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Euro-Asian Transport Linkages

Methodology, Results and Future Actions

*based on the Experience gained from TEM and TER
Master Plans Project*

By the External Consultant of EATL
Prof. Dimitrios A. Tsamboulas

*Department of Transportation Planning and Engineering
School of Civil Engineering
National Technical University of Athens (NTUA)*



Brief Outline

- **Part A:** TEM and TER vs. EATL
- **Part B:** EATL Methodology
- **Part C:** Methodology Application Example
- **Part D:** Results
- **Part E:** Conclusions

Part A: TEM & TER vs. EATL

*TEM & TER Master Plans project impact on
Transport Sector*

TEM & TER vs. EATL

*Experience gained from TEM & TER Master Plans
project*

TEM & TER Master Plans project impact on Transport Sector

In theory

Provided and tested, a coherent methodology that..

- “saves time and money” in transport project evaluation procedure
 - Identification phase excludes “weak” projects from the beginning
 - Uses readily available data
- has the ability to measure a multinational project’s performance, shared by more than one region/country, by introducing spatial weights
- is easy in each application, therefore useful for the decision makers in countries with different levels of development.

TEM & TER Master Plans project impact on Transport Sector

In practice

- Guide future efforts of TEM and TER member countries and their Central, Eastern and South Eastern European neighbours as well as UNECE, EU and its members, for the development of the necessary priority road, rail and combined transport infrastructure at national, regional and transnational level.
- Assist new EU members and accession countries, as well as their Western and Eastern neighbours, to achieve interconnection and interoperability of national and trans-national networks and their access to those networks.

TEM & TER vs. EATL

- Both projects involve the development of transport networks but..
 - TEM & TER concentrated only on road and rail as opposed to EATL that involves all type of transport infrastructure
 - TEM & TER was mostly concentrated on projects, EATL concentrated on corridors
 - Geographically, TEM & TER has a more “European” character, EATL has an “intercontinental” character

Thus..

- EATL project has a more macroscopic character and more strategic objectives

How TEM & TER experience was used for Euro-Asian Transport Linkages?

- Same rules in identification methodology
- Same rules in evaluation methodology
 - TEM & TER criteria used as the default set
 - EATL methodology introduced additional criteria reflecting the “macroscopic” and “intercontinental” of the project
 - Same procedures and methods for scores and weights derivation
- Same procedure in the prioritization phase
 - But modified underlying principles, according to EATL strategic objectives

Differences in criteria and underlying principles were based on notions as..

- Projects should constitute segments of the major Euro-Asian corridors, within recognized UNECE/UNESCAP networks;
- For projects considered, consensus existed from all countries that they contributed to improvement of specific Euro-Asian transport routes;
- Projects considered enhanced the quality of infrastructure to meet international standards;
- Projects addressed needs to overcome time/cost bottlenecks.
- Projects should promote
 - Safe and environmental-friendly sustainable conditions of transport operations
 - Facilitation of international traffic
 - Maximizing use of existing infrastructure

Part B: EATL Methodology

Objectives

Phases & Data Needs

Process

Objectives

- Identify project's prioritization/categorization,
 - support elaboration of a medium and long-term investment strategy
 - encourage the realization of projects that have good chances of implementation
 - all projects that are on the EATL routes or being extensions of those routes will be considered

Phases of Methodology

- Three consequent phases
 - PHASE A – Identification
 - ↓
 - PHASE B – Evaluation
 - ↓
 - PHASE C – Prioritisation

Identification Phase

- Within the identification phase, projects were grouped according to whether they have **committed funding** or not.
 - If a project has already secured necessary funding, it was directly prioritised as Priority Category I.
 - The rest would go through the evaluation phase
- Identification phase was based on the country reports

Data to be collected - *between Identification and Evaluation Phases*

- Regardless of the case of a project having secured funds or not, the countries were requested to further elaborate this list of projects resulted from Identification phase, in the following manner:
 - For projects with funding committed, only some additional technical information should be completed
 - For projects without funding committed, as well as for newly proposed projects, additional technical information and evaluation criteria questionnaire should be completed

Evaluation Phase

- **Selection of Criteria** – *two dimensions of criteria*
 - horizontal dimension or CLUSTER A
 - “**Functionality/ Coherence**” expresses the role of the project in the functionality and coherence of the Euro-Asian Transport Linkages (C_A)
 - vertical dimension or CLUSTER B
 - “**Socio-economic Efficiency/ Sustainability**” expresses the socio-economic return on investment (C_B)
- **Measurement of criteria** – *physical performances*
- **Quantification of Criteria** - *Scores*
- **Weighting/ Hierarchy of Criteria** – *Delphi/ Paired Comparison*
- **Total Performance of Project**

Selection of Criteria

1. Serve international connectivity (reaching a border crossing point or provide connection with a link that is border crossing); (CA1)

A: Greatly improves connectivity, B: Significantly improves connectivity, C: Somewhat improves connectivity, D: Slightly improves connectivity, E: Does not improve connectivity.

2. Promote solutions to the particular transit transport needs of the landlocked developing countries; (CA2)

The project provides solution..

A: Greatly, B: Significantly, C: Somewhat, D: Slightly, E: Does not

3. Connect low income and/or least developed countries to major European and Asian markets; (CA3)

The project connects..

A: Greatly, B: Significantly, C: Somewhat, D: Slightly, E: Does not

4. The project crosses natural barriers, removes bottlenecks, raises substandard sections to meet international standards, or fills missing links in the EATL; (CA4)

The project crosses natural barriers or removes bottlenecks and/ or missing links in EATL..

A: Greatly, B: Significantly, C: Somewhat, D: Slightly, E: Does not

5. Have high degree of urgency due to importance attributed by the national authorities and/or social interest; (CB1)

The project is..

A: In the national plan and immediately required (for implementation up to 2008), B: In the national plan and very urgent (for implementation up to 2010), C: In the national plan and urgent (for implementation up to 2015), D: In the national plan but may be postponed until after 2015, E: Not in the national plan.

6. Pass socio-economic viability test; (CB2)

The project is expected to increase traffic (both existing and generated) ...

A: More than 15%, B: 10-15%, C: 5- 10%, D: less than 5%, E: Will not affect traffic

7. Have a high degree of maturity, in order to be carried out quickly (i.e. project stage); (CB3)

Project's is at stage of...

A: Tendering, B: Feasibility study, C: Pre-feasibility study, D: Planning, E: Identification

8. Financing feasibility; (CB4)

Project's financing feasibility is..

A: Excellent, B: Very Good, C: Good, D: Medium, E: Low

9. Environmental and social impacts; (CB5)

The project has potentially negative environmental or social impacts (pollution, safety, etc).

A: No impact, B: Slight impact, C: Moderate impact, D: Significant impact, E; Great impact.

Weights

- The resulting weights are:

Criterion no.	Criterion explanation	Criterion weight
C _{A1}	Serve international connectivity (reaching a border crossing point or provide connection with a link that is border crossing);	3,13%
C _{A2}	Promote solutions to the particular transit transport needs of the landlocked developing countries;	9,38%
C _{A3}	Connect low income and/or least developed countries to major European and Asian markets;	19,79%
C _{A4}	The project crosses natural barriers, removes bottlenecks, raises substandard sections to meet international standards, or fills missing links in the EATL;	17,71%
C _{B1}	Have high degree of urgency due to importance attributed by the national authorities and/or social interest;	12,67%
C _{B2}	Pass economic viability test;	12,67%
C _{B3}	Have a high degree of maturity, in order to be carried out quickly (i.e. project stage);	3,33%
C _{B4}	Financing feasibility	7,33%
C _{B5}	Environmental and social impacts	14,00%
		100%

Prioritization Phase

- Project score (resulted from combination of the criterion's scores and priorities) places each project in one of the four priority categories or reserve category.
 - *If the project has committed funding, it belongs to priority category **I**.*
 - *If the project scores between 4-5, then it belongs to priority category **II**.*
 - *If the project scores 3 -4, then it belongs to priority category **III**.*
 - *If the project scores 1 -3, then it belongs to priority category **IV**. Projects with insufficient data belong to priority category **IV**.*
 - *If the project does not pass the pre-selection phase, then it belongs to reserve category.*

Priority Categories

- **I:** projects, which have funding secured and are ongoing or planned and are expected to be completed in the near future (up to 2010).
- **II:** projects which may be funded and implemented rapidly (up to 2015).
- **III:** projects requiring some additional investigations for final definition before likely financing (up to 2020).
- **IV:** projects requiring further investigations for final definition and scheduling before possible financing.
- **Reserve:** projects to be implemented in the long run, including the projects where insufficient data existed.

Part C: Methodology Application Example

Road project evaluation and prioritization

Example Steps

- Project description
- Complete Project Criteria Fiche – *see next*
- Derive Criteria Scores
- *Use default set of Criteria Weights*
- Derive Project Total Score
- Prioritize Project

Project description

- Country: IRAN (Abbr. IR)
 - Project Type: Road (Abbr. ROD)
 - Project name: Construction of Bazargan – Tabriz
 - Project code: IR-ROD-34
 - Project group: Unfunded
- ✓ The above can be found in Project's fiche – Section 1, Technical Characteristics

Complete Project Criteria Fiche

Project Name: Construction of Bazargan – Tabriz

Project Code: IR-ROD-34

Section 2 To be completed only for non-funded projects

Section 2.A. Project Information Concerning Criteria of CLUSTER A

1. To what extent does the project improve international connectivity (for example, by reaching a border-crossing point or providing connection with a link that is border crossing; (Criterion C_{A1})?
 - A: Greatly
 - B: Significantly
 - C: Somewhat
 - D: Slightly
 - E: Does not improve connectivity.
2. To what extent will the project promote solutions to the particular transit transport needs of the landlocked developing countries (Criterion C_{A2})?
 - A: Greatly
 - B: Significantly
 - C: Somewhat
 - D: Slightly
 - E: Does not.

3. Will the project connect low income and/or least developed countries to major European and Asian markets (Criterion C_{A3})?

- A: Greatly
- B: Significantly
- C: Somewhat
- D: Slightly
- E: Does not.

4. Will the project cross a natural barrier, alleviate bottlenecks, complete a missing link or raise substandard sections to meet international standards along a Euro-Asian Transport route (Criterion C_{A4})?

- A: Greatly
- B: Significantly
- C: Somewhat
- D: Slightly
- E: Does not.

Section 2B Project Information Concerning Criteria of CLUSTER B

5. Does the project have a high degree of urgency due to importance attributed by the national authorities and/or social interest (Criterion C_{B1})? The project is...
- A: In the national plan and immediately required (for implementation up to 2008)
 - B: In the national plan and very urgent (for implementation up to 2010)
 - C: In the national plan and urgent (for implementation up to 2015)
 - D: In the national plan but may be postponed until after 2015
 - E: Not in the national plan.
6. To what extent is the project expected to increase traffic (Criterion C_{B2})?
- A: By more than 15%
 - B: 10-15%
 - C: 5- 10%
 - D: less than 5%
 - E: Will not affect traffic.
7. At what stage is the project (Criterion C_{B3})?
- A: Tendering
 - B: Feasibility study
 - C: Pre-feasibility study
 - D: Planning
 - E: Identification.

8. What is the financing feasibility of the project (Criterion C_{24})?

- A: Excellent
- B: Very Good
- C: Good
- D: Medium
- E: Low

9. To what extent does the project have potentially negative environmental or social impacts (pollution, safety, etc) (Criterion C_{25})

- A: No expected impact
- B: Slight impact
- C: Moderate impact
- D: Significant impact
- E: Great impact.

Derivation of criteria scores

- Criteria scores on physical scale - *based on project's fiche-section 2 answers from country*

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
IR-ROD-34	A	A	B	A	A	B	B	A	A



- Criteria scores on artificial scale (*quantification*)

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
IR-ROD-34	5	5	4	5	5	4	4	5	5

Use default set of criteria

- *The country accepted the default set of criteria, being:*

Weights	Criteria A				Criteria B				
	WCA1	WCA2	WCA3	WCA4	WCB1	WCB2	WCB3	WCB4	WCB5
	3,13%	9,38%	19,79%	17,71%	12,67%	12,67%	3,33%	7,33%	14,00%

Project Total Score

- Based on methodology described earlier Total Score is: T.S. = 4,64
 - Resulted as the weighted sum (*multiply criteria artificial score with weights and then add all*) of criteria artificial scores, analytically:

Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
IR-ROD-34	5	5	4	5	5	4	4	5	5



Weights	Criteria A				Criteria B				
	WCA1	WCA2	WCA3	WCA4	WCB1	WCB2	WCB3	WCB4	WCB5
	3,13%	9,38%	19,79%	17,71%	12,67%	12,67%	3,33%	7,33%	14,00%



Project ID	Criteria A				Criteria B				
	CA1	CA2	CA3	CA4	CB1	CB2	CB3	CB4	CB5
IR-ROD-34	0,16	0,47	0,79	0,89	0,63	0,51	0,13	0,37	0,70

Project prioritization

- Since project scored between 4-5, then it belongs to priority category **II**.
 - *That is* to projects which may be funded and implemented rapidly (up to 2015).

Part D: Results

Countries participation

Statistics on project's types and costs

Combined analysis:

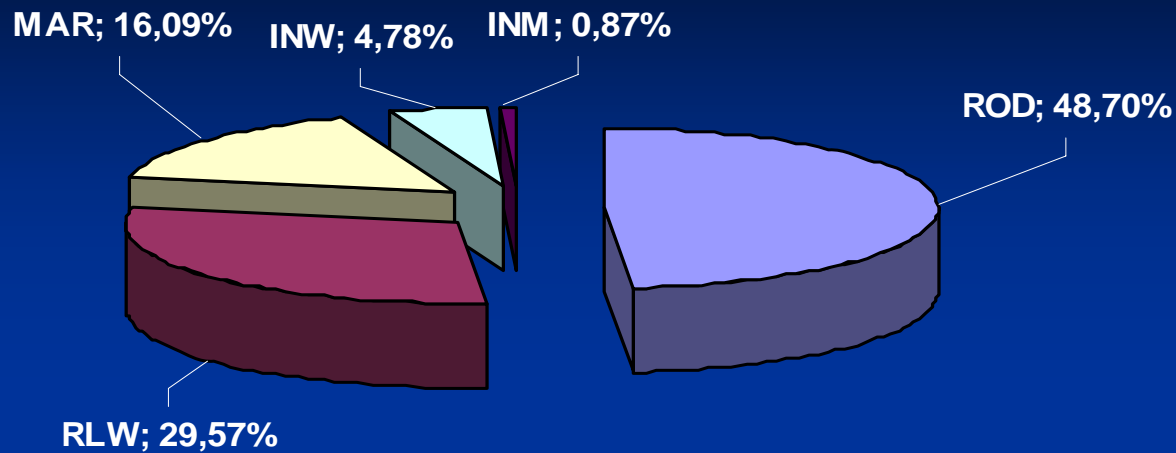
↳ *Prioritization results – all and per infrastructure type*

↳ *Cost analysis – all and per infrastructure type*

Countries participation

- Out of the 18 countries participating in this project, 15 countries have submitted data on the projects under evaluation.
 - Countries that submitted data:
 - Armenia, Azerbaijan, Belarus, Bulgaria, China, Georgia, Islamic Republic of Iran, Kazakhstan, Kyrgyzstan, Moldova, Romania, Tajikistan, Turkey, Ukraine, Uzbekistan.
 - Countries not having submitted data:
 - Afghanistan, Russian Federation ,Turkmenistan

Projects submitted (types & costs)



No Project type/No All projects

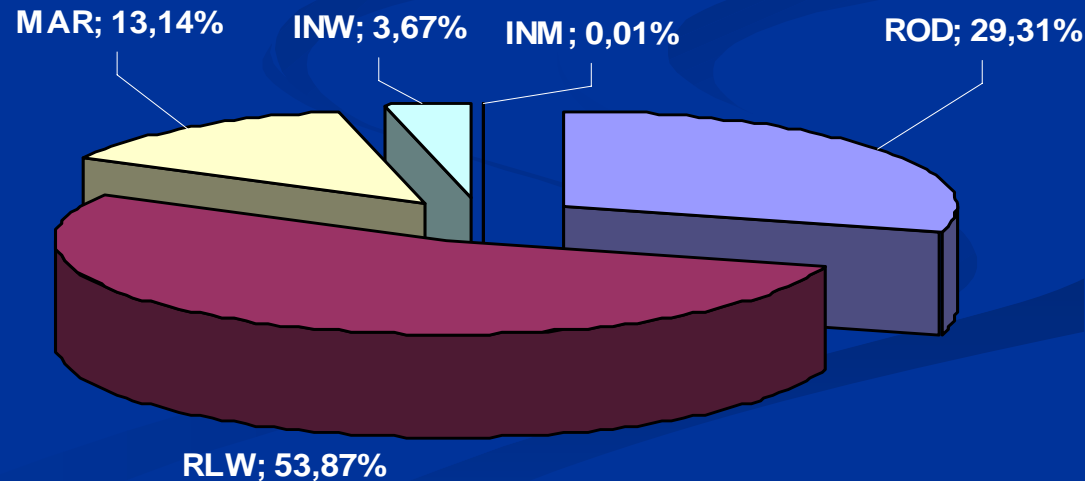
230 projects

- 112 road projects
- 68 railway projects
- 37 maritime projects
- 11 inland waterway projects
- 2 inland/ border crossing etc. projects

Project type cost/ Cost of all projects

total value \$ 43.4 bill.

- road projects \$12.7 bill.
- railway projects \$ 23.4 bill.
- maritime projects \$ 5.7 bill.
- inland waterway projects \$ 1.6 bill and
- inland/ border crossing etc. projects \$ 0,003 bill.

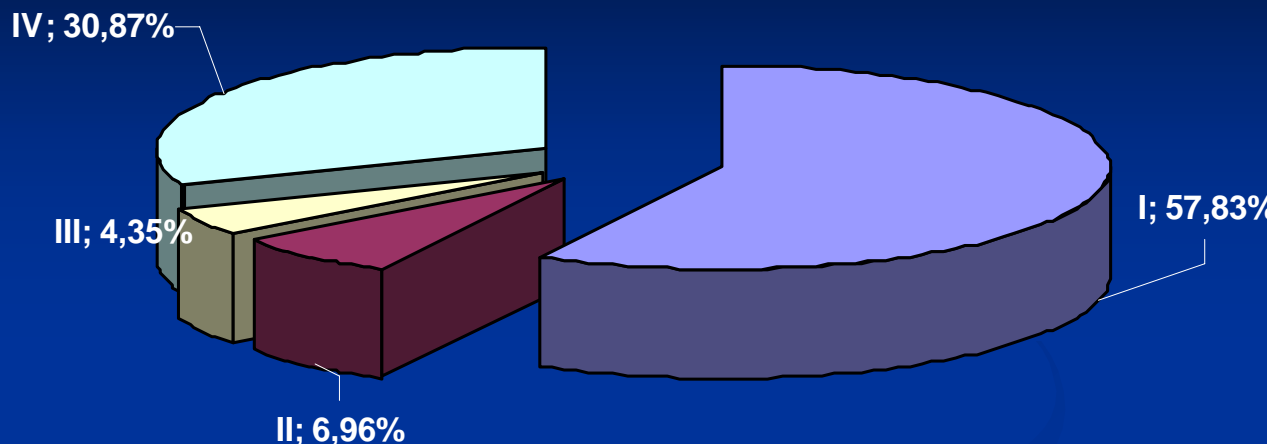


Prioritization results & Cost analysis

No Project per Priority Category/No All projects

230 projects

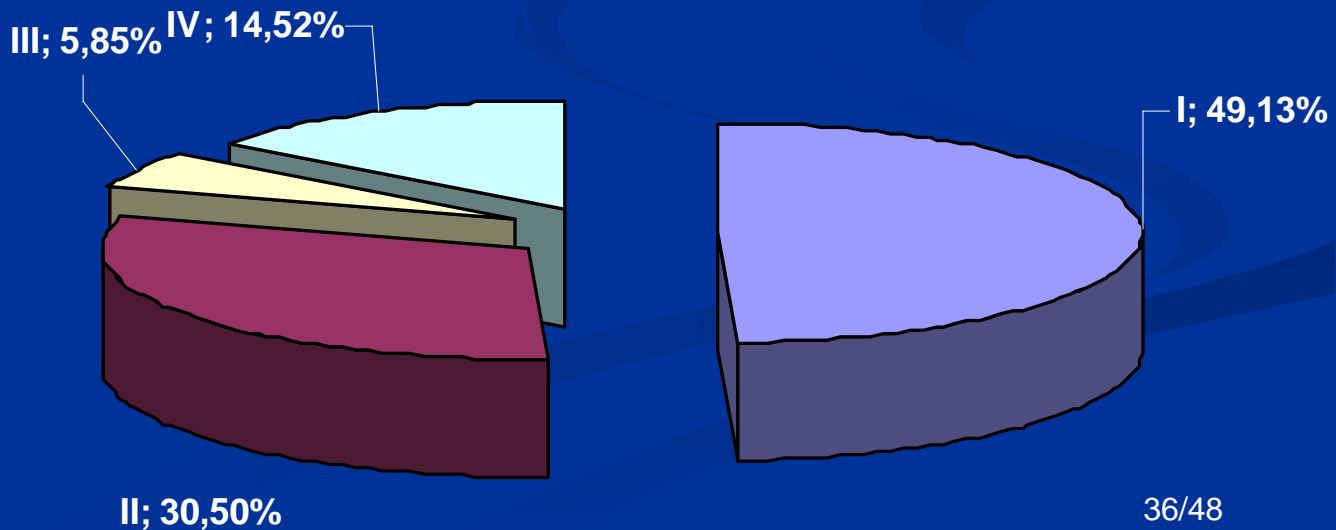
- 133 in Priority Category I*
- 16 in Priority Category II*
- 10 in Priority Category III*
- 71 in Priority Category IV*



Cost of Projects per Priority Category/ Cost of all projects

All Priorities - total value 43.4 bill. \$

- Priority Category I, 21,3 bill. \$*
- Priority Category II, 13,2 bill. \$*
- Priority Category III, 2,5 bill. \$*
- Priority Category IV, 6,3 bill. \$*

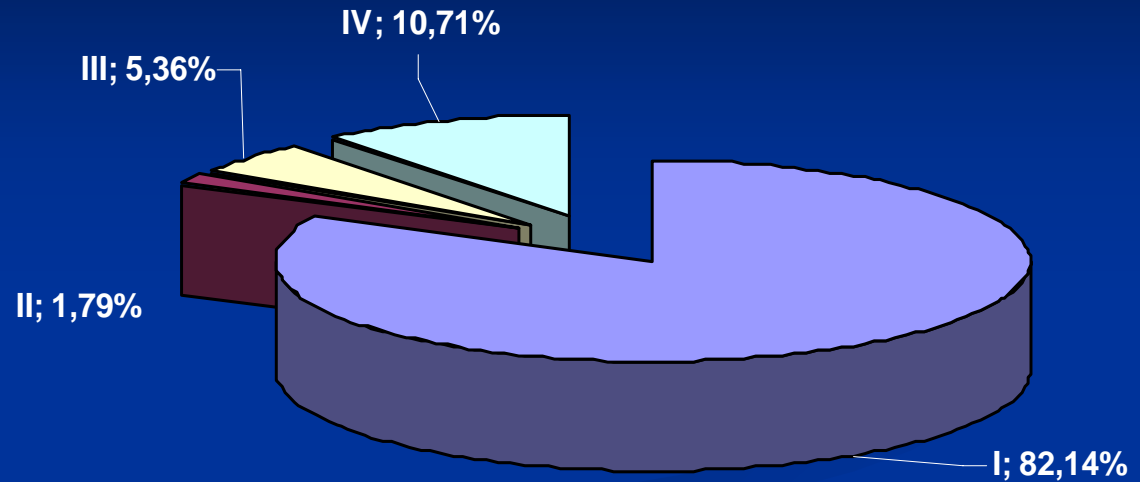


Prioritization results & Cost analysis (road)

No of Road projects per Priority Category/No All Road projects

112 Road projects

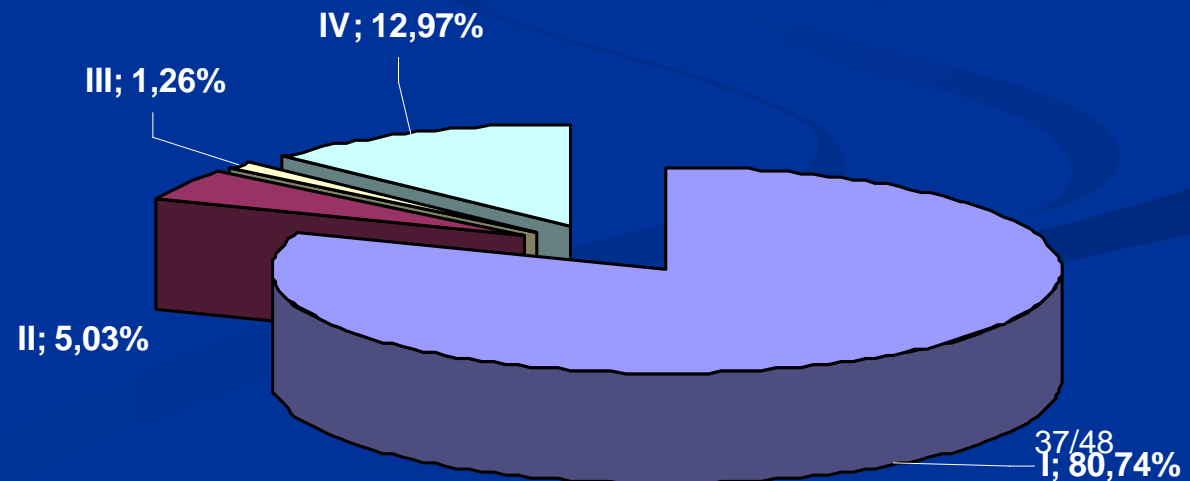
- 92 in Priority Category I
- 2 in Priority Category II
- 6 in Priority Category III
- 12 in Priority Category IV



Cost of Road projects per Priority Category/Cost of All Road projects

All Priorities for Road projects - total value 12.72 bill. \$

- Priority Category I, 10,2 bill. \$
- Priority Category II, 0,64 bill. \$
- Priority Category III, 0,16 bill. \$
- Priority Category IV, 1,65 bill. \$

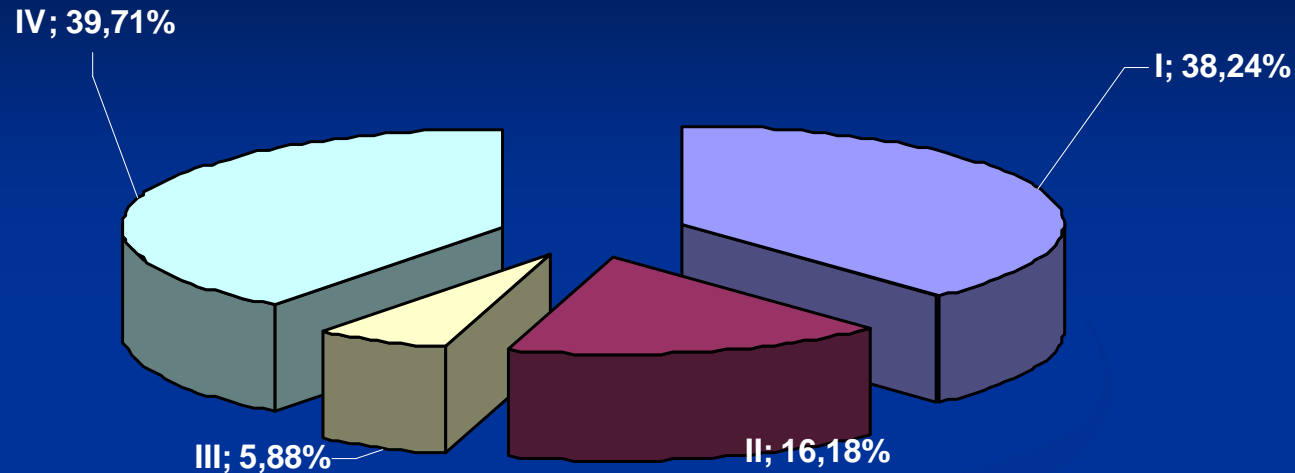


Prioritization results & Cost analysis (rail)

No of Rail projects per Priority Category/No All Rail projects

68 Rail projects

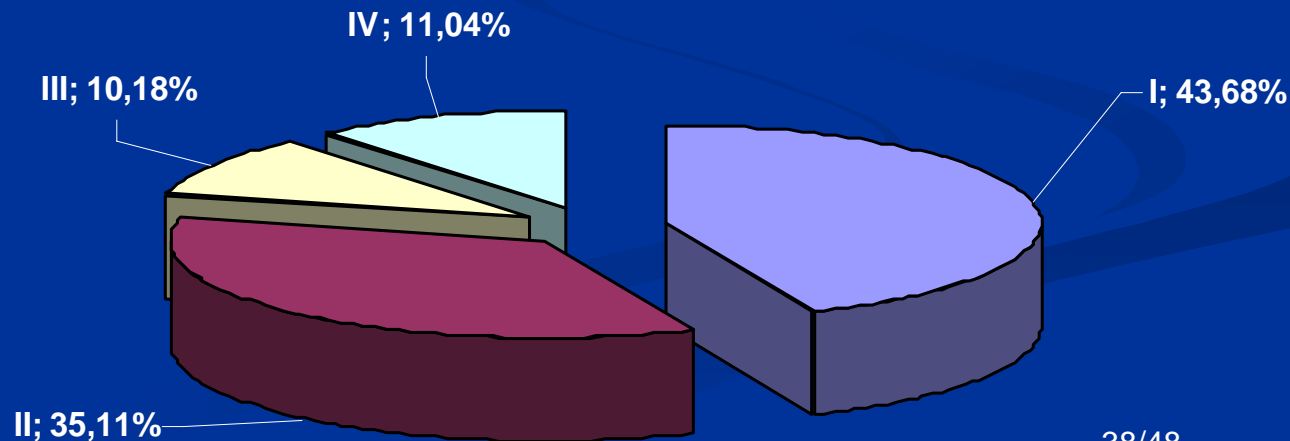
- 26 in Priority Category I
- 11 in Priority Category II
- 4 in Priority Category III
- 27 in Priority Category IV



Cost of Rail projects per Priority Category/Cost of All Rail projects

All Priorities for Rail projects - total value 23,4 bill. \$

- Priority Category I, 10,2 bill. \$
- Priority Category II, 8,2 bill. \$
- Priority Category III, 2,4 bill. \$
- Priority Category IV, 2,6 bill. \$

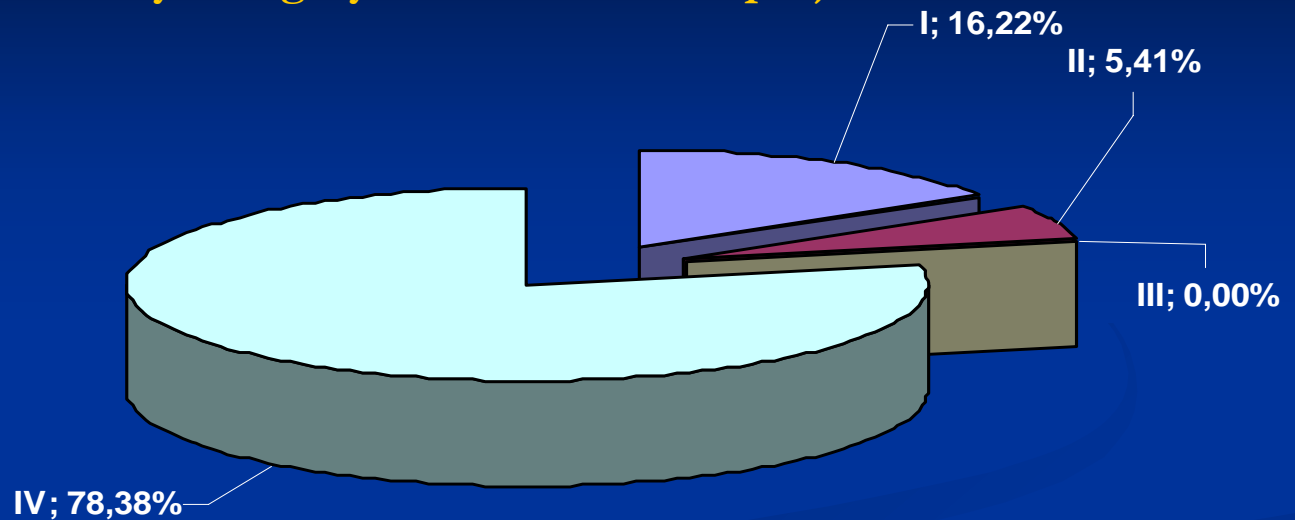


Prioritization results & Cost analysis (maritime)

No of Maritime projects per Priority Category/No All Maritime projects

37 Maritime projects

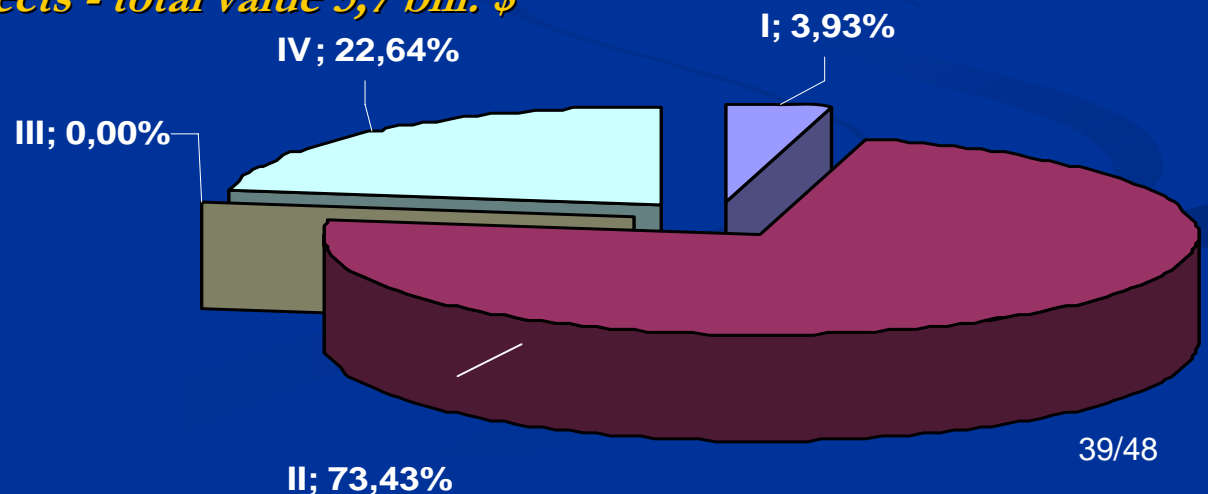
- 6 in Priority Category I
- 2 in Priority Category II
- 29 in Priority Category IV



Cost of Maritime projects per Priority Category/Cost of All Maritime projects

All Priorities for Maritime projects - total value 5,7 bill. \$

- Priority Category I, 0,2 bill. \$
- Priority Category II, 4,2 bill. \$
- Priority Category IV, 1,3 bill. \$

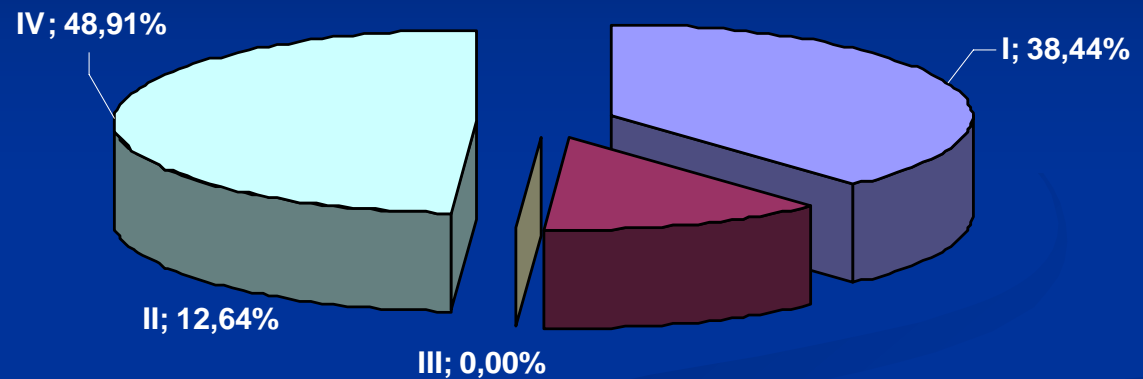


Prioritization results & Cost analysis (inland waterway)

No of Inland waterway projects per Priority Category/No All Inland waterway projects

11 Maritime projects

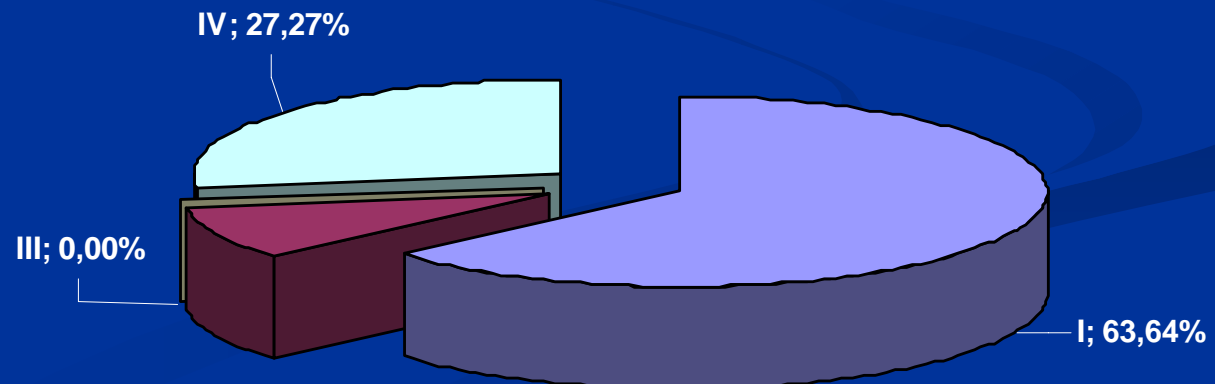
- 7 in Priority Category I
- 1 in Priority Category II
- 3 in Priority Category IV



Cost of Inland waterway projects per Priority Category/ Cost of All Inland waterway projects

All Priorities for Maritime projects - total value 1,6 bill. \$

- Priority Category I, 0,6 bill. \$
- Priority Category II, 0,2 bill. \$
- Priority Category IV, 0,8 bill. \$



Statistics concerning Inland/Border crossing (etc.) Projects' priorities and cost

- 100% of the Inland/Border crossing (etc.) projects belong to Priority Category I, for a total value of 3,12 mio\$.

Part E: Conclusions

Missing Data

Strong and weak points of the results

Interpretation of results

Future actions

Data missing

- Three countries have not sent data at all
 - Afghanistan, Russian Federation and Turkmenistan
- Half of the countries that submitted projects, have not provided all necessary data (specifically: Armenia, Azerbaijan, Bulgaria, Georgia, Kyrgyzstan, Moldova, Romania, Tajikistan, Ukraine)
 - for their unfunded projects they have not completed the questionnaire on the evaluation criteria, in order to facilitate the evaluation exercise for these projects.
 - so for these unfunded projects, that no answers were provided in the evaluation questionnaire, the lowest scores were assigned.

Strong and Weak points

- More than 50% of projects have secured funding (Priority I)
- These “secured” projects represent almost 50% of total cost
- In each type of infrastructure (except maritime), Priority I projects is the majority

Overall : Good chances of quick implementation of EATL network



- 30% of projects belong to Priority IV – due to lack of data
- The above is very obvious especially for Maritime projects
- Too many road projects (48,7%), enough railway (29,6), some maritime (16,1%) and very few inland waterway (4,8 %) etc. – no balance among infrastructure types

Overall: serious lack of data (reversible weakness), unbalance of infrastructure types



Interpretation

- Considerable difficulty in presenting the complete shape of the EATL Network in the different time horizons of 2010, 2015 and 2020
 - high number of projects in Priority category indicate a good chance for implementation, but the fact that 30% of the projects belonged to Priority IV, mainly due to the lack of data, is still a serious drawback
- Concerning the projects in the rest priority categories (II – III), ultimately the decision-making process rests on the investment priorities of the national governments, but in many cases countries might need assistance to develop sound medium and long-term investment strategies.
 - Therefore, in the future, certain action in some main fields might be necessary.

Future Actions for the completion of the evaluation and prioritization exercise

- Any missing or insufficient data should be completed with direct inputs of countries that did not provide data in order to support the evaluation and prioritisation exercise and ultimately the decision-making process.
 - Missing data are recognised. The only thing that remains is their collection.

Future Actions *for the design of EATL network*

- Sharing of experiences and exchange of best practices,
 - considering TEM and TER Projects' Master Plan current work
- Investment planning (time plan and financial plan
- Possibilities of stage construction
- Identify possible sources of funding and the required procedures, for all projects with no secured funds.
 - Especially for projects/parts of the network that funding is not yet secured but traffic is favourable, examine possibilities of PPPs.

Future Actions *for the implementation of EATL network (monitoring)*

- Definition of necessary technical and institutional actions for assisting the implementation of the proposed EATL network
- Priority projects' implementation should be followed from time to time. This would enable to keep the investment plan, updated.
 - through a complete database, the Geographical Information System (GIS) and maybe the creation of an Expert Network
- Establishment of transport sector priorities amongst possible investment measures using the criterion of sustainable mobility and an investment project pipeline for external financing.

Thank you!