FERRMED
Promotion du Grand Axe Ferroviaire de marchandises Scandinavie-Rhin-Rhône-Méditerranée Occidentale A.S.B.L.

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Technical, Socio-economic and Supply/Demand study regarding the transport of the FERRMED Great Rail Network (Scandinavia-Rhine-Rhône-Western Mediterranean)

Socio-Economic Analysis

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Components of Socio-Economic Analysis

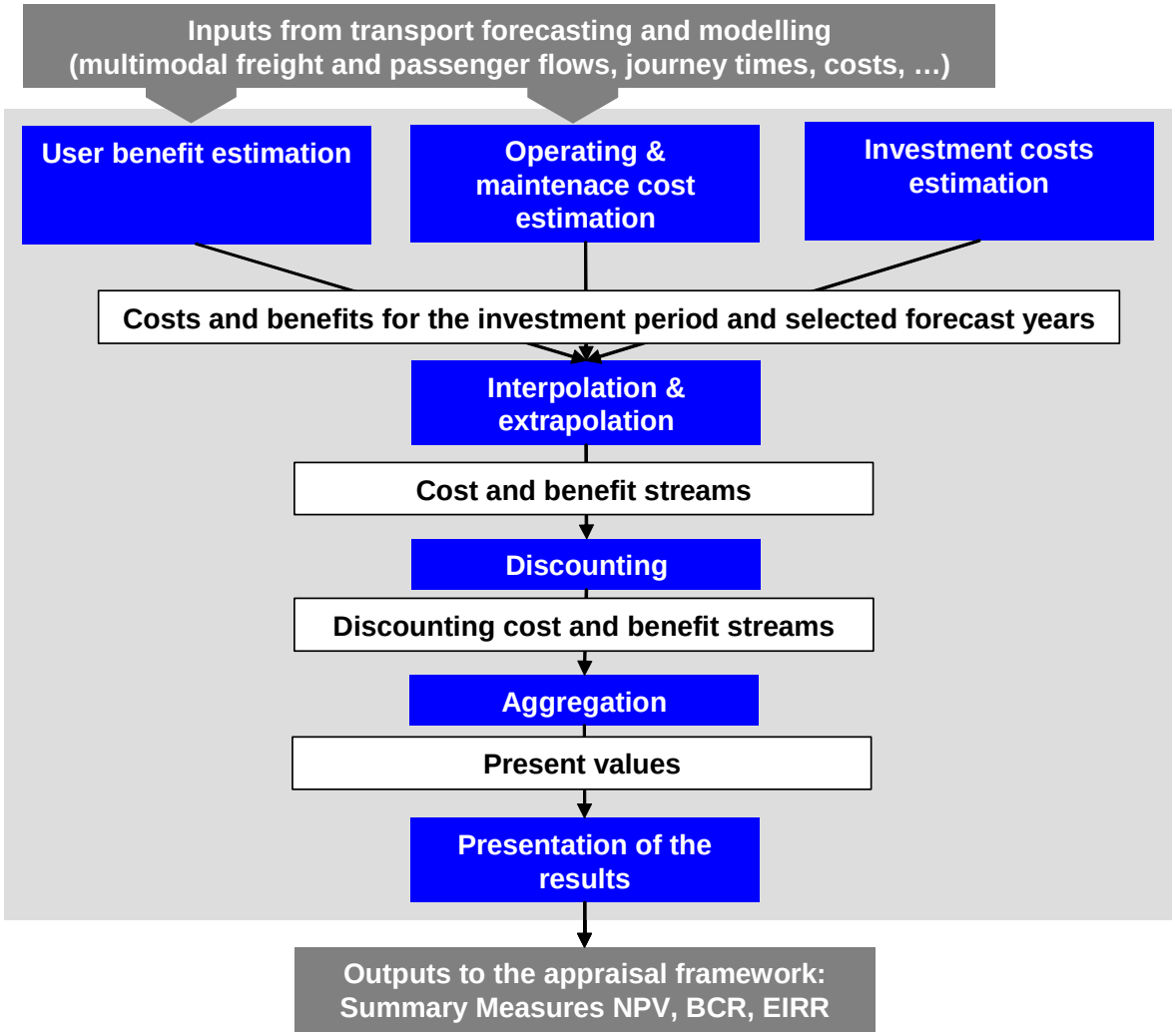
1. Cost-Benefit Analysis
2. Financial Analysis
3. Multi-Critera Analysis

Cost-Benefit Analysis

Objectives of the CBA

- Identification and quantification of all possible monetarisable economic, social and environmental impacts as economic costs or benefits (cost savings)
- Assessing project benefits against infrastructure investment and operating costs
- CBA methodology for strategic assessment
- Final TENconnect report not yet available

CBA methodology



General principles of CBA (1)

- **Four scenarios:** Reference („business as usual") Scenario, Medium FERRMED Scenario, Full FERRMED Scenario, Full+ FERRMED Scenario
- **Evaluation period 2016 – 2045**
  Investments spread over decade 2016 to 2025
- **Methodological consistency** of assumptions for traffic modelling/forecasting and CBA

General principles of CBA (2)

- **Impacts** measured in terms of average annual values (e.g. AADT)
- **Fixed price basis** in EURO, no inflation (base year 2005)
- **Economic costs** (without transfer costs (e.g. track charges, subsidies and taxes)
- **Average vehicle operating costs** over all FERRMED countries

CBA inputs

- Transport and traffic performance: from Supply/Demand Analysis
- Infrastructure investment and O&M costs: from Technical Analysis
- Vehicle operating and time costs: from EU and own sources
- External impacts: from TREMOVE and IMPACT studies; cost parameters: from HEATCO study

Traffic/transport impact by scenario 2025 (1)

Freight		MFS	FFS / F+FS
Rail			
traffic	train-km	+5.4%	+9.9%
o/w block trains	train-km	+4.2%	+11.5%
transport	tonne-km	+8.4%	+15.6%
	tonne-hrs	+0.3%	-29.9%
speed [1)]	km/h	23.0	35.2
Road			
traffic	veh-km	-1.4%	-2.0%
transport	tonne-km	-1.4%	-2.0%
	tonne-hrs	-1.4%	-2.3%
IWW			
all		-1.0%	-1.8%
SSS			
all		-0.5%	-0.8%

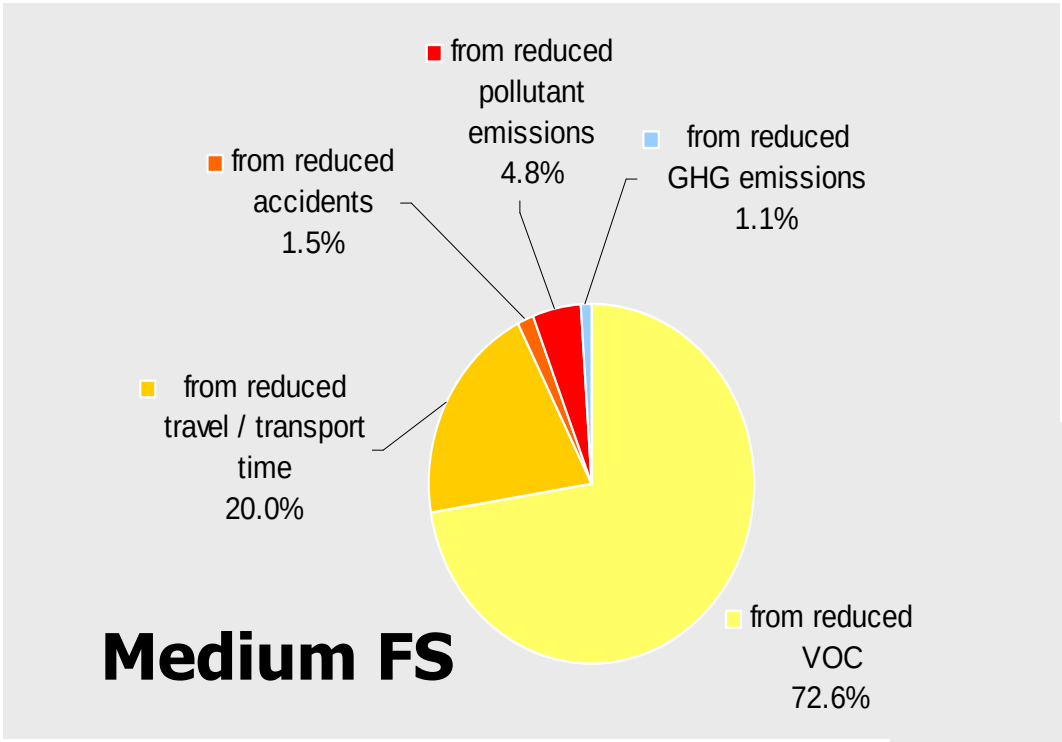
[1)] Average speed in reference scenario: 19.8 km/h

Traffic/transport impact by scenario 2025 (2)

Passenger		MFS	FFS / F+FS
Rail			
traffic	train-km	+0.12%	+0.34%
transport	pax-km	+0.12%	+0.34%
	pax-hrs	+0.12%	-10.29%
speed [1)]	km/h	113.1	126.5
Road			
traffic	veh-km	-0.04%	-0.05%
transport	pax-km	-0.04%	-0.05%
	pax-hrs	-0.04%	-0.05%

[1)] Average speed in reference scenario: 113.1 km/h

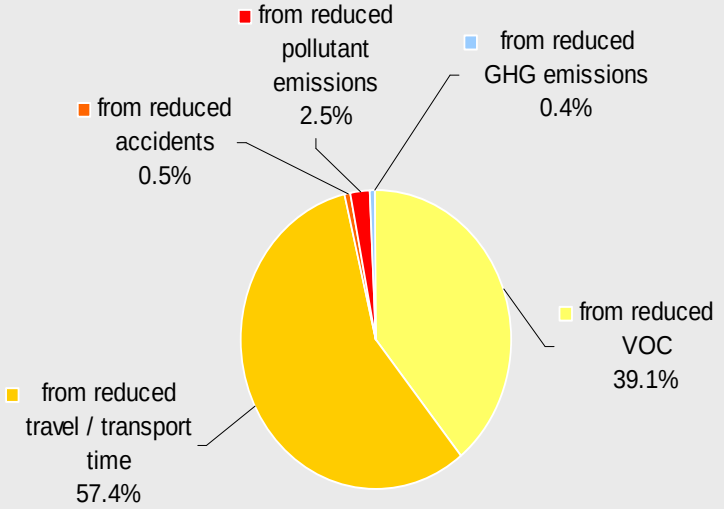
Origin of benefits by scenario and type



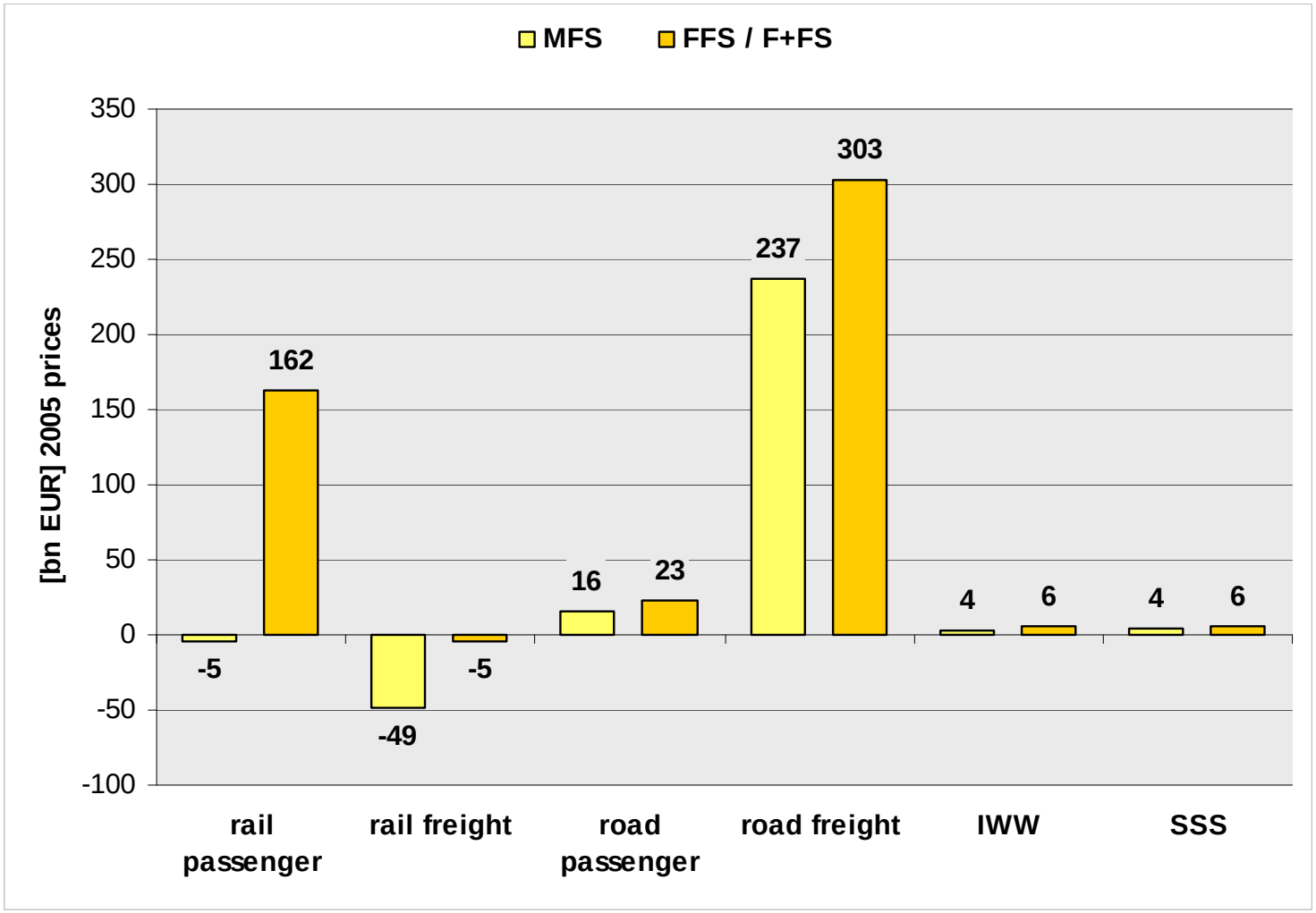
Medium FS

Social discount rate: 3.5%

Full FS



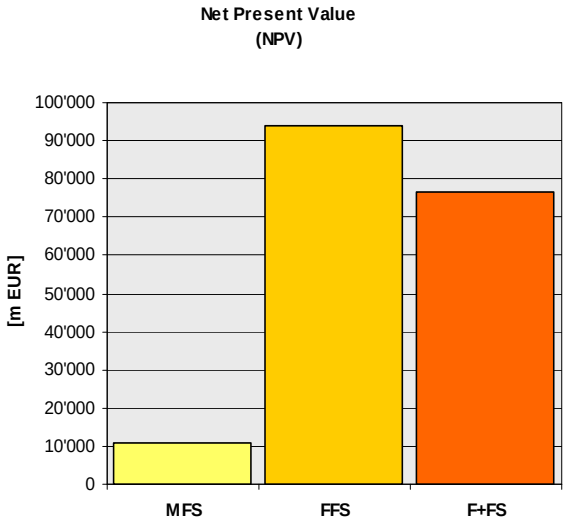
Origin of benefits by scenario and mode

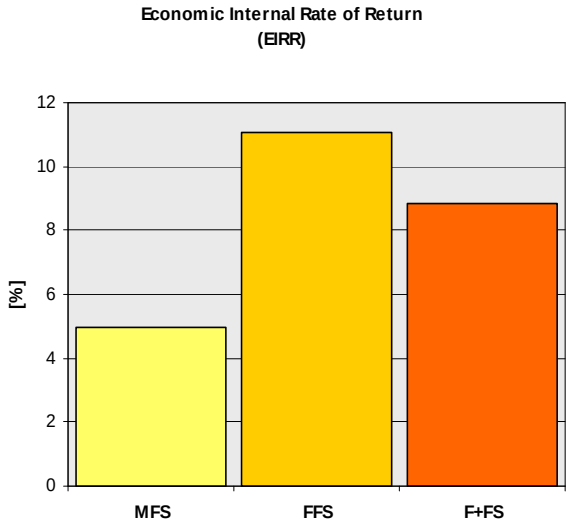


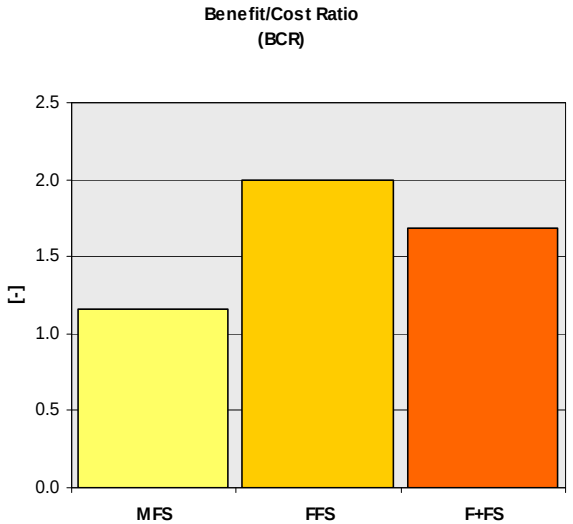
CBA results

Scenario	Net Present Value – NPV (million Euro)	Economic Internal Rate of Return – EIRR (%)	Benefit / Cost Ratio – BCR
MFS	10,780	4.97	1.155
FFS	93,783	11.09	1.993
F+FS	76,453	8.85	1.684

(*) social discount rate: 3.5%

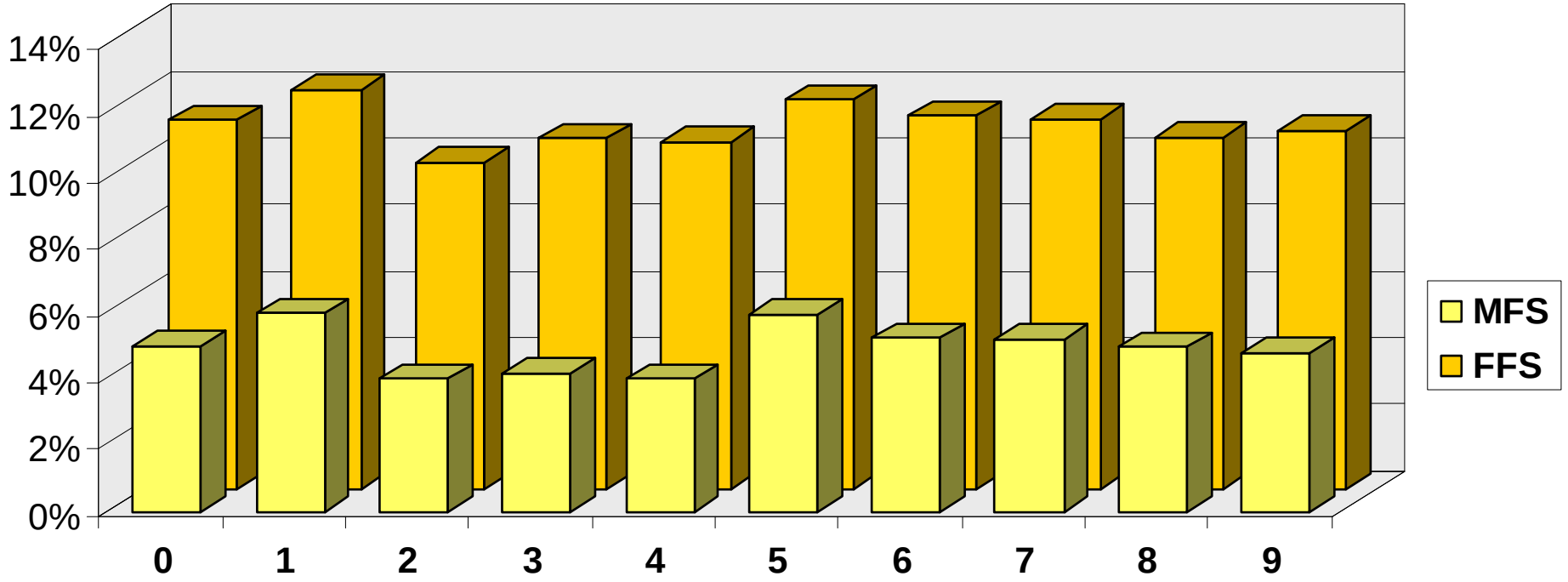






Sensitivities

Economic Internal Rate of Return (EIRR)



0 Base Case	**5** +10% of VOC for HGVs only
1 by-pass investment costs excluded	**6** -10% of VOC for all rail vehicle types only
2 +10% investment and maintenance costs	**7** -10% of VOC for FERRMED trains only
3 -10% of VOC for all means of transport	**8** -10% of VoT for passenger mode
4 -10% of VOC for HGVs only	**9** -10% of VoT for freight mode

Financial Analysis

Objectives of Financial Analysis

- Suitable financing sources for the different investment types and scenarios
- Public versus private funding
- Cash-flow calculation 2013-2025
- Break-down of total funding requirements of each FERRMED Scenario by main financing sources 2013-2025

Possible financing sources

Source	Railway infra-structure upgrad. (incl. noise prot. walls)	ERTMS	Rolling stock (couplg. +Spanish UIC g. roll. st.)	New rail lines	Ports & ter-mi-nals	Electr. power upgra-ding	Bottle-neck invest ments	By-pas-ses
National public entities	70	50	70	10	10	70	70	40
EC	15	25	15	10	10	15	30	15
EIB	15	25	15	10	10	15	0	15
Private PPP inv.	-	-	-	50	50	-	-	20
Comm. banks	-	-	-	20	20	-	-	10
Σ	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %

Total funds required 2013-2025

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FERRMED Scenario	Total invest-ment cost in billion € of 2007	National public entities (Governm., public rail companies, regional authorities)	EC (TEN-T, Cohesion & Struct. Fund etc.)	EIB	Total EU Funds (EC + EIB)	Private PPP in-vestors	Commer-cial banks
MEDIUM	**130.7**	**61.5**	18.4	18.1	**36.5**	**23.2**	**9.5**
in %	100 %	**47.1 %**	14.3 %	13.9 %	**28.2 %**	**17.6 %**	**7.1 %**
FULL	**177.8**	**77.4**	24.7	24.7	**49.4**	**36.2**	**14.7**
in %	100 %	**43.5 %**	13.9 %	13.9 %	**27.8 %**	**20.4 %**	**8.3 %**
FULL +	**210.7**	**99.7**	30.0	30.0	**60.1**	**36.2**	**14.7**
in %	100 %	**47.3 %**	14.2 %	14.2 %	**28.5 %**	**17.2 %**	**7.0 %**

Conclusions

- There is in Europe a widespread preparedness to finance rail projects to solve the increasing environmental and capacity problems of road transport .
- European rail corridors are co-financed by the EC only if the new European rules for rail transport are met. The investments foreseen for the FERRMED Great Axis Rail Network meet the funding rules of the EC.
- More than 50 % of the funds for the FERRMED Great Axis Rail Network) must come from national public sources.
- Up to 30 % of the total funds required can be expected to be co-financed by the EC and EIB.
- Financial contributions from private stakeholders should be taken into account based on pilot models of PPP rail projects in Europe.
- New financing instruments have been created on the EU level as a major step to support PPP projects.

Multi-Criteria Analysis

Objective of the MCA

- Extension of the CBA assesment to include other relevant evaluation and decision criteria including non-monetarisable ones
- Integration of all parts of the socio-economic analysis

Considerations in the MCA

- Interoperability
- Co-modality
- Safety and security
- Environmental damage reduction
- Transport system/technology improvement
- Employment and competitivity
- EU cohesion
- Decongestion of transport infrastructures

Result of the MCA

	Weight (%)	Medium scenario	Full scenario	Full + scenario
Cost-benefit analysis	65	5	10	8
Financial Analysis	20	10	5	4
Macro-economic impacts	10	6	8.5	10
Facilitation of access to remote areas (interconnectivity and cohesion)	5	8	10	10
MCA Result	100	6,3	8,9	7,5

Many thanks for your kind attention