because their role relates to social-economic development and not to commercial profitability. On the other hand, the private sector is very interested in the aforementioned indicators and it usually disregards the project potentials in terms of social-economic development. That is why it is difficult to attract any substantial interest of the private sector in the implementation of TER projects. The case of

Lithuania is a good example of private sector involvement: the regular "equity" of the private sector in the investments is 15 % and the projects are of a minor size (21 projects with total investment costs at EUR 658 x 10^6 and private investment at around EUR 100 x 10^6).

Functionality and coherency of the network cluster

This "cluster" had the following criteria in the original Master Plan:

- relative importance of the demand in international passenger traffic;
- relative importance of the demand in international freight traffic;
- alleviation of bottlenecks;
- interconnection of existing networks at the international level;
- interoperability of networks.

This "cluster" is also similar to the set of criteria under the TIRS.

Relative importance of the demand in international passenger traffic is the criterion used to indicate the volume share of international passenger traffic of the overall volume of passenger traffic of a project. In the TIRS exercise, this criterion could have the following "values": A - unknown, B - more than 25 %, C - from 15 % to 25 %, D - from 7 % to 15 %, and E - less than 7 %.

Relative importance of the demand in international freight traffic is the criterion used to indicate the volume share of international freight traffic of the overall volume of freight traffic of a project. In the TIRS exercise, this criterion had the same "values" as for international passenger traffic.

Alleviation of bottlenecks is the criterion used to indicate whether a project alleviates an earmarked bottleneck on a railway line in terms of its capacity. This criterion was not included in the TIRS exercise.

Interconnection of existing networks at the international level is the criterion used to indicate the extent to which a project improves the links in international terms and facilitates trade between the countries. In the TIRS exercise, this criterion could have the following "values": A - missing connection, B - unknown, C - improved connection, D - unknown, and E - no influence.

Interoperability of networks is the criterion used to indicate whether a project meets the EU standards of interoperability, and specifically the level of service in terms of train speed, traffic safety and comfort of passengers. In the TIRS exercise, this criterion could have the following "values": A - unknown, B - inadequate, C - medium, D - adequate, and E - unknown.

This "cluster" of criteria indicates a certain impact of this evaluation on the projects and their prioritization. As for the previous cluster, the "values" were not indicated in the original Master Plan report. Again, all of these criteria should use a Feasibility Study as the source of information. The traffic analysis and forecast in the Feasibility Study can indicate the share of international traffic volumes in the overall traffic volumes along a railway line (a project). This analysis along with the technical design contributes to the identification of any bottlenecks alleviated by a project (capacity analysis), as well as its interoperability level. The social-economic impact of a project in the Feasibility Study can also address the issue of interconnection at the international level.

In general for this "cluster", information obtained through "a broad evaluation of experts", and which is based on their experience, can contribute to creating a different "picture" of the priorities amongst the projects in a similar way as for the previous "cluster".

Phase D of the original Master Plan evaluation included a separate procedure which was based mainly on the financial capability of a country. This capability was assessed in relation to whether

a country could afford to fund the projects and thus avoid the risk of over-indebtedness. The indicator for this was the ratio of the investment costs to the GDP, and the maximum threshold value[12] used was 1.5 %. Consequently, the original Master Plan included the separate elaboration of this indicator by use of the "seven-step" procedure described below.

- Step 1: Top-down ranking of all projects in a country by priority category and then by the scope in each category (Priority I = Class 1, Priority II = Class 2, etc.).
- Step 2: A "cross-border" or "under construction" project was moved to Class 1, project regardless its priority category.
- Step 3: Check of the consistency of the project class with respect to the results of the Van Miert, REBIS (the Regional Balkans Infrastructure Study, drafted in 2003 and the TIRS. If the class of a project (as calculated in steps 1 and 2) was in conformity with its class in the REBIS and the TIR, this class was confirmed.
- Step 4: Class 1 projects were checked against the EIRR threshold. If the EIRR was less than 4.5 % or there was no EIRR available, a project was moved from Class 1 to Class 2.
- Step 5: Once results from the first four steps had been obtained, a classification was made with respect to the implementation periods (Class 1 projects start before 2010, Class 2 projects start before 2015, Class 3 projects start before 2020 and Class 4 projects start after 2020).
- Step 6: The classified projects were put in the implementation schedule, with the investment costs split over the years of the foreseen implementation time. The first trial referred to putting each project of each class in the first respective year of implementation.
- Step 7: The project classification was checked for consistency with the 1.5 % of the GDP threshold of a country. If this threshold was exceeded, the project was moved to a later year and possible period.

At this point, it is important to note that this procedure referenced the investment costs and GDP values of 2004, and both road and railway projects were included in the same implementation schedule for the 1.5 % GDP consistency check. The resultant tables listing the prioritization of the projects per country were given in Annex VI "Investment – Time Plan/Final Prioritization Results" of the original Master Plan.

In principle, a procedure such as that described would require a decision about the relevance of sources and an update of the relevant data along with the thresholds.

It is the opinion of the author of this annex that the original Master Plan should not have given such a strong importance to the REBIS and the TIRS because these studies related to a different geographic area (the Balkan countries), with a different political situation (some Balkan countries were not EU members at that time), and with somewhat different evaluation criteria; it is difficult to check the consistency of the Master Plan evaluation results with the results of studies having a different basis. This project relates is the Master Plan of the TER[13] member countries and all relevant work and documentation should be subordinate to it, and not vice versa. As a result, "Step 3" of the original Master Plans appears to be irrelevant for this evaluation procedure and this may have affected the prioritization of the TER projects.

Secondly, it is unclear why in "Step 4" only Class 1 projects were checked. The other "classes" should also have an indication of the EIRR. Moreover, the definition of the threshold at EIRR =

[12] The value of 1.5 % was recommended by the ECMT Resolution n° 97/1 on Transport and Infrastructure Development, and adopted in Berlin on 21 to 22 April 1997.

[13] "… and TEM …".

4.5 % seems an overestimation in relation to the cost-effectiveness criteria elaborated before (6 % and 10 % respectively).

Thirdly, the consistency check with 1.5 % of the GDP of the country, as indicated in "Step 7", should be revised. Through the use of this approach, TER projects are "in competition" with other projects of the transport infrastructure of a country. Moreover, the original Master Plan indicated a joint investment schedule of TER and TEM projects to check whether they reached the threshold together.

At this point, it is important to indicate the basis for this revision.

- The context of over-indebtedness risk is related to the policies of the TER countries and of the major IFIs. So, 1.5 % of the GDP and the GDP itself should not be regarded as fixed values for such long-term development projects, which the TER projects are. Also, the stated ratio does not seem to represent the threshold for the over-indebtedness risk, because there are other components which indicate it (certain macroeconomic indicators of a country), and a country can make a decision to allocate more funds for investments in a specified subsector like railways in order to meet the pre-defined objectives. It is more a question of affordability and the supporting instruments for a country's policy.
- The transport policy of a country has a major impact on the funds foreseen to be allocated to individual transport subsectors for their development (roads, railways, airports, etc.) and it does not need to be balanced in terms of "equalization" between the subsectors. It should be rather "harmonized" and "consistent" with the EU transport policy, which actually leaves more space for the railways or, in other words, for the TER projects.

As an example in this respect, we can look at the case of Slovakia. This TER country recorded substantial growth in the economy in the period 2005 to 2008. In 2005, Slovakia had a GDP at a level of EUR 38.5 x 10^9, whereas this figure in 2008 was EUR 64.6 x 10^9, which is an increase of 67 % in just 3 years. Following saturation of the GDP in the last 2 years, which was mainly caused by the economic crisis, the forecast GDP for 2011 is almost EUR 70 x 10^9 [Source: Eurostat].

At the same time, Slovakia started the implementation of the numerous TER and TEM projects listed in the Master Plan. The recent update was drafted for the revision of the Master Plan, which was documented in Annex V of this final report. We have already mentioned that the majority of the TER projects of Slovakia are being co-financed using EU grants along with the national budget. If we add to the TER projects those projects nominated in the TEM part of the plan, we get the interesting results shown in table VI.4.

The period studied in this example was 2008 to 2013. The consultants considered all TER and TEM projects which are planned to be implemented in this period. Also, the consultants split the total cost estimates of the projects into equal shares over the years in the period considered.

The total figures indicate that the ratio of the investment cost to GDP does not reach the threshold of 1.5 % in 2008 or 2009. Meanwhile, this threshold would be exceeded in the period 2010 to 2013. In the period up to the end of 2012, there are only 2 TER projects under implementation as provided by the original Master Plan. In the updated proposal, there are 9 TER projects and 1 TEM project in addition, for all of which the implementation would start in the given period. If we look back at the "classes" of all the projects elaborated in the original Master Plan[14], the period of their realization was excessively long in line with the stated threshold. In 2004, Slovakia had a GDP of EUR 34.0 x 10^9, which is almost 100 % less than its current GDP level.

[14] The last four columns indicated in table VI.4.

Table VI.4 - **Updates of Slovakian TEM and TER projects**
[Source: The latest updates for the revision of the Master Plan]

Code	Project title	Year						Total cost	Class	Start year	End year
		2008	2009	2010	2011	2012	2013				
SK-M-5	Motorway D3 Cadca, Bukov – Svrcinovec					21.3	21.3	42.5	2	2011	2022
SK-M-6	Motorway D3 Svrcinovec – Skalite				47.5	47.5	47.5	142.5	1	2004	2023
SK-H-1	Expressway R3 Horna Stubna, bypass	3.8	3.8	3.8	3.8			15.0	2	2011	2019
SK-H-2	Expressway R4 Kosice – Milhost			24.8	24.8	24.8	24.8	99.0	1	2004	2018
SK-H-3	Expressway R4 Svidnik, relocation	5.3	5.3	5.3				15.8	2	2011	2019
SK-M-7	Motorway D1 Sverepec – Vrtizer	126.7	126.7	126.7				380.0	1	2004	2018
SK-M-8	Motorway D1 Hricovske Podhradie – Dubna Skala			269.6	269.6	269.6	269.6	1,078.4	1	2004	2018
SK-M-9	Motorway D1 Dubna Skala – Turany		38.8	38.8	38.8	38.8	38.8	194.0	1	2004	2022
SK-M-10	Motorway D1 Turany – Hubova			101.6	101.6	101.6	101.6	406.4	2	2011	2024
SK-M-11	Motorway D1 Hubova – Ivachnova		71.0	71.0	71.0	71.0	71.0	355.0	1	2004	2023
SK-M-12	Motorway D1 Janovce – Jablonov	62.0	62.0	62.0	62.0	62.0	62.0	372.0	2	2011	2022
SK-M-13	Motorway D1 Jablonov – Beharovce		21.0	21.0	21.0			63.0	2	2011	2020
SK-M-14	Motorway D1 Fricovce – Svinia			50.3	50.3	50.3	50.3	201.0	2	2011	2024
SK-M-15	Motorway D1 Presov West – Presov South					48.6	48.6	97.2	2	2011	2024
SK-M-16	Motorway D1 Budimir – Bidovce				41.7	41.7	41.7	125.0	2	2011	2022
SK-M-19	Motorway D4 intersection Stupava, south		10.0	10.0				20.0			
SK-R-1	Modernization of line Zilina – Krasno nad Kysucou		72.0	72.0	72.0			216.0	2	2007	2011
SK-R-3	Modernization of line Kysak – Kosice						72.6	72.6	1	2004	2008
SK-R-4	Station Cierna nad Tisou (UKR)		17.7	17.7	17.7			53.0	1	2007	2013

Code	Project title	Year						Total cost	Class	Start year	End year
		2008	2009	2010	2011	2012	2013				
SK-R-5	Modernization of line Nove Mesto nad Vahom – Puchov		223.6	223.6	223.6	223.6	223.6	1,118.0	1	2007	2009
SK-R-6	Modernization of line Puchov – Zilina						112.8	112.8			
SK-R-9	Modernization of line Kuty – Czech border				20.5	20.5	20.5	61.5			
SK-R-10	Modernization of line Kuty – Bratislava				55.4	55.4	55.4	166.3			
SK-R-11	Modernization of line Kosice – Cierna nad Tisou		141.8	141.8	141.8	141.8		567.0			
SK-R-13	Modernization of line Krompachy – Kysak						157.6	157.6			
SK-R-14	Modernization of line Liptovsky Mikulas – Poprad						236.4	236.4			
SK-R-15	Modernization of line Poprad – Krompachy						280.6	280.6			
	Total cost (EUR x10⁶)	197.7	793.5	1,239.7	1,262.9	1,218.3	1,936.6				
	GDP (EUR x10⁶)	64,572.4	63,050.7	65,591.9	69,961.2	73,000.0	77,000.0				
	Investment cost to GDP ratio	0.31%	1.26%	1.89%	1.81%	1.67%	2.52%				

3. ADDRESSING FUNDING CONSIDERATIONS FOR NON-SECURED OR PARTLY SECURED TER MASTER PLAN PROJECTS

3.1 Non-secured funds for TER projects

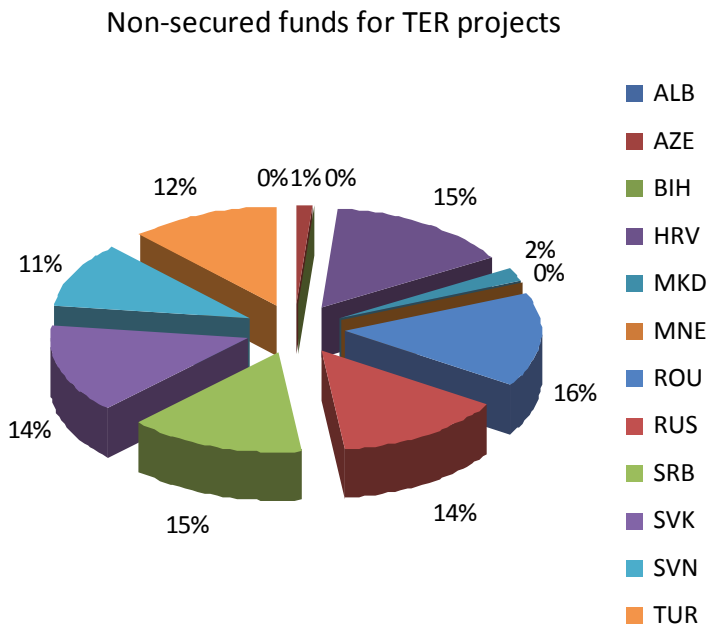
On the basis of the updated information for the revision of the Master Plan, the total amount of secured funds for TER projects is EUR 41.4 x 10^9 whereas the total amount of non-secured funds for TER projects is EUR 28.9 x 10^9. Table VI.5 and figure VI.3 below outline the non-secured funds for the TER projects.

Table VI.5 - **Non-secured funds for TER projects**

Country	Non-secured funds in million Euros
Albania	29
Azerbaijan	319
Bosnia and Herzegovina	70
Croatia	4.156
The former Yugoslav Republic of Macedonia	580
Montenegro	41

Country	Non-secured funds in million Euros
Romania	4.298
The Russian Federation	5.009
Serbia	4.021
Slovakia	3.987
Slovenia	3.020
Turkey	3.345
Total	28.875

Figure VI.3 - Non-secured funds breakdown for TER projects per country
[Source: The latest updates for the revision of the Master Plan]



In addition, there are TER projects without any indication of their cost estimates for which we can also assume that the funds are not secured. Also, the status of TER projects from the original Master Plan in 2006 is unknown for five TER countries: Georgia, Greece, Hungary, the Republic of Moldova and Ukraine.

The values of non-secured funds for TER projects in table VI.5 reveal few specific issues with respect to the groups of countries.

Most of the non-EU countries have relatively low-sized projects with respect to the investment costs. This might provide them with an advantage at the time of accession to the EU but this largely depends on their economic situation and on policy issues. Serbia nominated substantial TER projects without secured funds and this country would as a minimum need a stronger involvement of EU grants to support the projects once the country meets the eligibility requirements as an acceding country.

The Russian Federation can be regarded as a special case since, by the time of the revision, it had not provided the status of funding for its TER projects. Meanwhile, the Russian federal Government has already established an Investment Fund to attract investments particularly in the sub-programme called "Rail Transport" of the federal dedicated programme entitled "Development of Russia's Transport System (2010-2015)".

The EU acceding countries Croatia, the former Yugoslav Republic of Macedonia and Turkey seem to be in the initial stages of the use of EU grants. Meanwhile, these countries do not have the same economic situation. In 2009, Turkey had a GDP of EUR 440.4 x 10^9, whereas that of Croatia was EUR 45.4 x 10^9 and of the former Yugoslav Republic of Macedonia EUR 6.9 x 10^9.

The EU member countries Romania, Slovakia and Slovenia are still seeking substantial funds for implementation of their TER projects. In total, these countries require EUR 11.3 x 10^9 to complete the TER projects with funding currently missing. This requirement will need to be followed by a clear strategy and adjustment instruments on the basis of the economic situation in these countries and of the EU in general.

3.2 Policy issues regarding sources of funding

The stated amount of nearly EUR 30 x 10^9 requires further consideration for those TER projects having non-secured funds. The consideration is based on "the policy" of the funding source; regardless to the origin of a funding source (government budget or "off the budget" funding), a clear policy along with efficient funding instruments must be in place for the support of the TER projects.

Government budget policy issues

It is clear that the demand for railway infrastructure of TER countries will continue to increase in the foreseeable future. This is primarily based on the fact that most of these countries share the goals of having an effective railway infrastructure integrated to the single market and based on the provision of high-level services.

In order to reach these goals and to meet the demand, the Governments of the TER countries need to continue the support of TER projects with direct allocations from their budgets. This has to be clearly stated in the relevant policies and enforced through numerous instruments which are at the disposal of any government. This is very important because such an approach enables a government

- to provide the funds for co-financing from other sources, including EU grants, loans, etc., and
- to provide the funds for the public sector share in a potential PPP scheme with the involvement of the private sector.

In both cases, a government indicates its firm commitment to the implementation of the projects regardless of the sources used for that implementation.

"Off the budget" policy issues

In parallel to the direct allocations, the Governments of TER countries should continue to develop the "off the budget" sources. A sufficient number and range of these sources should provide a framework for the implementation of the TER projects.

Infrastructure access fees, earmarked taxes and subsidies based on the polluter-pays principle have to be a basic funding tool used by a dedicated public authority/infrastructure manager.

A loan is also a useful funding source for TER projects and the primary targets should be IFIs based on their role in the development (the EIB, the EBRD, etc.). These institutions regularly publish their policies for a particular sector of funding such as railways. With respect to this, their recent policies confirm their commitment to the development of major railway infrastructure. A good example is the EIB as illustrated below.

The EIB

The EIB transport lending is determined in accordance with the following guiding principles.

- Mobility is essential for the free movement of people and economic growth. In this context, the EIB will pursue an approach that strives for the most efficient, most economic and most sustainable way of satisfying transport demand. This will require a mix of transport solutions, covering all modes and carefully planned to control the negative environmental impacts of transport.
- The EIB will continue its strong commitment to the funding of TENs. The long-term nature of these investments and their essential role in achieving an efficient and cohesive EC-wide transport system continue to make them the backbone of transport investment in the EU and essential for the functioning of the internal market. The relationship between the stock of infrastructure capital and greenhouse gas emissions is complex, but this does not in itself call into question this continued EU commitment to TENs.
- The funding of railways, inland waterways and maritime projects (in particular the motorways of the sea) will continue to be a priority as these are intrinsically the most promising in terms of reducing greenhouse gas emissions per transport unit.

A specific joint sector policy is related to "Railways and Urban Transport, Ports, Inland Waterways and Multimodal Terminals" as follows.

- Lending to sound projects in rail (including interoperability investments such as ERTMS), multimodal terminals, urban transport as well as maritime (e.g. motorways of the sea) and inland navigation sectors will be prioritized, even when they are neither TENs nor located in assisted areas. Efforts will be made to enhance lending to these sectors.

The EIB transport lending policy follows the EU policy framework, which is composed of the following components:

- TENs (Trans-European Networks);
- Economic and Social Cohesion;
- Transport Policy (White Paper);
- Environmental Policies;
- Lisbon Strategy.

The priorities in the bank's Corporate Operational Plan (COP) have reflected the above policy considerations. As already mentioned, the EIB is a key player in financing the European transport sector, and has lent more than EUR 120×10^9 to the sector over the past decade. Apart from the Member States themselves, the EIB is the largest financier of the TEN-T projects.

The contribution to the fulfilment of the convergence objectives is also significant. Between 2000 and 2006, almost 70 % of the EIB's transport lending (or some EUR 50×10^9) was allocated to cohesion areas. Furthermore, the EIB is already supporting a range of transport projects where the explicit project aim is to achieve environment friendly and sustainable transport systems leading to substantial reduction in CO2 emissions. Lending to such projects has steadily increased over the last years both in absolute and in relative terms. This includes lending to rail projects as well as strong support to research and development projects aimed at reducing exhaust gas emissions and

enhancing fuel efficiency. Indeed, relative to the aggregate underlying investments made in the road and rail sectors, the EIB has demonstrated a clear preference towards the funding of projects in the railway sector.

Other sources

The participating countries have access to various EU funds, namely

- the European Regional Development Fund (ERDF),
- the Cohesion Fund (CF), and
- the Instrument for Pre-Accession Assistance (IPA).

The ERDF aims to strengthen economic and social cohesion in the EU by correcting imbalances between its regions. In short, the ERDF finances

- infrastructures linked notably to research and innovation, telecommunications, environment, energy and transport,
- financial instruments (capital risk funds, local development funds, etc.) to support regional and local development and to foster cooperation between towns and regions,
- technical assistance, and
- direct aid to investments in companies (in particular SMEs) to create sustainable jobs.

The CF is aimed at Member States whose Gross National Income (GNI) per inhabitant is less than 90 % of the Community average. It serves to reduce their economic and social shortfall, as well as to stabilize their economy. It supports actions in the framework of the Convergence objective. It is now subject to the same rules of programming, management and monitoring as the ERDF.

In the period 2007 to 2013, the Cohesion Fund operated in Bulgaria, Cyprus, the Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia and Slovenia.

The Cohesion Fund finances activities under the following categories:

- Trans-European Transport Networks, notably priority projects of European interest as identified by the European Union;
- environment, where the Cohesion Fund can also support projects related to energy or transport as long as they clearly present a benefit to the environment, e.g. energy efficiency, use of renewable energy, development of rail transport, support for intermodality, strengthening of public transport, etc.

The financial assistance of the Cohesion Fund can be suspended by a Council decision (taken by a qualified majority) if a Member State shows excessive public deficit and if it has not resolved the situation or has not taken the appropriate action to do so.

From January 2007 onwards, the Instrument for Pre-Accession Assistance (IPA) replaces a series of EU programmes and financial instruments for candidate countries or potential candidate countries, namely PHARE, PHARE CBC, ISPA, Sapard, CARDS and the financial instrument for Turkey.

The ISPA is made up of five different components as follows:

- assistance for transition and institution building;
- cross-border cooperation (with EU Member States and other countries eligible for IPA);
- regional development (transport, environment, and regional and economic development);
- human resources (strengthening of human capital and combating exclusion);
- rural development.

Similarly to the Structural Funds, as of 1 January 2007 pre-accession funds underwent a significant policy reform. The most visible effect of this reform was the replacement of several EU programmes and financial instruments (PHARE, PHARE CBC, ISPA, Sapard, CARDS and the financial instrument for Turkey) with a single instrument and legal framework — the **Instrument for Pre-Accession Assistance**.

The legal framework for this new instrument was established under Council Regulation (EC) 1085/2006 of 17 July 2006 and its implementation provisions in Commission Regulation (EC) 718/2007.

The European Commission Directorate General for Regional Policy is responsible for the implementation of Component 3 and Component 2 in the part concerning the Member States.

Components 1 and 2 are open to all beneficiary countries, whereas Components 3, 4 and 5 are open to the candidate countries only (current candidate countries are Croatia, Turkey and the former Yugoslav Republic of Macedonia). The components are designed to mirror closely the structural, cohesion and rural development funds, in preparation for the management of such funds upon accession. Thus, the IPA allows beneficiary countries to prepare themselves for successful participation in the Community's Cohesion Policy and its instruments upon accession, with a view to a better and more effective absorption of these funds once they become available.

Current potential candidate countries eligible for IPA funding are Albania, Bosnia and Herzegovina, Montenegro and Serbia under UNSC Resolution 1244/99.

4. PREREQUISITES FOR BANKABLE PROJECTS AND STEPS TO BE FOLLOWED FOR ENSURING FUNDING

4.1 EIB loan application case

This chapter provides two cases of prerequisites once a promoter/borrower from a TER country starts to ensure funding from EIB loans. The cases are

- corporate lending: EIB → borrower/promoter → project, and
- project finance.

4.1.1. Corporate lending

Individual loans for projects over EUR 25 x 10^6 may be requested directly from the EIB. The layout and content of documents to be submitted to the EIB are the responsibility of the project promoter. Given the range and diversity of potential projects there is no standardized documentation requirement. The bank does not require its borrowers to complete set forms or questionnaires. As a general rule, the EIB does expect to receive a comprehensive feasibility study. Where this has not been prepared, the project promoter may use his or her own discretion in compiling the detailed information to permit the technical, environmental, economic, financial and legal appraisal of the project. The following documentation list is intended as a guideline for preparing an application for a loan. Additional information may be required subsequently.

From the institutional standpoint, a borrower/promoter needs to provide the following:

- general information about the enterprise (or institution), its legal status, principal partners and shareholders, organization structure; where the proposed borrower of the EIB loan is not the same as the promoter of the project, similar information is required from both parties;

- legal documents covering incorporation, statutes, activities, accounting policies, management, ownership, audited financial statements (balance sheets, profit-and-loss and cash-flow statements) for the last three financial years, details of short-, medium- and long-term liabilities, dividend distribution policy and financial forecasts.

From the project standpoint, a borrower/promoter needs to provide the following:

- technical and environmental data: general purpose, justification and location (rated and forecast capacity); legal status of the proposed project, relationship with the borrower/promoter's other activities, licenses and concessions obtained;
- technical description of the infrastructure project;
- environmental impact assessment, where relevant and appropriate, including reference to relevant laws, mitigating measures to protect the environment, specific studies;
- engineering studies and implementation plan: consultants (if any), procedures for tendering and awarding contracts, supervision, works schedule and implementation timetable;
- detailed cost estimate, itemizing site and plant expenditure, provision for physical and price contingencies, interest during construction, initial and start-up expenses, together with a breakdown in foreign and local currencies;
- operation: raw materials and products, flowcharts, consumption and output levels, managerial staff and workers, management organization, technical assistance where applicable;
- financial data: breakdown of project operating and maintenance costs, depreciation and overheads; financing plan for the project and schedule of projected expenditure; projected cash flows, profit-and-loss accounts, and balance sheets, until the project is expected to come fully on stream; estimate of project working capital requirements over time; calculation of the project's IRR; security and guarantees offered.

4.1.2. Project finance

In addition to the above information regarding the borrower/promoter and the project, the following are required:

- description of the project's envisaged commercial structure and risk allocation:
  - description of the purpose of the project, any envisaged off-take (revenue) or supply contracts (including construction and operation/maintenance) and the parties to these contracts (including their experience in the domain of the project and their credit standing), and
  - analysis of the project's revenue and cost risks, especially in cases where "term of debt" supply or off-take contracts are not envisaged;
- description of the project's financing structure including a detailed breakdown of the financing sources: equity, mezzanine and senior debt, and the envisaged role of the EIB within the financing structure;
- financial model, including cash-flow forecasts for the life of the project in sufficient detail to enable analysis of the underlying assumption (e.g. detailed revenue, funding, operating and maintenance cost forecasts);
- in the case of a PPP project, information on the conceding authority and the procurement timetable, a summary of the key concession terms and a copy of the concession contract, including technical, legal or insurance advice received on the project.

4.2 EU funds case

This chapter details the case for application for an EU grant

Project cycle and investment appraisal

A timely and simple financial and economic analysis can do a lot to unveil weaknesses in project design. These weak points would probably become apparent at a later stage, after a lot of time and effort have been already been wasted on an option that, in the end, has to be abandoned or thoroughly restructured.

The use of the tools (presented in the national or European guidelines) to check projects before preparing the application for EU assistance and building a national or regional selection process will be beneficial to all actors involved, since their attention will be focussed only on the really good projects and this will in turn enhance their probability of success. Moreover, the legal basis in the guidelines mentions clear-cut thresholds to define 'major projects'.

Although a full CBA is not required by the regulations as a basis for decision by the EC for a project below the investment cost threshold, clearly it is good practice that the managing authority looks at the latter in a similar way. In fact, some projects that do not fall into the 'major' category will form a sizeable share of operational programmes.

National guidelines will probably use different thresholds to define the extent of CBA to be performed on any investment project included in an operational programme.

Six steps for a good appraisal

The guidelines suggest that a project appraisal document should be structured in six steps as presented below.

Step 1: Presentation and discussion of the socio-economic context and the objectives

The first logical step for the appraisal is a qualitative discussion of the socio-economic context and the objectives that are expected to be attained through the investment, both directly and indirectly. This discussion should include consideration of the relationship between the objectives and the priorities established in the Operational Programme or the National Strategic Reference Framework as well as consistency with the goals of the EU funds. This discussion will help the Commission Services to evaluate the rationale and policy coherence of the proposed project.

Step 2: Clear identification of the project

Identification means that the object is a self-sufficient unit of analysis, i.e. no essential feature or component is left out of the scope of the appraisal (half a bridge is not a bridge), indirect and network effects are going to be adequately covered (e.g. changes in urban patterns, changes in the use of other transport modes) and "whose" costs and benefits are going to be considered (i.e. who has standing?).

Step 3: Study of the feasibility of the project and of alternative options

A typical feasibility analysis should ascertain that the local context is favourable to the project (e.g. there are no physical, social or institutional binding constraints), the demand for services in the future will be adequate (long-run forecasts), appropriate technology is available, the utilization rate of the infrastructure or the plant will not reveal excessive spare capacity, personnel skills and management will be available, there is a justification of the project design (scale, location, etc.) against alternative scenarios ("business as usual", "do minimum", "do something" and "do maximum").

Step 4: Financial analysis

The financial analysis should be based on the discounted cash-flow approach. The EC suggests a benchmark real financial discount rate of 5 %. A system of accounting tables should show cash inflows and outflows related to the following:

- total investment costs;
- total operating costs and revenues;
- financial return on the investment costs: FNPV(C) and FIRR(C);
- sources of finance;
- financial sustainability;
- financial return on national capital: FNPV(K) and FIRR(K) (the financial return on national capital takes into account the impact of the EU grant on the national (public and private) investors).

The time horizon must be consistent with the economic life of the main assets. The appropriate residual value must be included in the accounts in the end year. General inflation and relative price changes must be treated in a consistent way. In principle, FIRR(C) can be very low or negative for public sector projects, whereas FIRR(K) for private investors or PPPs should normally be positive.

Step 5: Economic analysis

CBA requires an investigation of a project's net impact on the economic welfare. This is carried out in five steps as follows:

- observed prices or public tariffs are converted into shadow prices that better reflect the social opportunity cost of the goods;
- externalities are taken into account and given a monetary value;
- indirect effects are included if relevant (i.e. if not already captured by shadow prices);
- costs and benefits are discounted with a real social discount rate (suggested SDR benchmark values are 5.5 % for Cohesion and IPA countries, and for convergence regions elsewhere with high-growth outlook, and 3.5 % for Competitiveness regions);
- calculation of economic performance indicators: economic net present value (ENPV), economic rate of return (ERR) and the benefit–cost (B/C) ratio.

Critical conversion factors are as follows: the standard conversion factor (particularly for IPA-assisted countries); sector conversion factors and marginal costs or willingness-to-pay for non-tradable goods; the conversion factor for labour cost (depending on the nature and magnitude of the regional unemployment).

Practical methods for the calculation of the economic valuation of environmental impacts, the shadow price of time in transport, the value of lives and injuries saved and distributional impacts are suggested in the relevant European guidelines.

Step 6: Risk assessment

A project appraisal document must include an assessment of the project risks. Again, five steps are suggested:

- sensitivity analysis (identification of critical variables, elimination of deterministically dependent variables, elasticity analysis, choice of critical variables, and scenario analysis);
- assumption of a probability distribution for each critical variable;
- calculation of the distribution of the performance indicators (typically FNPV and ENPV);
- discussion of results and acceptable levels of risk;
- discussion of ways to mitigate any risks.

Further to the aforementioned approach, in some circumstances a cost-effectiveness analysis can be useful to compare projects with very similar outputs, but this approach should not be seen as a substitute for CBA. Multi-criteria analysis, i.e. multi-objective analysis, can be helpful when some objectives are intractable in other ways and should be seen as a complement to CBA when, for some reason(s), the project does not show an adequate EIRR but the applicant still wants to make a case for EU assistance. This is to be regarded as an exceptional step because CBA is a specific requirement of the Funds' regulations. In fact, focusing on CBA is consistent with the overarching goal of the Cohesion Policy in terms of sustainable growth; a goal that includes competitiveness and environmental considerations at the same time. For mega projects (relative to the country; no threshold can be given), economic impact analysis can be considered as a complement to CBA in order to capture macroeconomic effects which are not well represented by the estimated shadow prices.

5. ESTABLISHMENT OF TECHNICAL AND INSTITUTIONAL ACTIONS REQUIRED TO SECURE MISSING FUNDS

The most important actions are related to the Governments of the TER countries. On the basis of the previous analysis, it has been demonstrated that the actions provided below can contribute to secure the missing funds in the implementation of TER projects.

1 Each TER country Government needs to have in place a clear transport policy and strategy, which indicates the objectives and consistency with the EU transport policy and measures/ instruments for the provision of funds for investments.

2 Experience indicates that there is a strong need to have a dedicated unit within the competent ministry of a country, which will integrate the critical links between the Ministry of Transport, the Ministry of Finance, the Ministry or Body of EU integrations, the EU, IFIs and other relevant public and private stakeholders. This unit could also have a specific role to follow railway infrastructure projects only within the transport sector.

3 Governments should consider the establishment of transport funds. This will make additional funding available for investments in TER projects.

4 Contributions to TER projects through charges to users and taxpayers are still limited in most of the participating countries. Governments need to provide the proper instruments, which will utilize sources more extensively. In most of the cases, this would require certain tax reforms or restructuring, which would have to be balanced with the other sectors of a country in order to make all investment plans consistent and sustainable.

5 With a few exceptions, the potential of the private sector has largely remained unused. Considering the recent positive experience of some countries (e.g. Lithuania), governments should explore alternative cooperation models of PPPs with appropriate risk-sharing frameworks and administrative arrangements supported by the necessary legal and regulatory provisions.

6 TER countries should reconsider their current legislative and administrative frameworks as well as their administrative procedures with a view to creating a conducive environment for PPPs. Related actions could include suitable changes in legal and regulatory regimes to induce greater confidence in the private sector, streamlining of administrative procedures that place time limits on approval processes and the establishment of "special project vehicles" (SPVs).

7 A special PPP unit or programme in the government can address the capacity problem of the public sector effectively and promote private participation in a planned and coordinated

manner that takes into account the overall sector needs. Such an administrative arrangement in a government can also help to enhance the social acceptability and transparency of private projects by institutionalizing the project identification and approval processes.

6. CONCLUSIONS

On the basis of the above analysis, the following conclusions can be drawn.

1 The latest TER projects reported include "the package" of 191 projects estimated at EUR 70.3 x 10^9, which is 33.7 % higher than in the original Master Plan (TER part) from 2006.

2 A group of TER countries (Belarus, Georgia, Greece, Hungary, the Republic of Moldova, Poland and Ukraine) did not provide any updated information for their TER projects, including the projects in the 2006 report.

3 Most of the changes in the recent updates of information reflect the following:

- changes in the number of TER participating countries;
- changes in the TER nominated projects (such changes concerned most of the countries);
- different considerations by the countries with respect to the status of a project.

4 The most extensive programme updates of TER projects were provided by Turkey, Slovakia and Croatia, with an investment increase with respect to 2006 of EUR 8.7 x 10^9, EUR 5.7 x 10^9 and EUR 4.3 x 10^9 respectively.

5 The political status of TER countries, in terms of their accession to the EU, substantially affects their possibility to secure funds for TER projects. The best results with respect to the securing of such funds are recorded by the EU countries, including those that joined the EU after 1 May 2004 (Bulgaria, the Czech Republic, Hungary, Lithuania, Poland, Romania, Slovakia and Slovenia). The acceding countries to the EU (Croatia, the former Yugoslav Republic of Macedonia, and Turkey) have also started to use the benefits of their accession process. The worst results with respect to the securing of such funds are recorded by non-EU countries.

6 Available sources of funding are generally divided into two categories: government budget (direct allocations) and "off-the-budget" sources (indirect allocations). The government budget source will continue to have an important role in the funding of TER projects, especially in terms of co-financing, which has been proven to be successful according to the results provided by numerous TER countries. The "off the budget" sources provide a variety of possibilities (charges, debts, PPP, etc.) and most of the participating countries have started to use these possibilities extensively, in particular those related to loans and EU grants.

7 The prioritization of TER projects should be updated and this refers especially to Phases C and D of the procedure previously employed. The updated procedure should also reconsider the previously defined thresholds of certain indicators. Previous documents and methodologies should be used as a basis for the Master Plan and not as an element for comparison and decision-making.

8 The Governments of TER countries need to continue to respect the policy issues, which are important in the consideration of the funding of a TER project. The largest potentials at the moment are with IFIs and various EU instruments (the ERDF, the CF and the IPA).

9 The drafting of the Feasibility Study (or Pre-feasibility Study, at least) is of crucial importance when considering the funding of TER projects, no matter the source of the funding. Of course, the methodology can be adjusted in relation to a particular funding source, but the principle elements for the potential funding are located in such documents. Experience also

indicates the necessity to consider "the package" of relevant documents, such as the Feasibility Study, the Preliminary or Main Design, and the Environmental Impact Assessment Study. This approach will surely "pave the way" for funding.

10 Governments of TER countries need to continue with those actions which are needed for securing the missing funds. Such actions usually include broad and detailed activities, which should be coordinated by a single team (unit). In this respect, the establishment of a dedicated unit (even focused on railway infrastructure projects only) should be of the highest priority.

ANNEX VII

Results of the border crossings enquiry on the backbone road network of the Master Plan

Country		Annual average daily traffic (AADT) 2007	Average waiting time (min) P = passenger T = truck	Remark
From	To			
Albania				
Hani i Hotit	Montenegro	1,500	P 36, T 50	inadequate facilities
Qafe Thane	The former Yugoslav Republic of Macedonia	569	P 15, T 25	
Kapshtice	Greece	784	P 36, T 50	
Kakavija	Greece	2,540	P 12, T 40	
Tre Urat	Greece		P 10, T 20	
Morine		1,842	P 15, T 40	inadequate facilities
Azerbaijan				
Samur	The Russian Federation			inadequate facilities
Red bridge	Georgia	2,117		inadequate facilities
Astara	Iran			
Bosnia and Herzegovina				
Bosanski Samac	Croatia	1,200	P 5, T 20	inadequate facilities
Doljani	Croatia			inadequate facilities
Vardiste	Serbia	900	P 5, T 15	inadequate facilities
The Czech Republic				
Rozvadov	Germany	14,000	0	traffic data from 2005
Krasny Les	Germany	8,048	0	traffic data from 2005
Dolni Dvoriste	Austria	3,749	0	traffic data from 2005
Mikulov	Austria	6,185	0	traffic data from 2005
Breclav	Slovakia	12,600	0	traffic data from 2005
Chotěbuz	Poland	9,314	0	traffic data from 2005

Georgia

Sarpi	Turkey	4,849		
Red bridge	Azerbaijan	2,117		
Sadakhlo	Armenia	1,645		
Vale	Turkey	261		gravel access road
Larsi	The Russian Federation			closed

Lithuania

Medininkai	Belarus	2,282	60	
Sangruda	Poland	8,474	5	
Salociai	Latvia	3,686	0	

Poland

Budzisko	Lithuania	6,157	0	capacity bottleneck
Swiecko	Germany	15,334	0	capacity bottleneck
Terespol/Brzesc	Belarus	3,650		
Olszyna	Germany	10,006	0	
Jedrzychowice	Germany	13,725	0	
Korczowa	Ukraine	3,324		
Cieszyn	The Czech Republic	9,848	0	capacity bottleneck
Zwardon	Slovakia	549	0	
Lubawka	The Czech Republic	1,068	0	

Romania

Calafat	Bulgaria			bridge under construction
Giurgiu	Bulgaria			
Vama Veche	Bulgaria			
Albita	The Republic of Moldova			
Siret	Ukraine			
Halmeu	Ukraine			
Nadlac	Hungary			
Moravita	Serbia			

Serbia

Batrovci	Croatia	5,955	P 30	
Presevo	The former Yugoslav Republic of Macedonia	6,436	P 15, T 10	
Horgos	Hungary	5,300	P 75	
Gradina	Bulgaria	3,405	P 12, T 20	

Slovakia

Brodske	The Czech Republic	11,722	0	traffic data from 2005
Rusovce	Hungary	7,707	0	traffic data from 2005
Skalite	Poland	1,537	0	traffic data from 2005
Jarovce	Austria	4,531	0	traffic data from 2005
Vysne Nemecke	Ukraine	1,695	90	traffic data from 2005
Sahy	Hungary	6,217	0	traffic data from 2005
Milhost	Hungary	2,105	0	traffic data from 2005
Vysny Komarnik	Poland	2,269	0	traffic data from 2005

Turkey

Kapikule	Bulgaria	3,189	P 30, T 17*)	waiting time needs to be shorter [a] up to 3 h to 4 h for trucks carrying agricultural products
Sarp	Georgia	632	P 7, T 17	shorter waiting time after infrastructure upgrade
Turkgozu	Georgia	8	P 7, T 15	
Gurbulak	Iran	544	P 45, T 30	waiting time to be shorter
Habur	Iraq	1,931	P 12, T 17**)	[b] waiting at TIR parking area: up to 3 days to 4 days possible.
Yayladagi	Syria	151	P 20	no trucks
Ipsala	Greece	904	P 30, T 30	

ANNEX VIII

Results of the border crossings enquiry on the backbone railway network of the Master Plan

Country		Trains/day 2007	Average waiting time (min) P = passenger F = freight	Remark
From	To			
Albania				
Hani i Hotit	Montenegro	2	short period	freight only
Azerbaijan				
Boyuk Kesik	Georgia	32	60	
Yalama	The Russian Federation	16	P 90, F 60	
Sadarak	Armenia			closed
Barkhudarly	Armenia			closed
Culfa	Iran	180/year		
Horadiz	Armenia			closed
Agband	Armenia			closed
Kerchivan	Armenia			closed
Austria				
Passau	Germany		P 3 to P 5 (all crossings)	freight, short technical stops only (all crossings)
Salzburg	Germany			
Kufstein	Germany			
Buchs	Switzerland			
Brenner	Italy			
Arnoldstein	Italy			
Nickelsdorf	Hungary			
Summerau	The Czech Republic	54		
Bernhardsthal	The Czech Republic	10[6]		
Rosenbach	Slovenia	42		
Spielfeld-Strass	Slovenia	38		
Kittsee	Slovakia	84		

Bosnia and Herzegovina

Bosanski Samac	Croatia	9	60	
Capljina	Croatia	14	60	

Bulgaria

Svilengrad	Turkey	8	P 30, F 180 (all crossings)	
Svilengrad	Greece			
Kulata	Greece			
Dragoman	Serbia	18		
Russe	Romania			

Croatia

Savski Marof	Slovenia	42	P 1, F 5	
Tovarnik	Serbia	24	P 1, F 75	
Volinja	Bosnia and Herzegovina	7	P 15, F 85	
Koprivnica	Hungary	20	P 1, F 0	
Sapjane	Slovenia	12	P 15, F 90	
Beli Manastir	Hungary	6	P 15, F 90	
Slavonski Samac	Bosnia and Herzegovina	9	P 20, F 80	
Metkovic	Bosnia and Herzegovina	14	P 15, F 70	
Kotoriba	Hungary	15	P 1, F 0	
Cakovec	Slovenia	11	P 15, F 80	

The Czech Republic

Decin	Germany	82	P 3 to P 5 (all crossings)	freight short technical stops only (all crossings)
Cheb	Germany	29		
Horni Dvoriste	Austria	54		
Břeclav	Austria	10[6]		
Lanzhot	Slovakia	68		
Horni Lidec	Slovakia	42		
Mosty u Jablunkova	Slovakia	73		
Petrovice u Karvine	Poland	82		
Bohumin	Poland	46		
Lichkov	Poland	42		

Hungary

Sopron	Austria			
Hegyeshalom	Austria			
Rajka	Slovakia	36		
Szob	Slovakia	33		
Zahony	Ukraine			
Biharkeresztes	Romania			
Lokoshaza	Romania			
Kelebia	Serbia	37		
Gyekenyes	Croatia	20		
Murakeresztur	Croatia	15		

Romania

Halmeu	Ukraine	8	F 120 to F 160	freight only
Dornesti	Ukraine	8	P 20 to P 37, F 75	
Galati Larga	Ukraine	10, 16[a)]	F 300	freight only [a)] wide gauge
Cristesti Jijia	The Republic of Moldova	36, 8[a)]	120	[a)] wide gauge
Stamora Moravita	Serbia	24		
Giurgiu	Bulgaria			
Episcopia Bihor	Hungary			
Curtici	Hungary			

The Russian Federation

Buslovskaya	Finland	26	F 280 to F 435	
Zaverezhye	Belarus	18		
Krasnoe	Belarus	78		
Suzemka	Ukraine	82		
Derbent (Samur)	Azerbaijan	22	F 220 to F 230	

Serbia

Presevo	The former Yugoslav Republic of Macedonia	6	30	
Ristovac	The former Yugoslav Republic of Macedonia	10	F 140	
Dimitrovgrad	Bulgaria	18	P 30, F 185	
Subotica	Hungary	37	P 30, F 240	

Sid	Croatia	8	P 30, F 130	

Slovakia

Kuty	The Czech Republic	114	P 5, F 38	
Luky pod Makytou	The Czech Republic	54	P 5, F 38	
Plavec	Poland	28	P 5, F 60	
Cana	Hungary	16	P 5, F 37	
Sturovo	Hungary	33	P 8, F 52	
Rusovce	Hungary	36	P 10, F 30	
Chop	Ukraine	20	P 40, F 150	
Bratislava Petrzalka	Austria	84	P 40, F 150	
Skalite	Poland	61	P 5, F 78	train length, max. 200 m

Slovenia

Jesenice	Austria	42	P 8, F 55	
Sentilj	Austria	38		
Hodos	Hungary	25	P 21, F 185	
Dobova	Croatia	42	P18, F 112	
Sezana	Italy	36	P 10, F 110	

Turkey

Dogukapi	Armenia			closed
Kapikoy	Iran	6	P 88, F 45	
Kapikule	Bulgaria	8	P 116, F 200	

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