

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

FERRMED CONFERENCE

Socio-economic and environmental analysis

Brussels, November 29th 2023



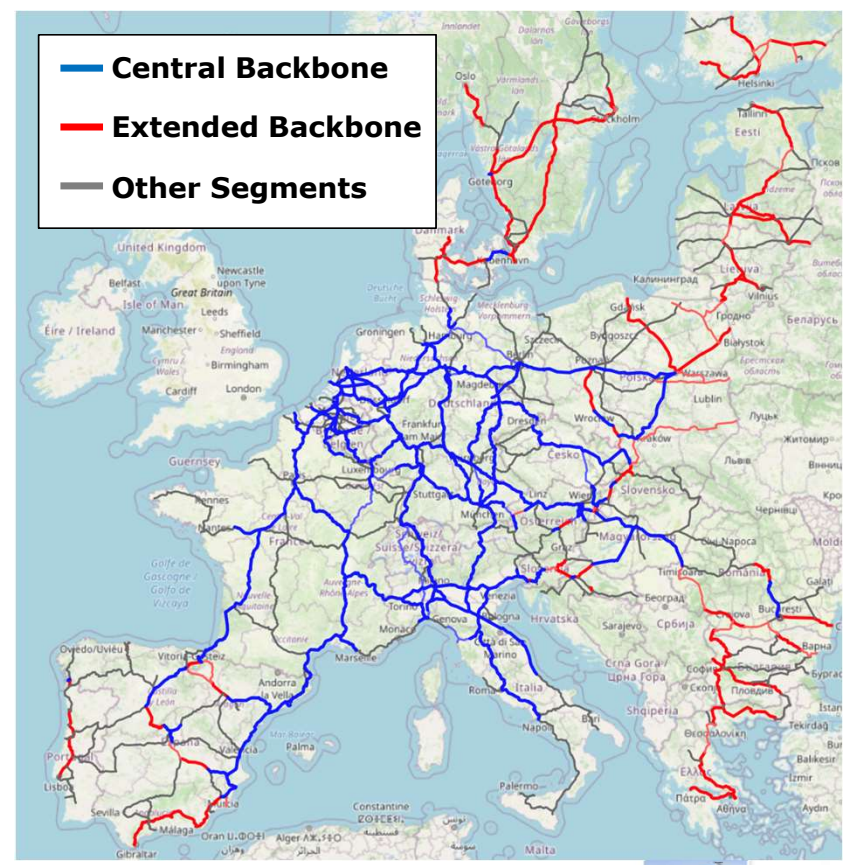
Promotion du Grand Axe Ferroviaire de marchandises
Scandinavie-Rhin-Rhône-Méditerranée Occidentale A.S.B.L

In this section we share some of the main takeaways from our socio-economic & environmental impact analysis

The purpose of this section is to assess the socio-economic and environmental impact of FERRMED's recommendations.

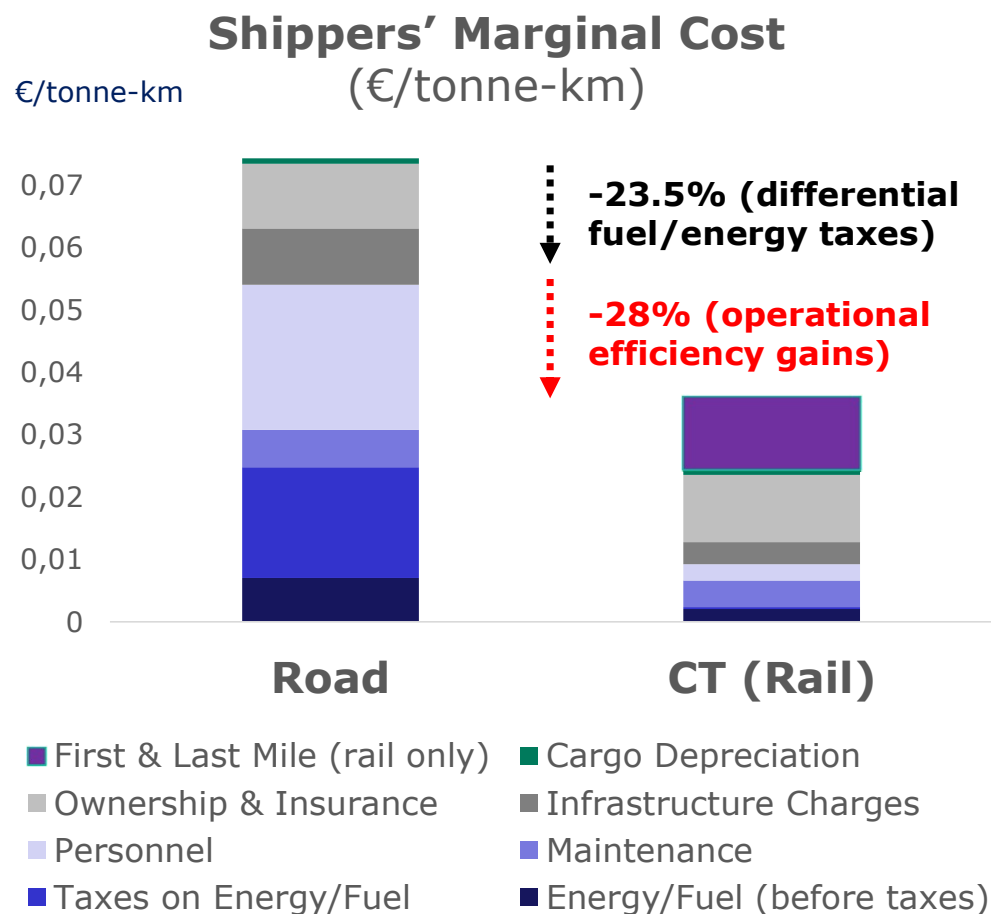
Its scope therefore encompasses analyses of:

- ❖ Operational efficiency improvements due to the recommended shift from road to combined transport
- ❖ Related externality cost reductions (e.g. pollution, CO₂, etc.)
- ❖ Investment costs required to generate these benefits
- ❖ Net Present Value (NPV), Benefit-Cost Ratio (BCR) and Internal Rate of Return (IRR)
- ❖ Potential for new +FIRRST terminal privatisation



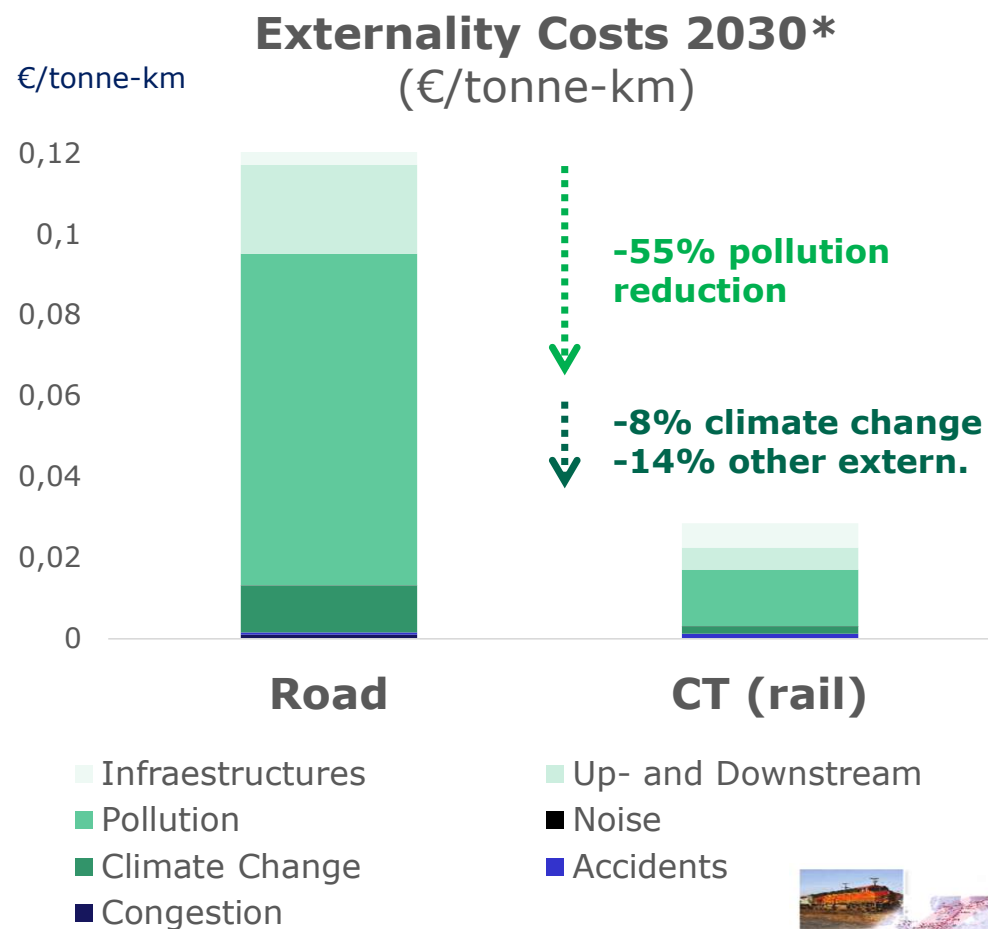
Shippers' marginal combined transport cost could be 51.5% lower than by road, incl. 28% of operational efficiency gain

- ❖ We built the cost bottom-up (i.e. by modelling each component) to find the operators' marginal cost.
- ❖ We find the road transport cost is ~ 1 €/HGV-km which is consistent with practitioners' observations.
- ❖ For trips over 300 km (whose average length in the EU is 645 km, plus 102 km of first-and-last-leg road transport), CT marginal cost is **51.5%** lower than road.
- ❖ This 51.5% gain consists of two major components:
 - ❖ **23.5%** due to the lower energy/fuel tax
 - ❖ **28%** reflects the operational efficiency gains
- ❖ These improvements could therefore translate into an average **9.3%** drop in shippers' transport costs.



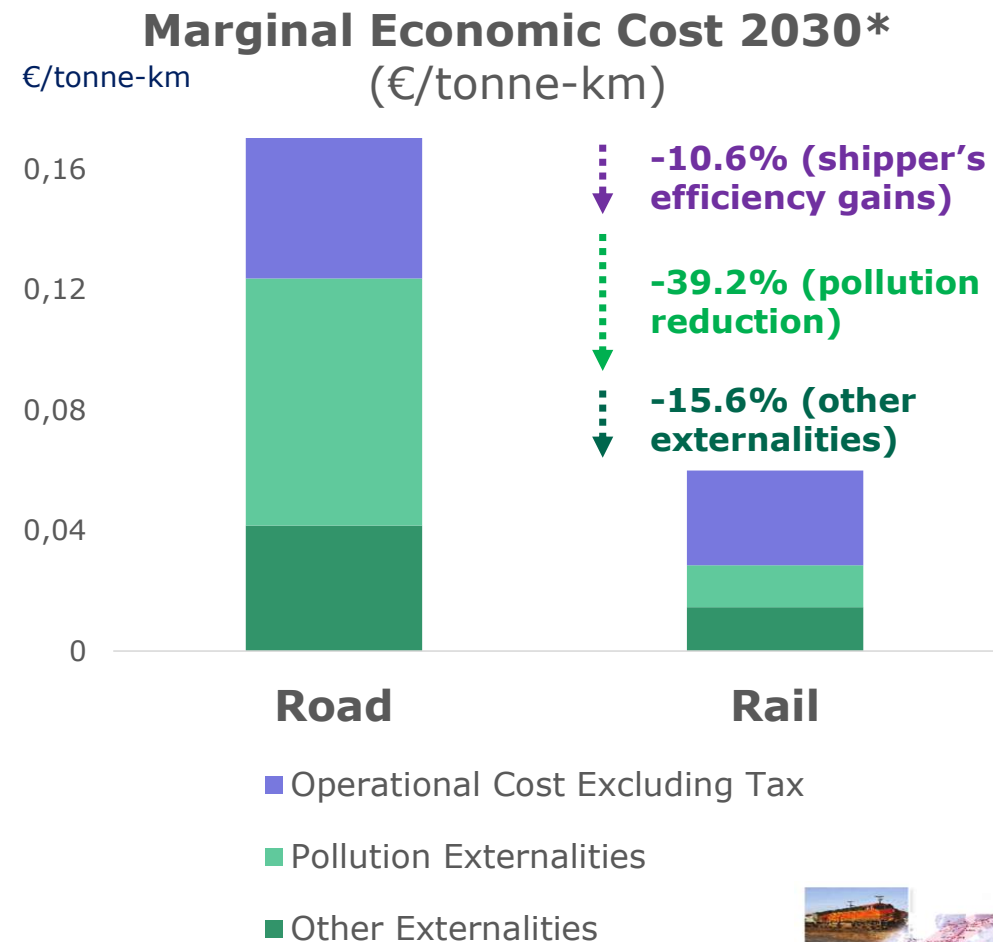
Furthermore, externality costs are 77% lower with CT than with road transport (55% due to pollution reduction alone)

- ❖ The impact of shifting cargo from road to rail is much larger in the area of externalities.
- ❖ The EU Commission’s recommended externality values for 2030 suggest that the road-to-rail shift would reduce externality costs by **77%**.
- ❖ Pollution alone accounts for an externality cost drop of **55%**; climate change represents another **8%**, and other externalities **14%**.
- ❖ The EU Commission’s *vademecum* foresees a steep CO₂ cost climb-up over time. Hence, by 2050 the estimated externality cost reduction per tonne-km would be even higher than depicted here.

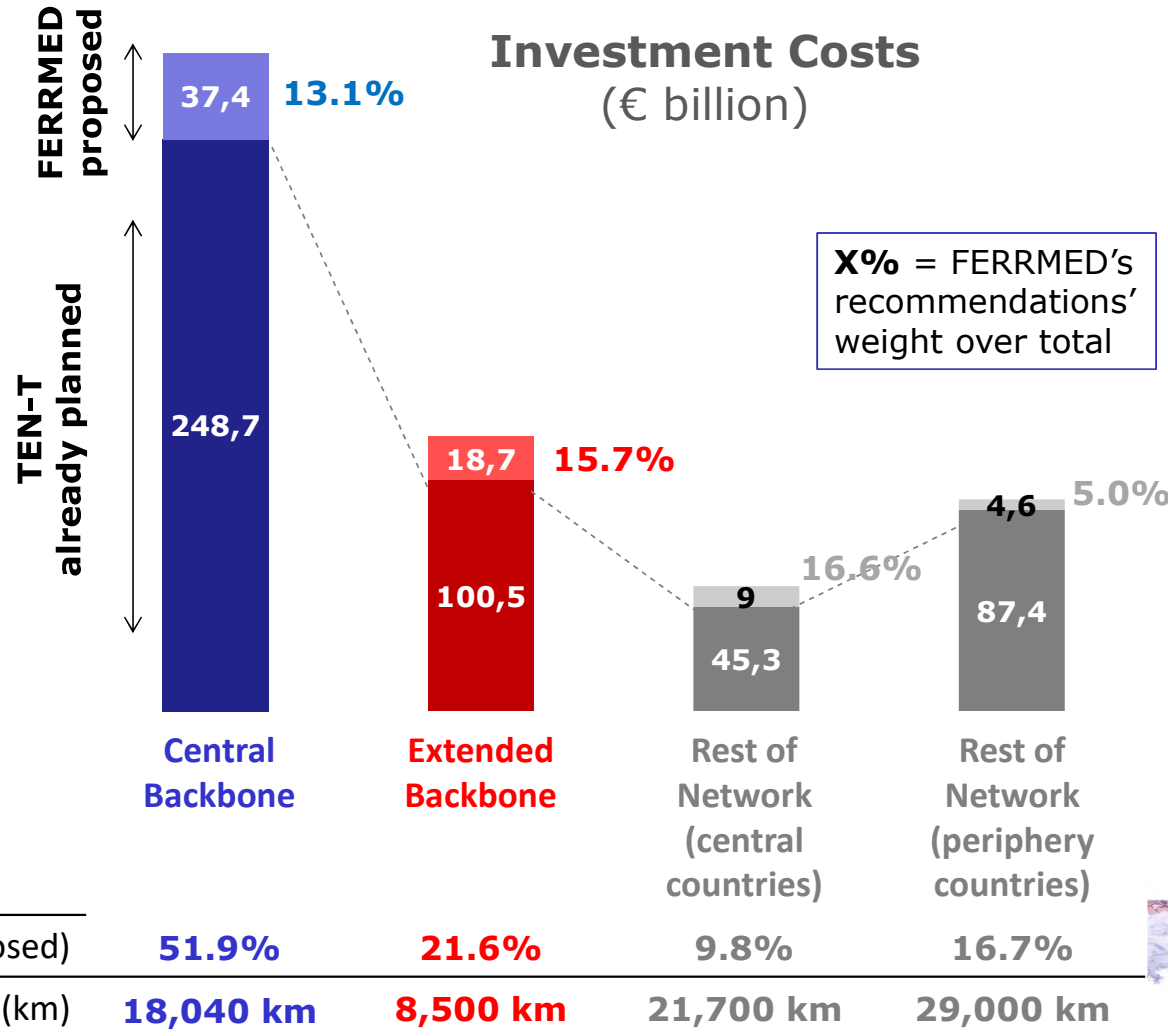
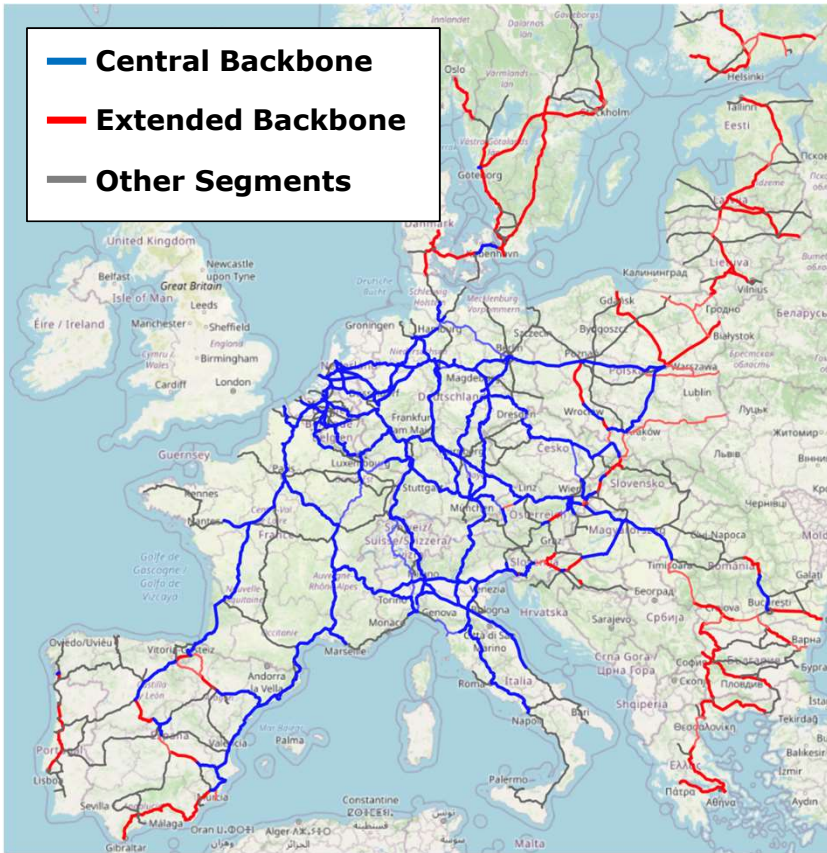


In sum, the shift from road to CT poses an opportunity to reduce socio-economic marginal cost per tonne-km by 65.4%

- ❖ Marginal economic cost is the sum of operator's costs (net of all taxes) plus externality costs.
- ❖ We estimate the potential economic cost reduction as **65.4%** of today's road transport's economic cost.
- ❖ This breaks down into:
 - ❖ **10.6%** operator's economic efficiency gains
 - ❖ **39.2%** pollution reduction impact
 - ❖ **15.6%** other externalities (e.g. accidents, climate change, noise, congestion, etc.)
- ❖ Benefits per tonne-km, times the tonnes-km shifted from road to CT, equal annual economic benefits.

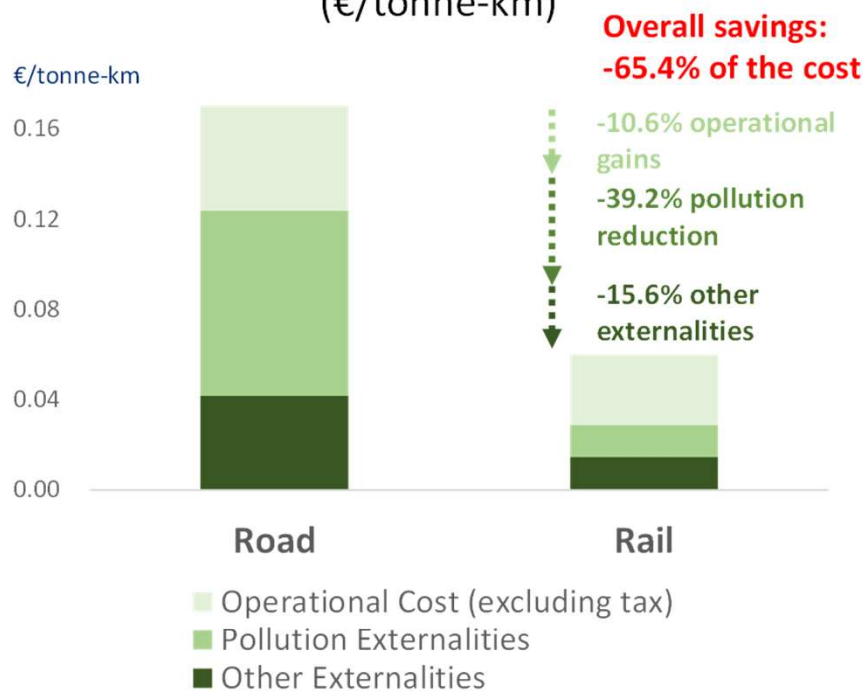


We have also assessed the cost of both TEN-T's planned investments and FERRMED's additional recommendations

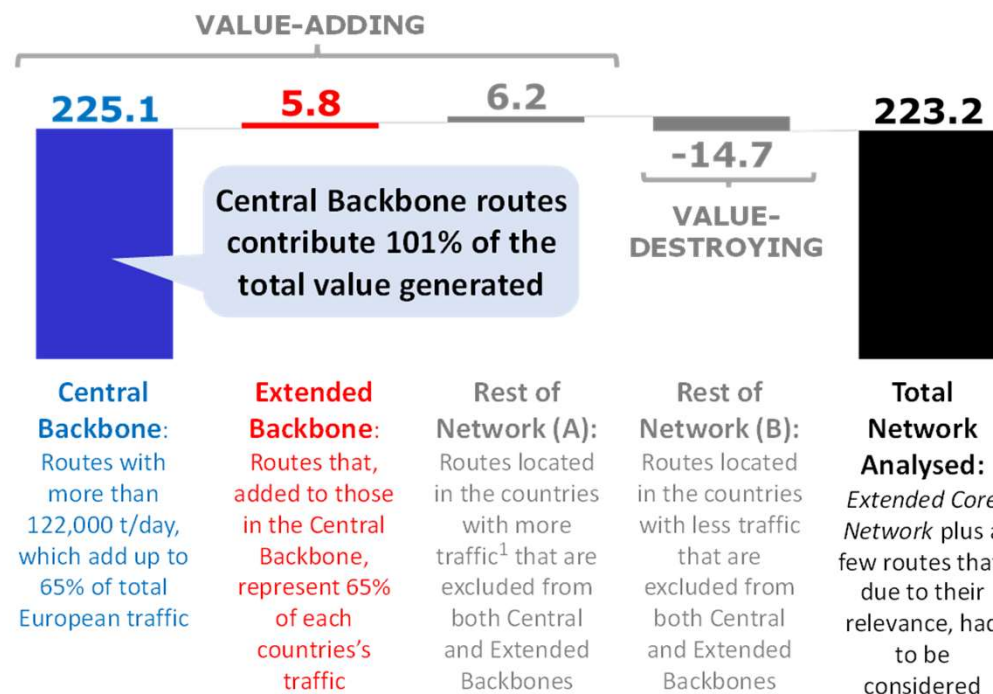


Overall, the TEN-T programme creates positive value, 101% of which is generated by Central Backbone investments

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



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	21,700 km	29,000 km	77,240 km
TEN-T investment (€ 1,000M)	248.7	100.5	45.3	87.4	481.9
FERRMED investment (€ 1,000M)	37.4	18.7	9.0	4.6	69.7

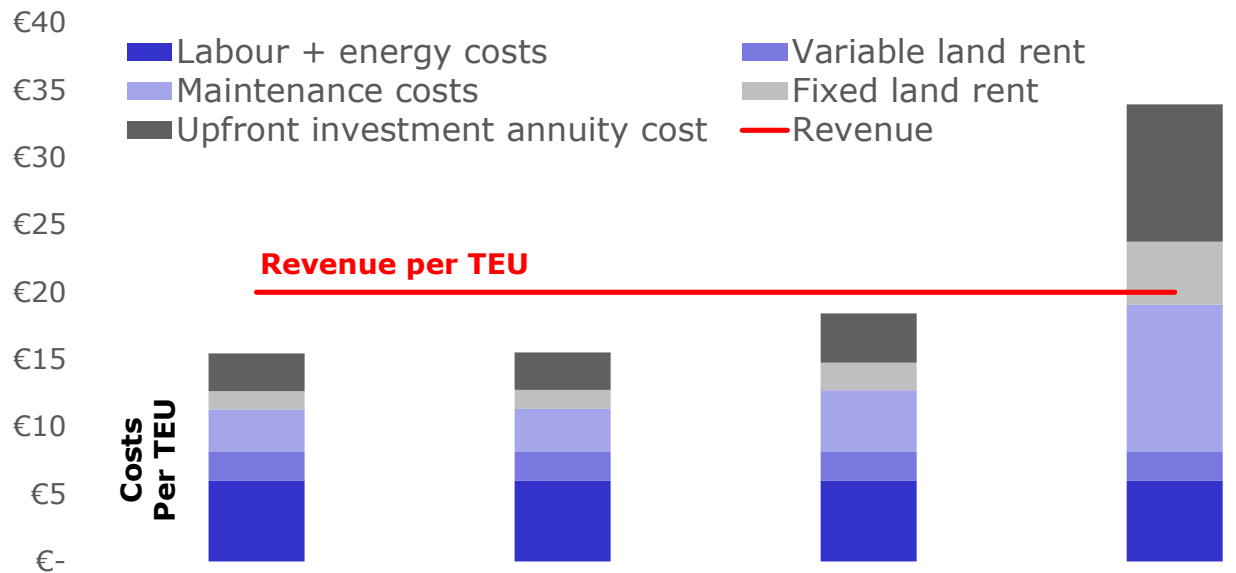
- ❖ **Operational cost reduction.** Road vs +FIRRST combined transport (including taxes): **51.5%**
- ❖ **Externality reduction.** Road vs +FIRRST combined transport: **77.0%**

1. The countries within (A) are Austria, Belgium, Czech Republic, France, Germany, Hungary, Italy, Netherlands, Slovakia and Switzerland.

A high-level assessment also suggests large & mid-sized +FIRRST terminals could attract private investors (1/2)

- ❖ We have developed a high-level profitability assessment of the recommended new terminals.
- ❖ Revenues and costs are based on expert input combined with steady state TEU flow forecast.
- ❖ At any rate, **Strategic** (i.e. large) & **intermediate+** (i.e. upper-range of the mid-sized) **terminals could be attractive to private investors.**

New +FIRRST terminals' steady-state average cost vs. revenue per TEU - High volume scenario

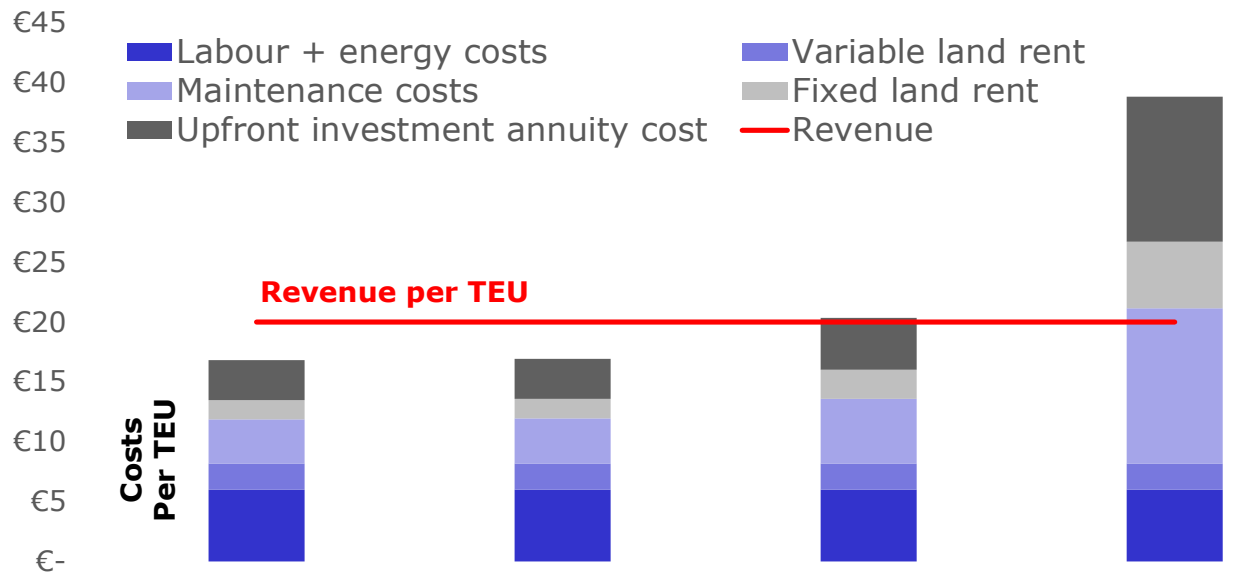


	Strategic	Intermediate+	Intermediate-	Mini
TEU / year ('000)	969	694	330	42
Surface (ha)	19.9	14.4	9.4	3.0
Upfront investment (€ '000)	41,422	28,690	16,998	6,462
Internal Rate of Return	17%	17%	9%	*

A high-level assessment also suggests large & mid-sized +FIRRST terminals could attract private investors (2/2)

- ❖ We have developed a high-level profitability assessment of the recommended new terminals.
- ❖ Revenues and costs are based on expert input combined with steady state TEU flow forecast.
- ❖ At any rate, **Strategic** (i.e. large) & **intermediate+** (i.e. upper-range of the mid-sized) **terminals could be attractive to private investors.**

New +FIRRST terminals' steady-state average cost vs. revenue per TEU - Low volume scenario



	Strategic	Intermediate+	Intermediate-	Mini
TEU / year ('000)	814	583	277	35
Surface (ha)	19.9	14.4	9.4	3.0
Upfront investment (€ '000)	41,422	28,690	16,998	6,462
Internal Rate of Return	12%	13%	5%	*

We propose: (1) deploy +FIRRST investments (2) focus on Backbone routes (3) consider new terminals' privatisation

- ❖ The TEN-T programme has **major potential** to deliver significant socio-economic & environmental value to Europe.
- ❖ **FERRMED's recommended additional investments (+FIRRST) are required** to achieve TEN-T's combined transport share targets.
- ❖ The **Central Backbone** (i.e. high traffic demand sectors) is where the programme's benefits concentrate.
- ❖ The **Extended backbone** may, however, also need to be prioritised high in order to avoid disadvantaging periphery countries.
- ❖ We suggest delaying some of the lower-traffic **Rest of Network** rollouts to accelerate Backbone execution and TEN-T target delivery.
- ❖ FERRMED's **recommended additional investments** could therefore be financed by delaying Other Segments lower-traffic sections
- ❖ The economics of large and mid-sized new +FIRRST terminals may offer enough profitability to attract **private investment**.

