

***FERRMED Study of Traffic and Modal Shift
Optimisation in the EU
FINAL REPORT PRESENTATION***

FERRMED CONFERENCE

***Opening session / EU integrated land freight transport
enhancement***

Brussels, November 29th 2023



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

OBJECTIVES OF THE STUDY (I)

Considering that there has been no increase in EU rail freight share in the last 15 years (17.9 % in 2005 and 17.3 % in 2017) and that the EU Transport Extended Core Network is too vast (c.80,000 km), **the shift from road to rail requires the concentration of investments in a selective part of the main corridors of the Extended Core Network. To identify** the most heavily used sections in the EU land transport network and **the best procedures to transfer freight from road to rail**, FERRMED has initiated a major study highlighted below.



OBJECTIVES OF THE STUDY (II)

The objectives of the study are:

- **To identify current total freight transport by mode** in the main corridors of the EU Core Network (EU Backbone Network);
- **To identify the main logistic hubs in the EU**
- **To define a new integrated Rail-Road system of transport for freight**
- **To propose an Action Plan to achieve the EC (2011) White Paper on Transport Policy targets by 2030** (30 % of inland freight transport over 300 km carried by rail or barge) **and “Green Deal” targets**, in the most heavily used sections of the corridors, covering 65 % of the traffic (tonne-kilometres) related to the EU Extended Core Network.



TASK FORCE

It has been a major study work. The task force involved consisted of:

- **24 experts:** academics, engineers, economists, geographers and senior analysts from all over the EU
- **12 students:** from Economics, Engineering and Geography Faculties
- **2 Universities involved:** Antwerp University and Barcelona University
- **1 Consultancy:** Mcrit
- **45,000 work hours spent:** between June 2019 and October 2023



DETERMINATION OF THE EU BACKBONE NETWORK

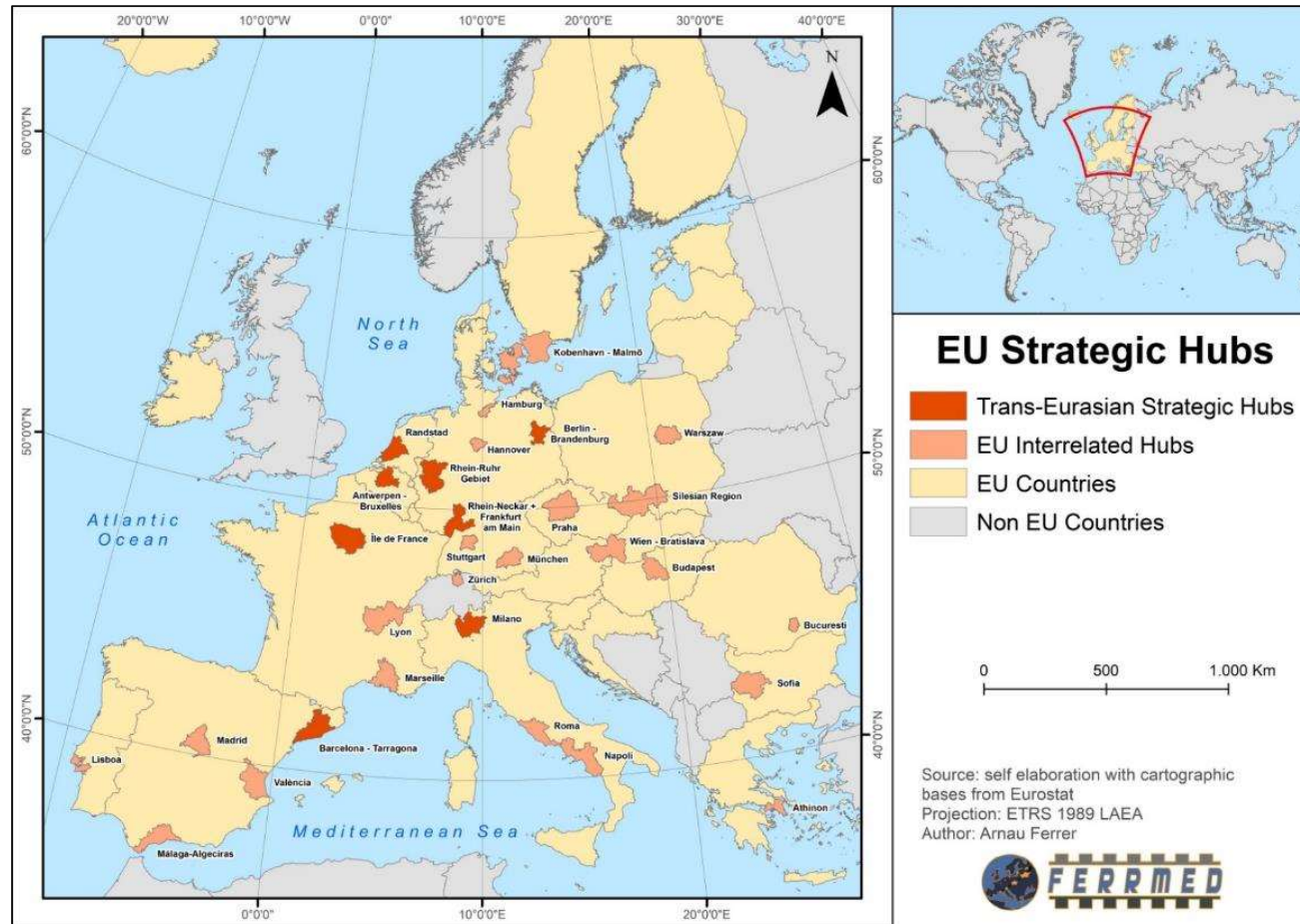


- First priority (18,040 km)
- Second priority (8,500 km)
- Third priority (50,700 km)

EU Core Network (aggregated): **77,240 km**
 EU Central Backbone Network: **18,040 km (23,3 %)**
 EU Extended Backbone Network: **8,500 km (11 %)**
 Backbone Network 65 % threshold: **122,000 tonnes/day**



EU STRATEGIC SOCIO-ECONOMIC HUBS



DATA COLLECTION OF THE EXISTING INTERMODAL TERMINALS IN THE EU

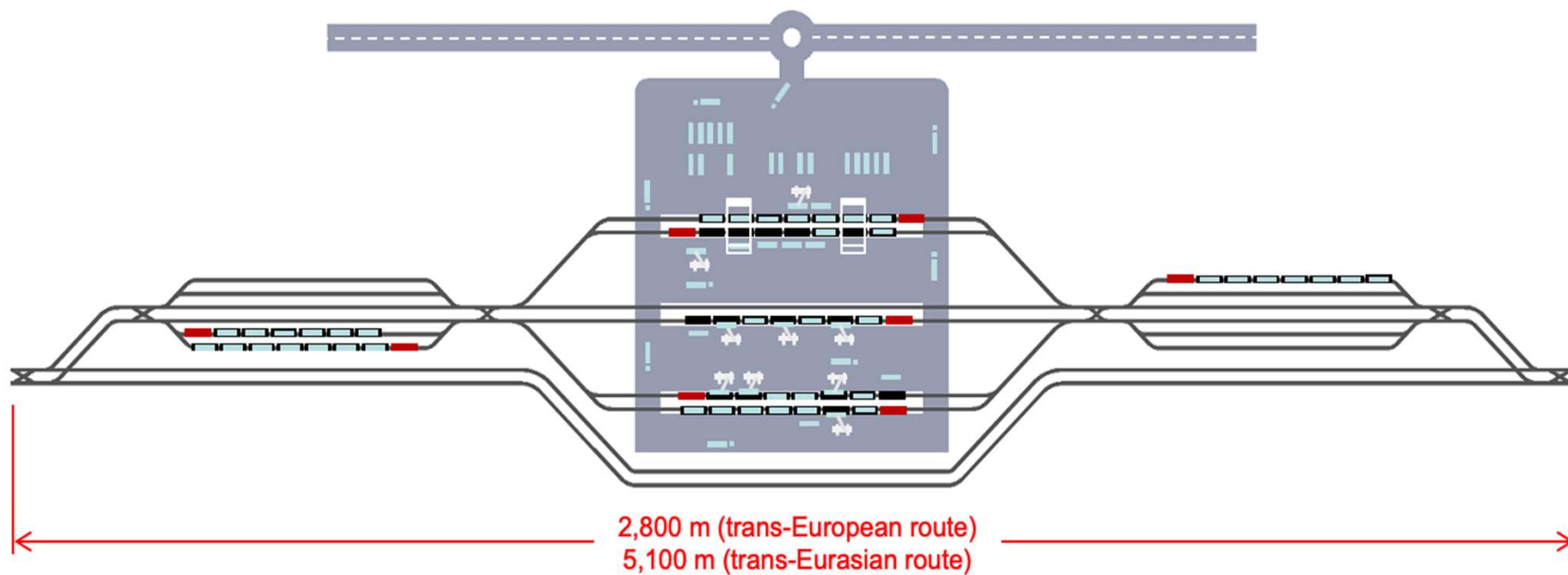
Classification of L/U		Europe	Share (%)
<250m	A	127	19.7
251 m – 500 m	B	280	43.5
501 m – 700 m	C	163	25.3
701 m – 750 m	D	47	7.3
>750 m	E	27	4.2
Total		644	100
Pass through		79	12.3
Dead end		565	87.7
Possible pass through		66	10.2
C possible enlargement (750 m)		5	0.8

Note: Existing Intermodal terminals in continental EU + Switzerland



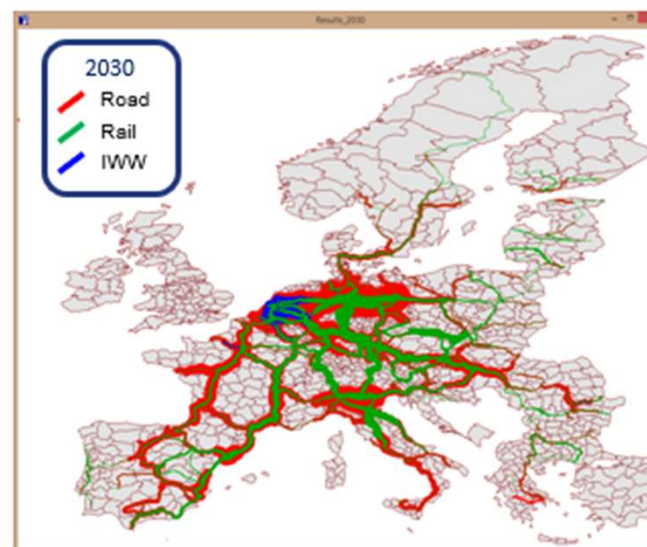
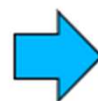
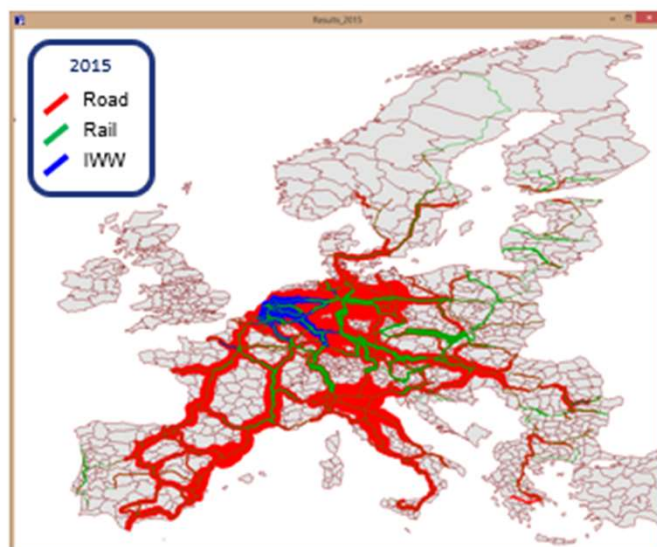
NEW INTERMODAL TERMINAL CONCEPT

+FIRRSST STRATEGIC TERMINAL (A)



FORECAST TRAFFIC SCENARIOS

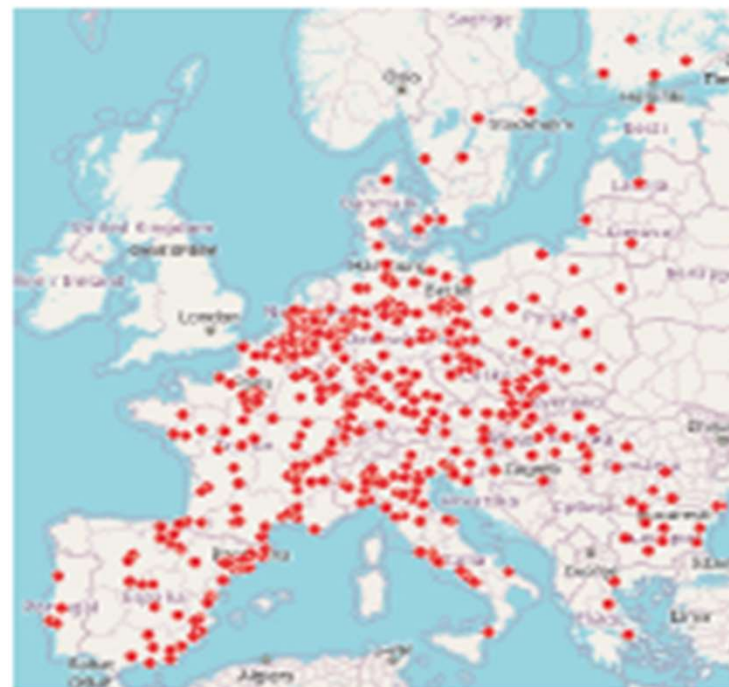
- **Mid term stagnant (2025): 23% of tonne-km by rail on average in Europe**
- **Long term stagnant (2030): 30% of tonne-km by rail on average in Europe**
- **Long term (2030) 20% increase land freight transport volume increase**
- **Long term (2030) +20% with port traffic rebalancing**



IMPACT OF TRAFFIC SCENARIOS IN THE INTERMODAL TERMINALS

The capacity analysis of the existing intermodal terminals in the EU shows that 425 additional new +FIRRST terminals are required across the EU (plus Switzerland) to accomplish a railway share of 30 % over distances of 300 km as stated in the EC (2011) White Paper on Transport Policy.

Location of 425 +FIRRST new terminals



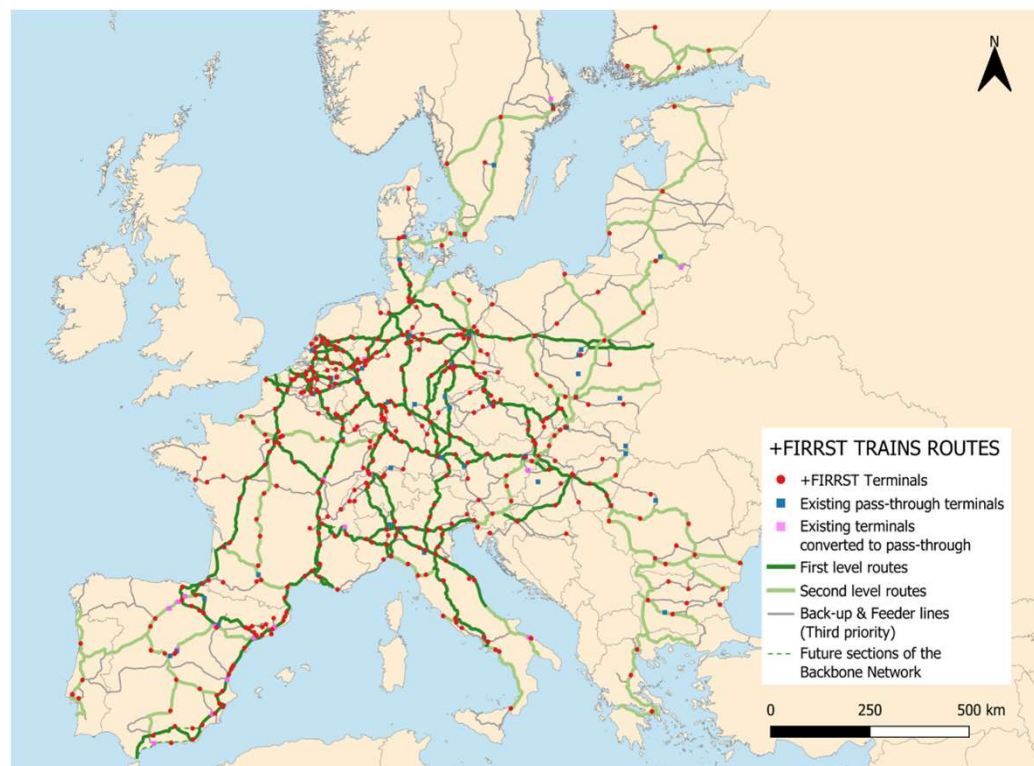
+FIRRST System

The only way to achieve the EC targets of road freight transfer to rail is to incorporate a system that can move isolated semi-trailers, containers and swap-bodies (ILUs) from/to different destinations in a fast, flexible integrated rail-road system of transport. It is a novel way of **organizing intermodal rail-road transport in the form of “Mobility as a Service (MaaS)**.

Several +FIRRST trains (**Ptp, Sai** and **Sor**) will be operative, in a framework of a **real time rolling planning concept**, interlinking the EU Socio-Economic Strategic Hubs (and related intermediate hubs) defined in the FERRMED Study.

+FIRRST TRAIN ROUTES DEFINITION

+FIRRST train routes will be developed in the corridors included on the Central and Extended EU backbone network, linking the +FIRRST terminals, the existing conventional pass-through terminals and main ports.



SUMMARY OF PROPOSED ADDITIONAL ACTIONS (I)

Summary of Member State action identified

- 12,285 km of new lines
- 44,105 km of upgraded existing lines (ERTMS, P400/410 loading gauge implementation, 25kV AC, and adaptation of the lines for trains up to 740 m long)
- 46 upgraded existing and new terminals
- **Total: €481.9 B.**

SUMMARY OF PROPOSED ADDITIONAL ACTIONS (II)

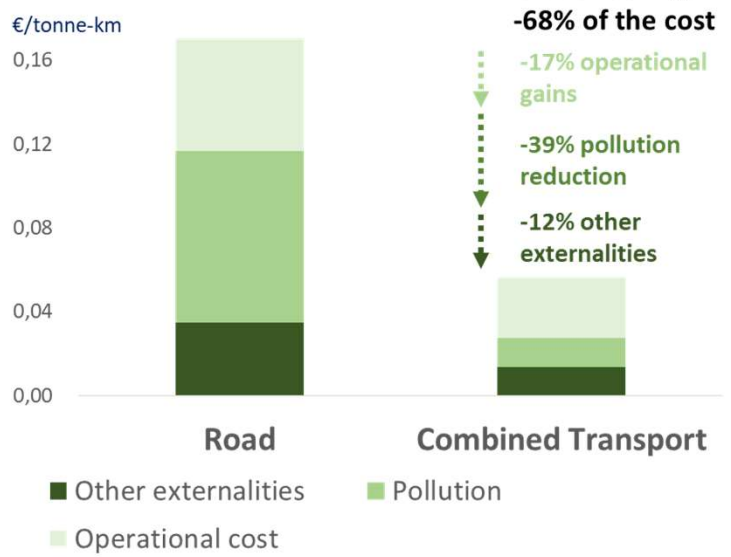
Summary of proposed FERRMED actions

- 1,939 km of new lines
- 11,170 km of upgraded existing lines (international track gauge, ERTMS, P410 loading gauge implementation, 25 kV AC and adaptation of the lines for trains up to 740 m long)
- 425 new +FIRRST terminals
- New lines: €31.18 B
- Existing line upgrading: €26.89 B
- New terminals: €11.06 B
- Upgraded terminals: €570 m
- +FIRRST system required rolling stock:
 - Electric locomotives (dual types): 950 units, €3.99 B
 - Multipurpose freight wagons: 19,950 units, €3.59 B
- **Total: €77.27 B.**



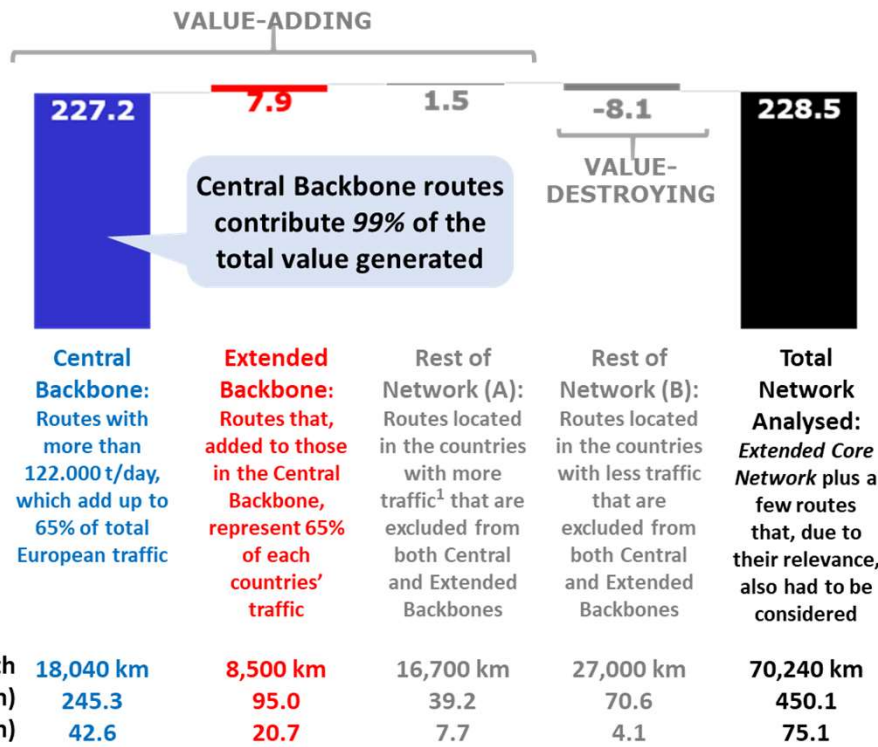
CONCLUSIONS OF THE SOCIO-ECONOMIC EVALUATION IN TERMS OF NVA

1. Marginal economic cost of transport (€/tonne-km)



- ❖ **Operational cost reduction.** Road vs +FIRRST combined transport (including taxes): 58%
- ❖ **Externality reduction.** Road vs +FIRRST combined transport: 76%

2. Net present value contribution (€ billion, discount rate = 4%)



	Central Backbone	Extended Backbone	Rest of Network (A)	Rest of Network (B)	Total Network Analysed
Length	18,040 km	8,500 km	16,700 km	27,000 km	70,240 km
TEN-T investment (1€ billion)	245.3	95.0	39.2	70.6	450.1
FERRMED investment (1€ billion)	42.6	20.7	7.7	4.1	75.1

1. These countries are Austria, Belgium, Czech Republic, France, Germany, Hungary, Italy, Netherlands, Slovakia and Switzerland.
 Source: FERRMED, preliminary data as of May 2023 (some details might differ from those published in the final report to be issued later in 2023).



MAIN CONCLUSIONS

- **Infrastructure**

- **First priority** investments in the part of the Extended Core Network that supports 65 % of land freight transport performance (18,040 km, 23 %).
- **Second priority** to be devoted to sections of peripheral Member States in which is concentrated 65 % of the land freight traffic of the country (8,500 km, 11 %).
- **Third priority** in the rest of the Network (50,700 km, 66 %).
- Investments gradually assigned according to transport volume of different sections.
- **In summary:** To achieve the EC (2011) White Paper on Transport Policy targets, in addition to the actions already identified by EU Member States, some 1,939 km of new lines and 425 new intermodal terminals are required.

- **Operation**

Gradual implementation of +FIRRST system for freight combined transport in the Central and Extended Backbone Network (c. 27,000 km).

- **Key conclusion**

Investing in 23% of the EU Extended Core Network generates 101% of Net Present Value (NPV) contribution, socio-economically and environmentally.

RECOMMENDATIONS

- To establish a “**Priority Investment Plan for EU Integrated Land Freight Transport System**” with highest priority where is the most freight transport
- **To agree on common guidelines**, aiming for an integrated land freight transport system (all key associations/federations of the transport sector)
- **Gradual implement actions of +FIRRST system**



*“To do things right, first you need love,
then technique”*

Antoni Gaudí

**THANK YOU VERY MUCH FOR YOUR
ATTENTION**

