

**RECORDIT**

**Brussels, December 20th 2001**

**WP 8**

**Intermodal transport  
cost reduction possibilities**

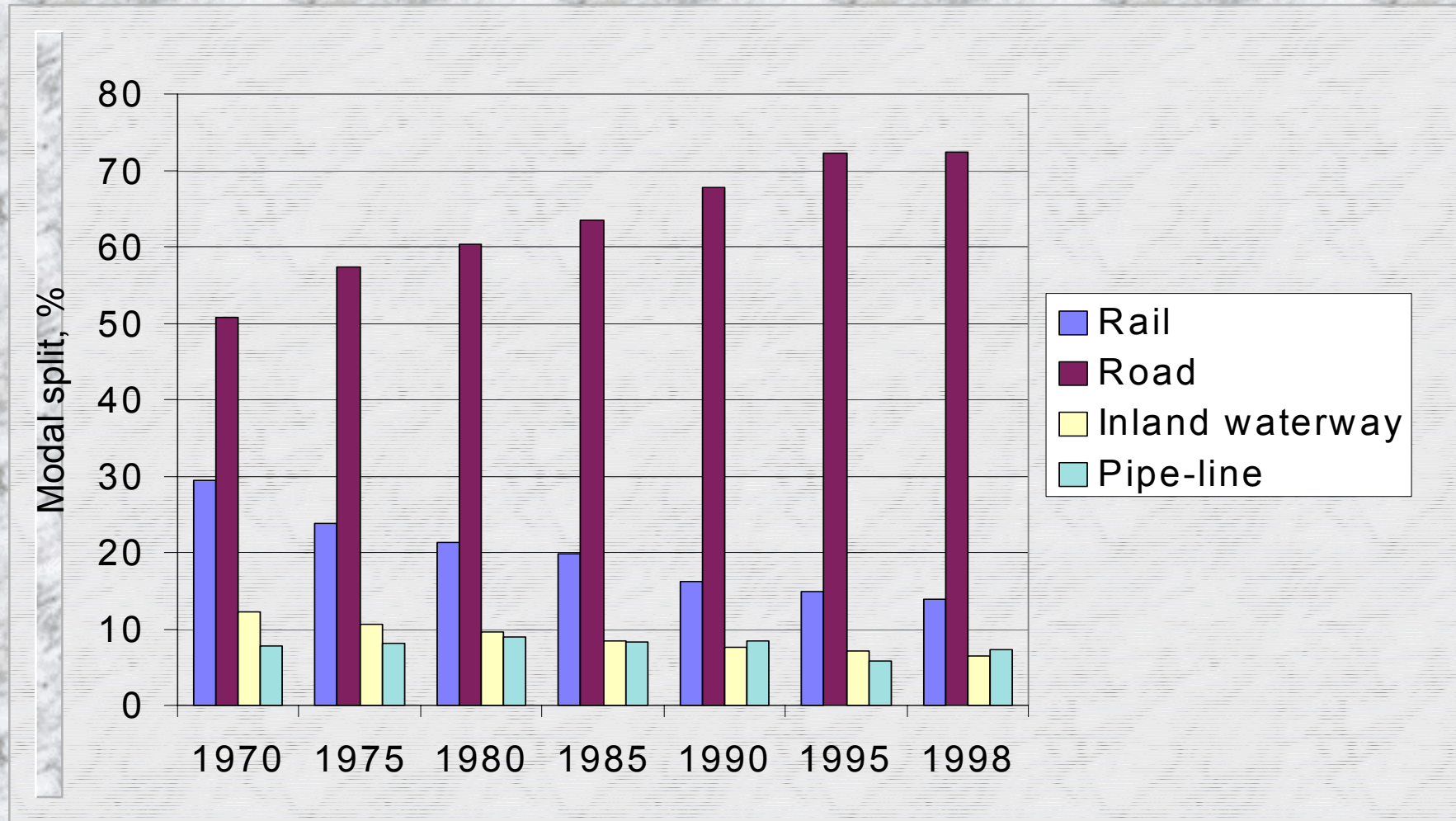
# Presentation

- RECORDIT project issues and WP 8 aims
- Phase 1 : corridor analysis
- Phase 2 : cross-corridor synthesis
- Phase 3 : cost reduction possibilities
- Conclusions

# RECORDIT project issues and WP 8 aims

# Modal shift as a political concern

Western Europe, 1970 – 1998



# WP8 : from estimate to reduction

- Outcome of previous WP
  - WP 3 : direct cost
  - WP 4 : external cost
- Give a general overview of total cost  
(comparisons, proportions)
- Explore reduction possibilities

# Cost definitions

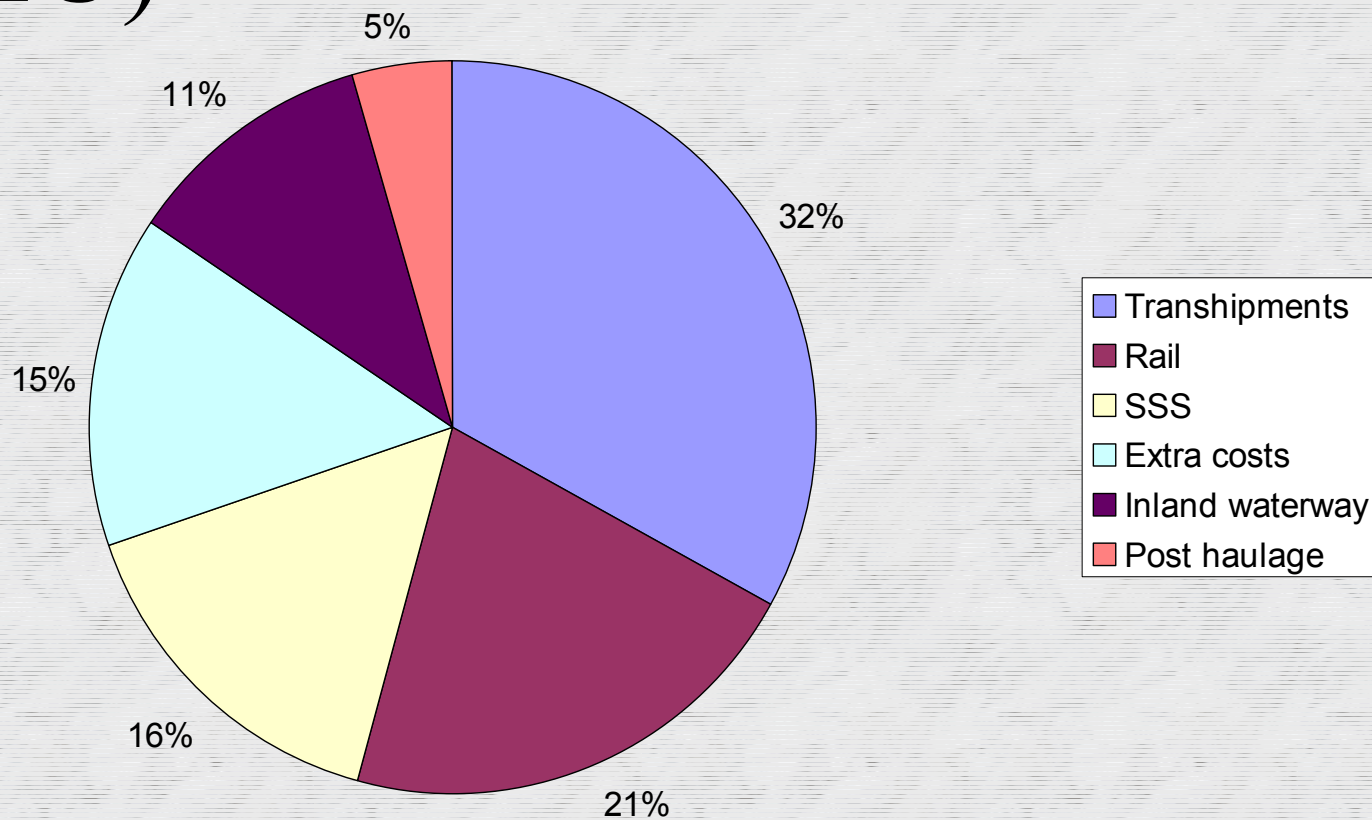
- NB : direct cost = cost for the shipper, i.e. established market price
- Infrastructure charges: in some corridors, not entirely covered by pricing (see WP 6)
- A double accounting of some external costs, partly included in indirect costs: a bias, but also a prudent approach, considering political conclusions to be drawn

# Research process

- Present situation : cost items
  - orders of magnitude only matter!
  - proportions
- Possible situation : cost drivers
  - to focus efforts in an efficient way
  - room for manoeuvre for cost reduction
  - potential results

# Phase 1 : corridor analysis

# Genova-Manchester Intermodal direct cost structure (TEU)



Transport costs are not the first items in complex chains

# Genova-Manchester

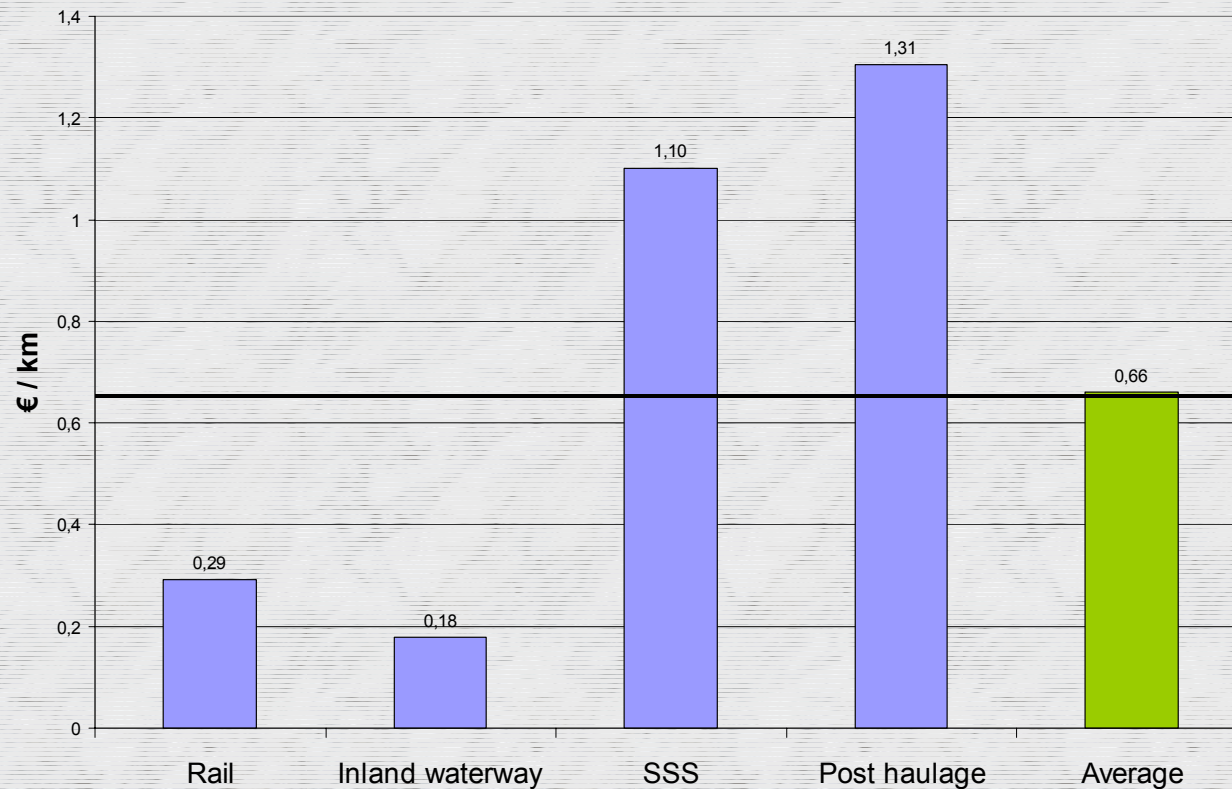
## Intermodal direct cost structure

### ■ Comments

- Long haulage only represents 48 % of total cost
- Big differences among transport costs per km, for various modes
- Importance of transshipment and of extra costs
- Cost reduction must touch all items, and not only long distance transport

# Genova-Manchester

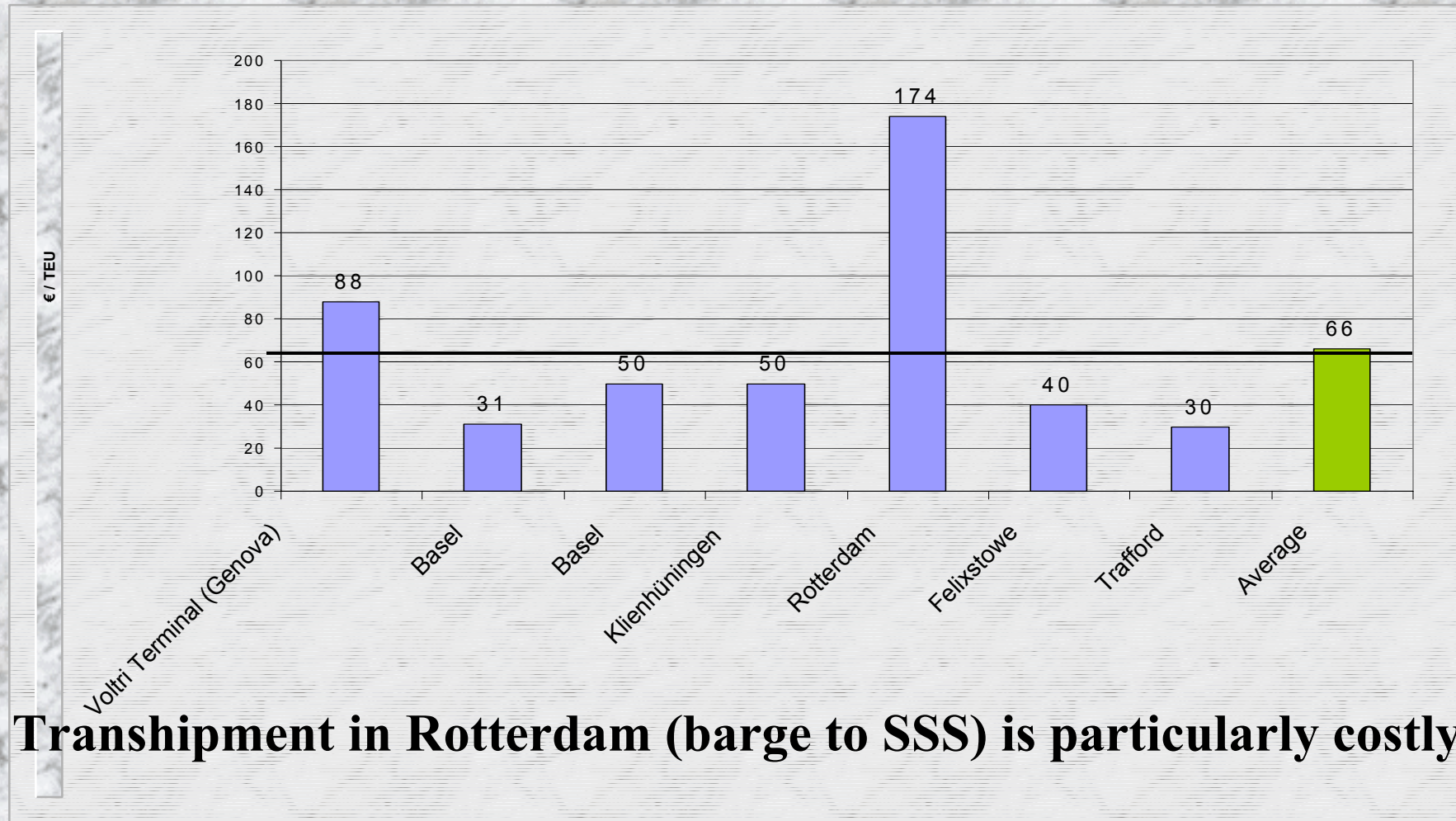
## Transport costs per km for various modes



Some cost differences are unexpected (SSS)

# Genova-Manchester

## Transshipment costs for various terminals



**Transshipment in Rotterdam (barge to SSS) is particularly costly**

# Genova-Manchester

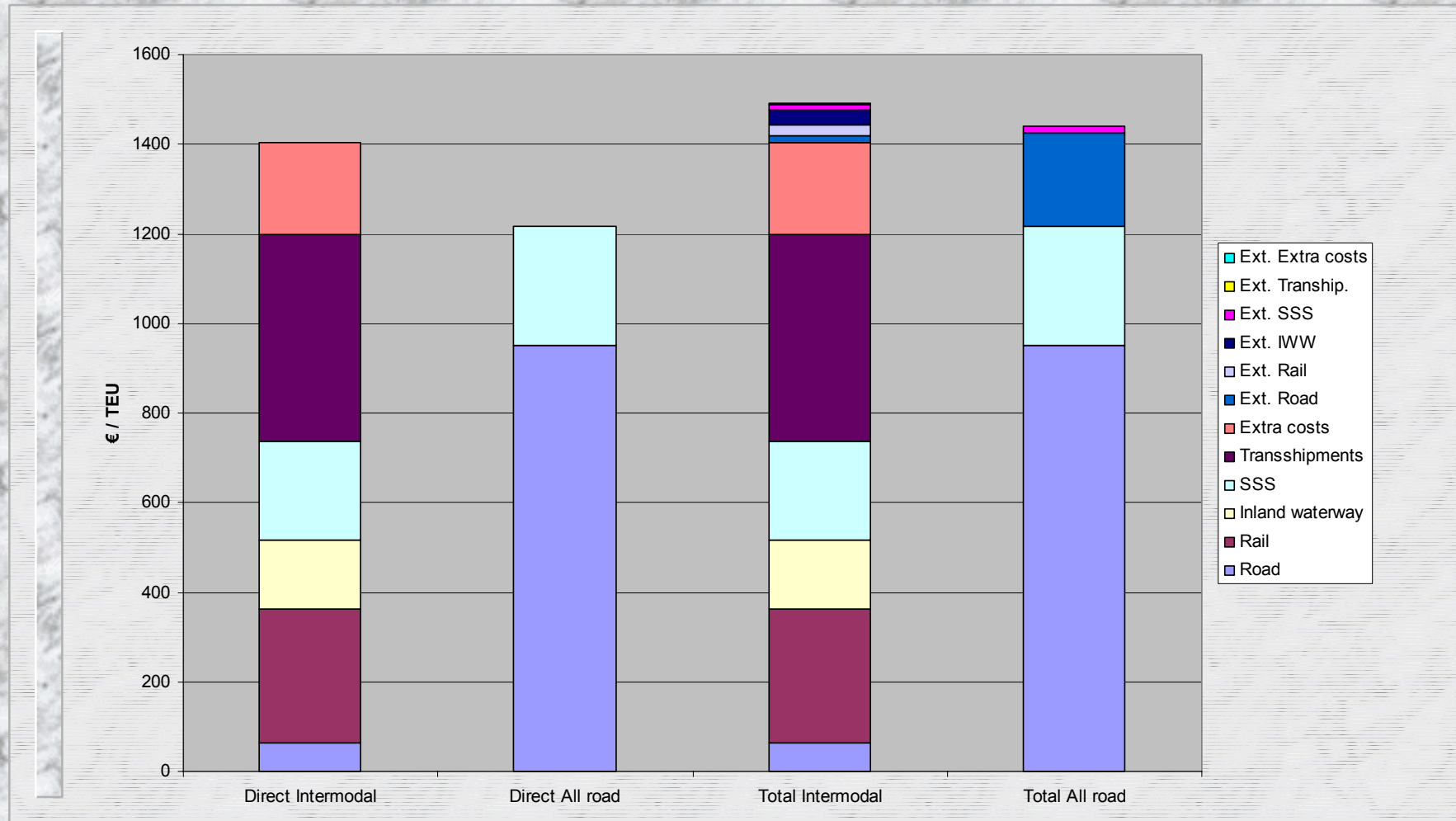
## External costs structure

%	Electri- city	Air pollut.	Noise	Accid	Congestio n	Global warming	Process	Total
<b>Rail</b>	48	00	52	128	00	39	1,6	282
<b>Inland waterw</b>	00	<b>27,5</b>	00	00	00	<b>10,7</b>	1,3	39,5
<b>SSS</b>	00	<b>150</b>	00	00	00	1,9	00	169
<b>TranSHIP ments</b>	04	00	00	00	00	04	00	08
<b>Post haulage</b>	00	30	27	46	00	26	1,8	146
<b>Total</b>	52	45,6	78	173	00	19,4	4,7	1000

**Air pollution and global warming by IW and SSS cannot be ignored**

# Genova-Manchester

## Intermodal and all-road comparison



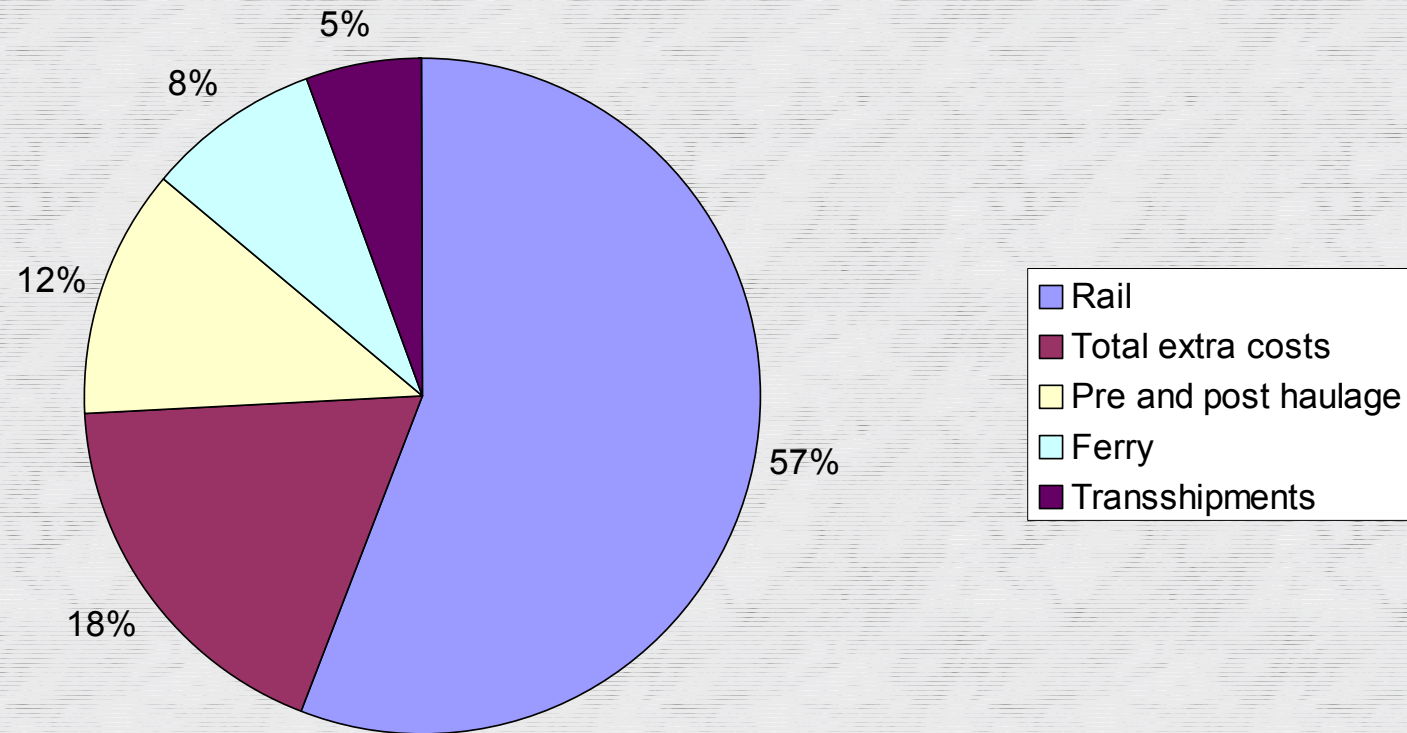
# Genova-Manchester Comparison

## ■ Comments

- if one considers strictly transport operations, IT is cheaper, but is hampered with transhipments and extra-costs
- all-road solution is cheaper in both calculations
- internalisation of external cost does not modify comparative competitiveness
- fiscal tools are not sufficient, unless they go beyond socio-economic costs, to change modal split

# Athens-Gothenburg

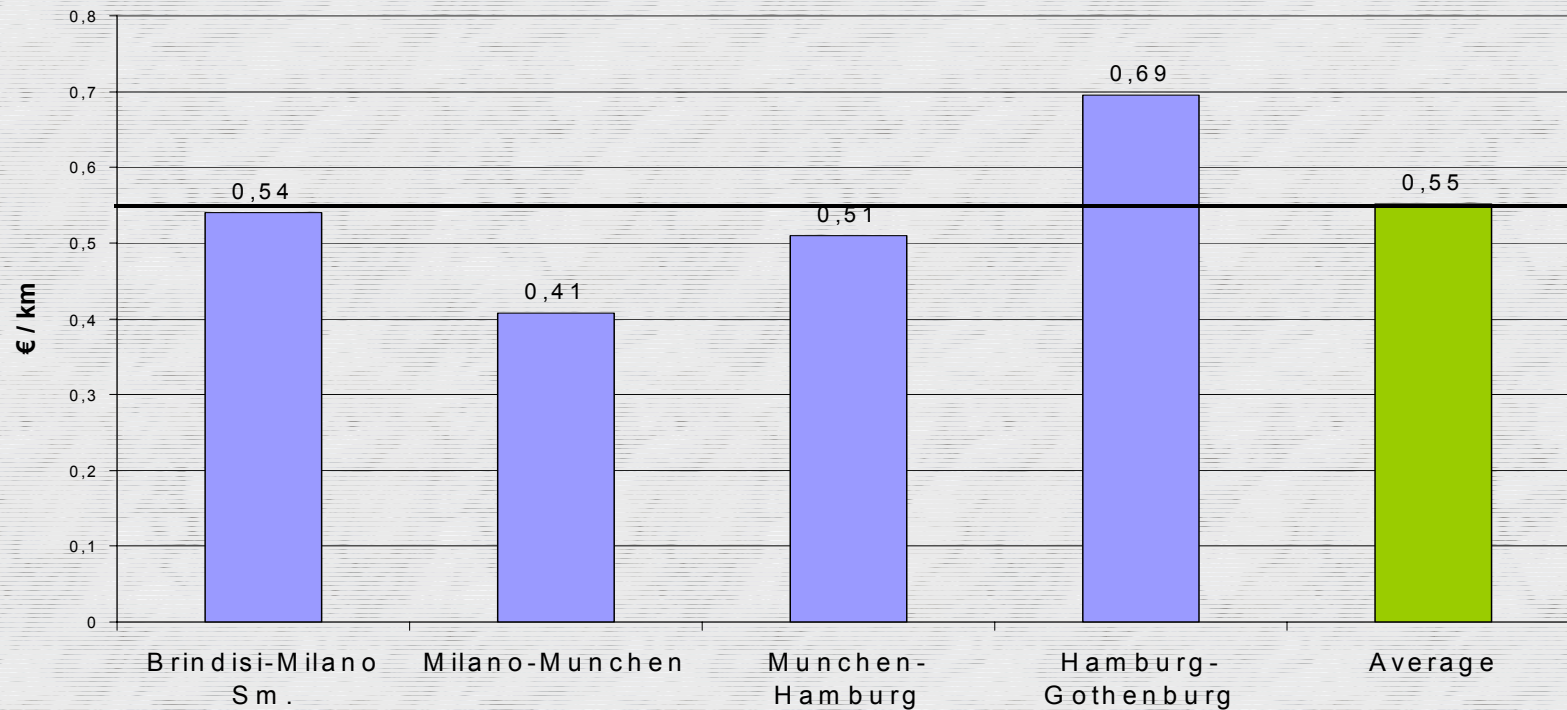
## Intermodal direct cost structure



Rail is the first item, but extra costs are substantial

# Athens-Gothenburg

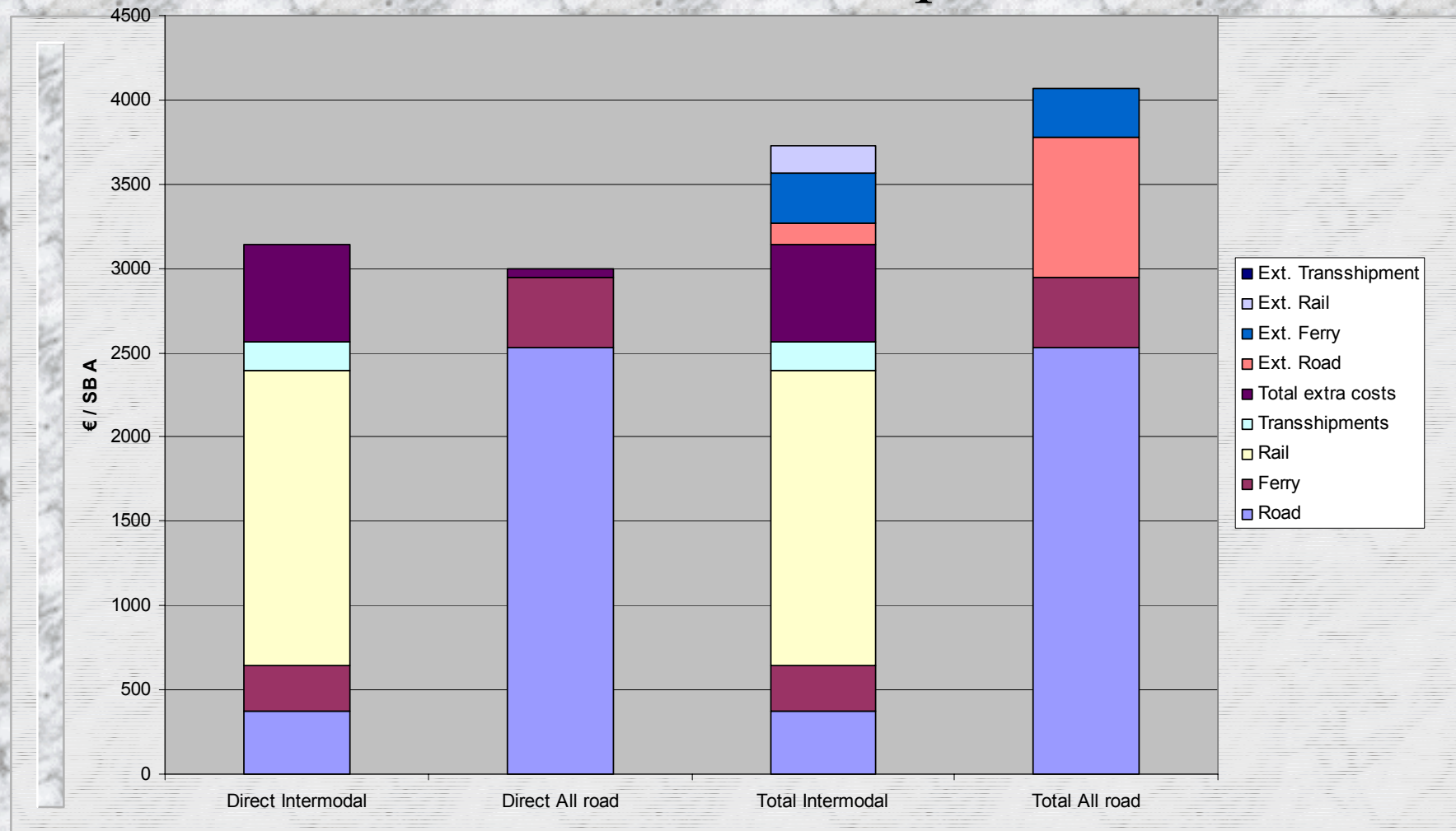
## Rail direct costs per segment



**Rail costs are not even along the corridor ( $\pm 20\%$ )**  
**Hamburg-Gothenburg segment comprises two toll bridges**

# Athens-Gothenburg

## Intermodal and all-road comparison



# Athens-Gothenburg

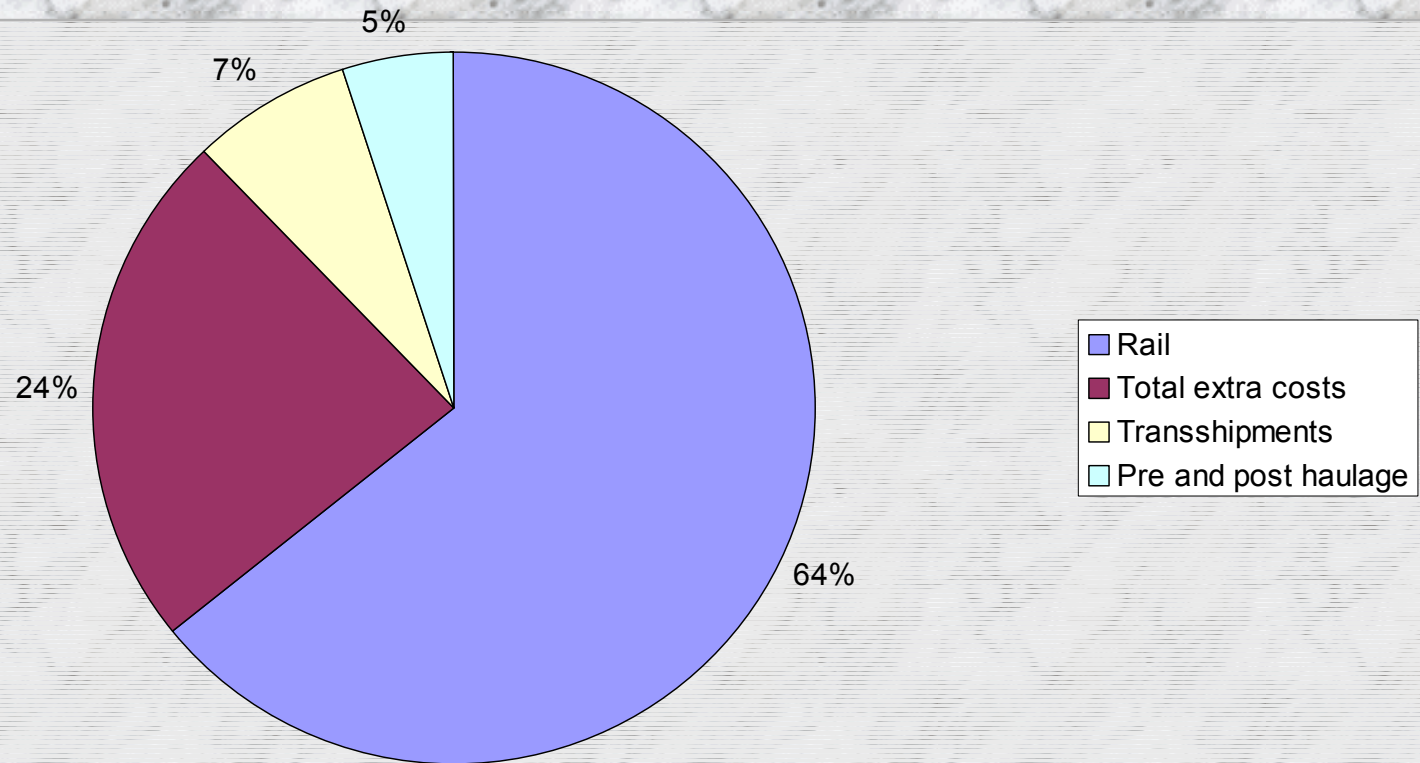
## Intermodal and all-road comparison

### ■ Comments

- internalisation of external costs makes intermodal transport competitive
- but the difference is small and other factors will influence shipper's modal choice
- intermodal transport needs to improve its own efficiency (productivity and quality), without counting only on political support

# Barcelona-Warsaw

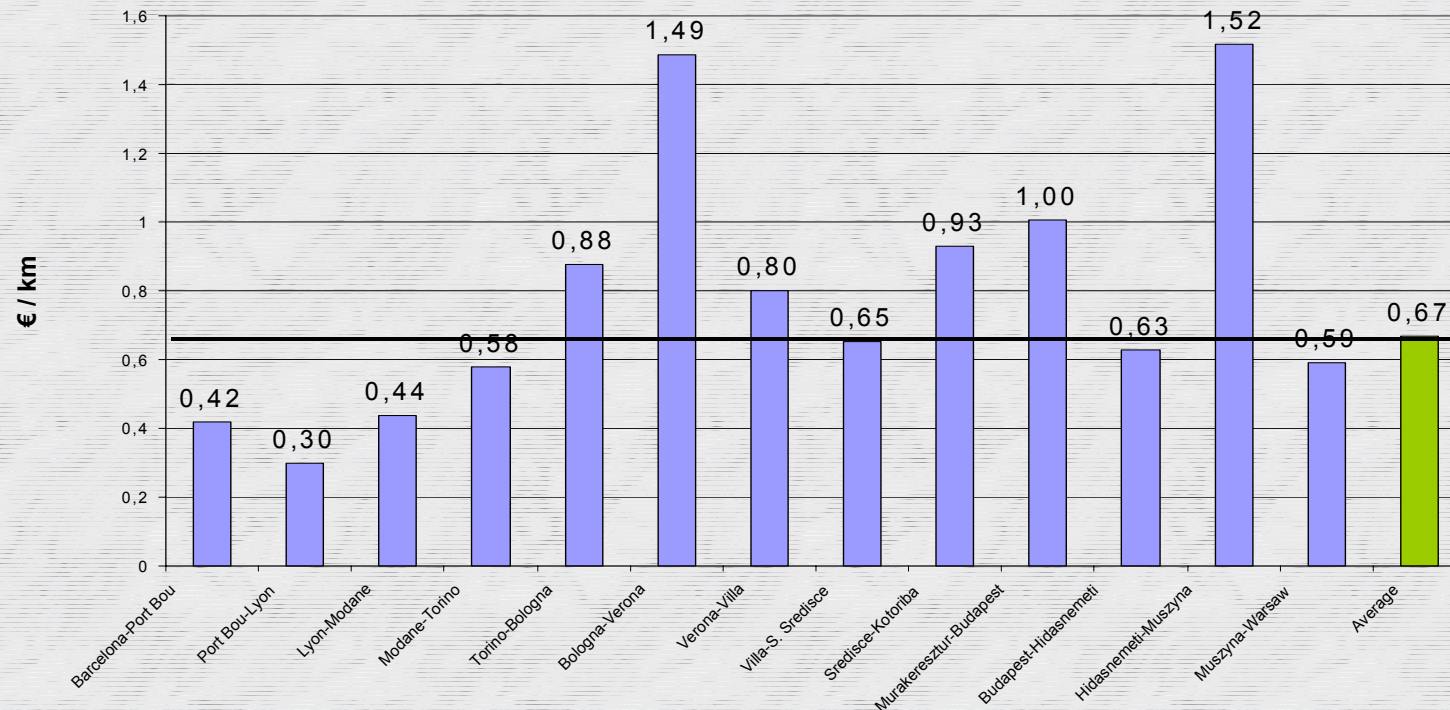
## Intermodal direct cost structure



Rail is the biggest cost component, followed with substantial extracosts

# Barcelona-Warsaw

## Rail direct cost per segment



**Rail cost per km vary in a 1 to 5 ratio!**  
**Bologna-Verona is a special "antenna service"**

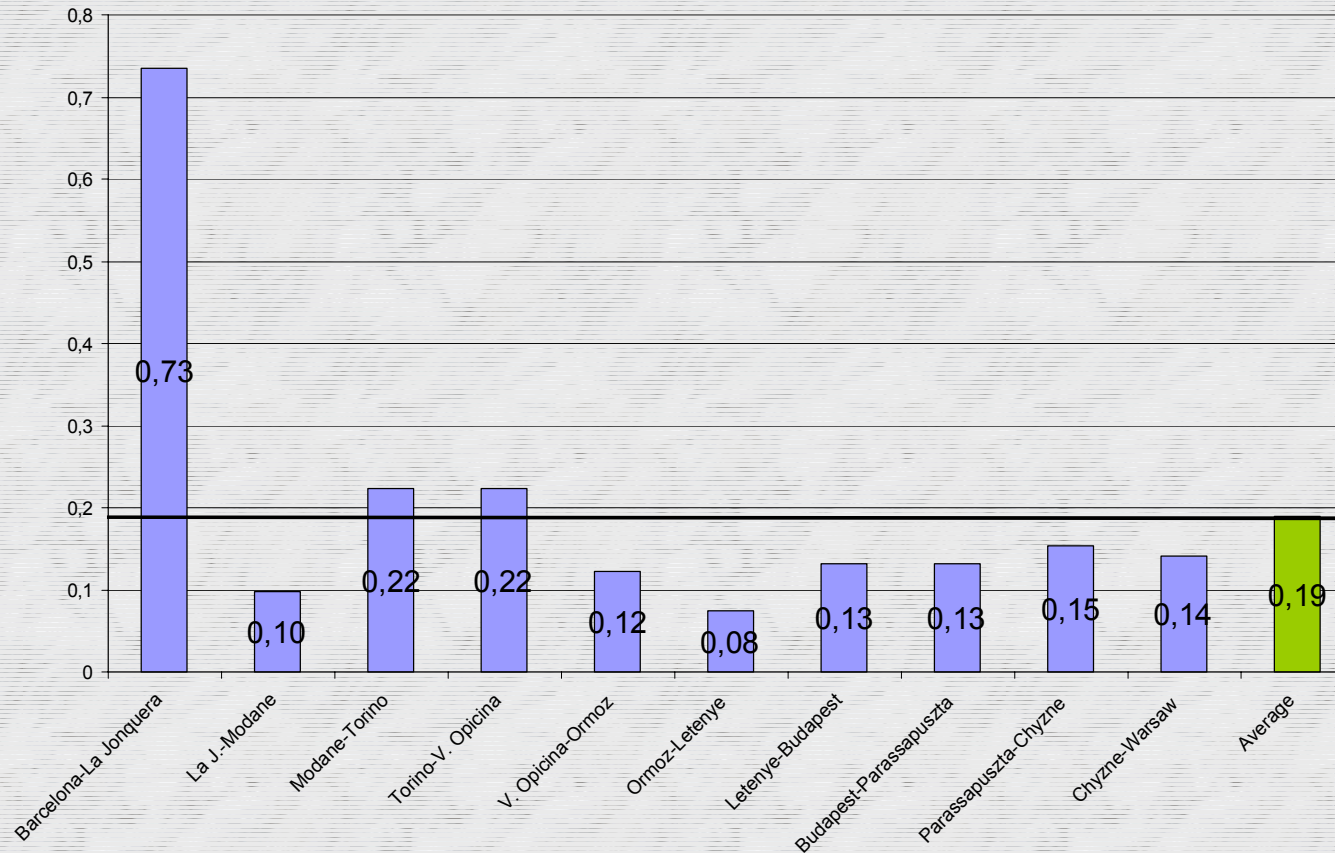
# Barcelona-Warsaw

## External costs structure

€/SBA	Electric	Air pollut	Noise	Accidents	Congestion	Global warm	Process	Total
<b>Pre haul</b>	0,0	4,3	5,9	<b>33,1</b>	0,0	1,9	1,1	46,4
<b>Rail</b>	12,6	0,0	5,0	<b>20,1</b>	0,0	13,2	2,3	53,3
<b>Trans-ship</b>	0,2	0,0	0,0	0,0	0,0	0,2	0,0	0,3
<b>Total</b>	12,8	4,3	10,9	<b>53,2</b>	0,0	15,3	3,5	100

Rail and road accidents are the heaviest burdens

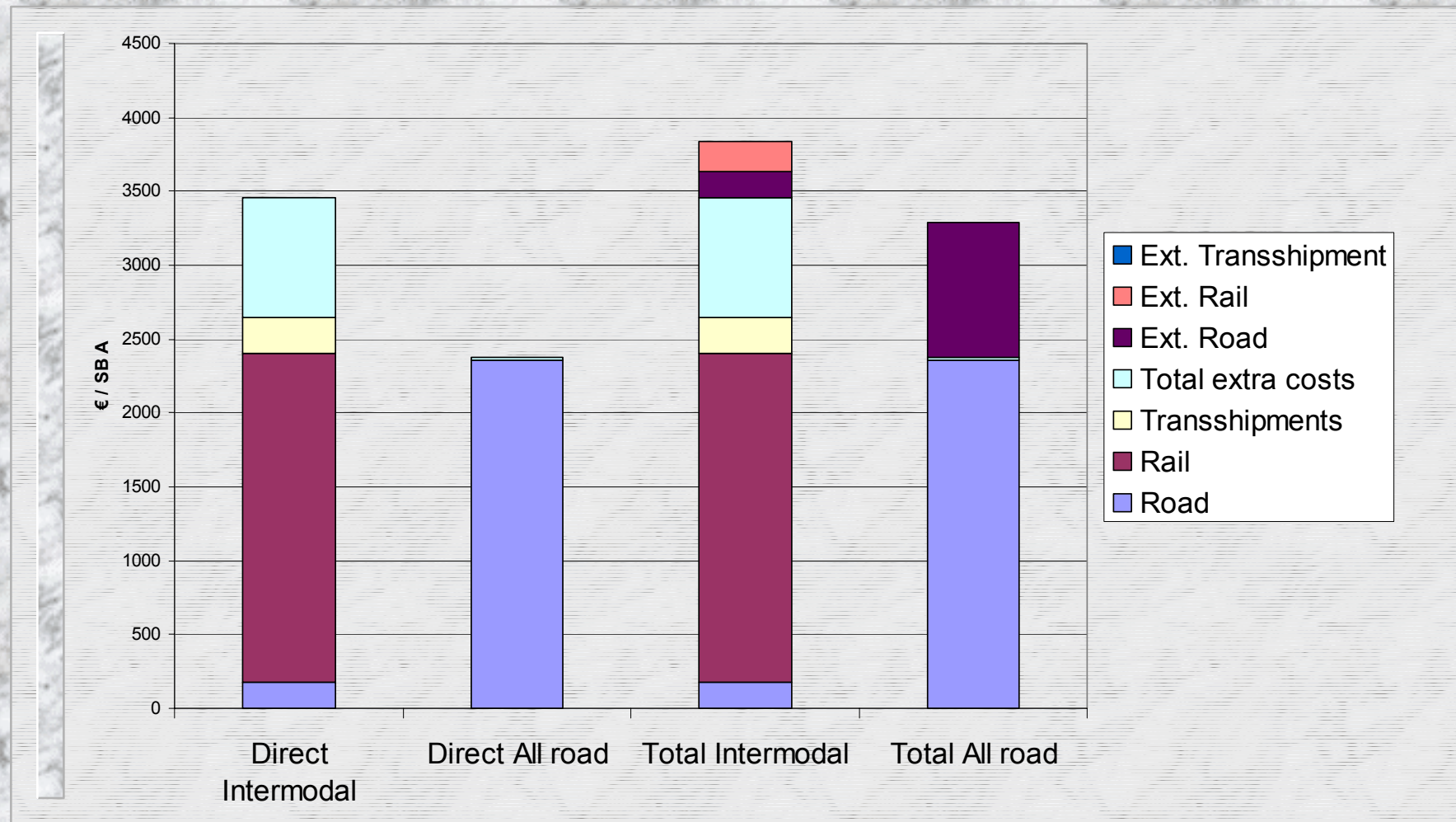
# Barcelona-Warsaw Road accidents costs



Large progress can still be made with road safety

# Barcelona-Warsaw

## Intermodal and all-road comparison



# Barcelona-Warsaw Comparison

## ■ Comments

- all-road solution is particularly effective when it is really “all-road”
- internalisation of external cost does not modify comparative competitiveness
- in present cost structure, other means could be sought for, in order to influence modal split : regulation, road pricing, permits, quotas, etc.

# Phase 2 : cross-corridor synthesis

# Cross-corridor synthesis

Transport costs are but a part of total cost:

- 53 % of total direct cost on Genova-Manchester
- 77 % on Athens-Gothenburg
- 76 % on Barcelona-Warsaw

Non transport costs:

- a burden for IT, but also a progress deposit (all efforts for cost reduction must not be devoted to long distance transport)

# Cross-corridor synthesis

## Rail:

- **0,29 € / km on Genova-Manchester (TEU)**
- **0,55 € / km on Athens-Gothenburg (SB A)**
- **0,67 € / km on Barcelona-Warsaw (SB A)**
- **average = 0,61 € / km (SB A or FEU)**

Prices vs. Costs ? (tariff practices in subsidised railway firms)

Important unevenness within corridors (1 to 5 cost ratio!): this “benchmarking” gives an idea of progress to be made

# Cross-corridor synthesis

## SSS:

- 0,53 € / km on Athens-Gothenburg (long distance RORO)
- 1,10 € / km, on Genova-Manchester (short distance LOLO)
- more costly than expected (as a massive, consolidated means of transport)

## Inland waterway:

- 0,18 € / km on the Genova-Manchester (efficient)

# Cross-corridor synthesis

## Road pre and post haulage

- 1,31 € / km on Genova-Manchester
- 1,45 € / km on Athens-Gothenburg

Expensive (low productivity / long distance road)

- 10 % of long distance transport cost (rail, inland waterway and SSS) on Genova-Manchester
- 19 % of long distance cost (rail and short sea shipping) on Athens-Gothenburg
- 8 % of long distance cost (rail) on Barcelona-Warsaw

Even higher % for « real » (shorter, more simple) corridors

# Cross-corridor synthesis

## ■ Road long distance haulage direct cost

- 1,13 € / km on Genova-Manchester
- 0,80 € / km on Athens-Gothenburg
- 0,87 € / km on Barcelona-Warsaw
- average = 0,90 € / km

## ■ Debate

- costs vs. prices on road transport market
- evolution:
  - productivity (logistics, REDEFINE) : cost reduction
  - working conditions, regulation, controls, extra-EU operators, etc. : cost increase

# Cross-corridor synthesis

- Non transport costs :
  - **extra costs : organisational (multi-layer subcontracting structure : forwarder, intermodal operator, carrier, infrastructure operator):**
    - **15 % on the Genova-Manchester corridor**
    - **18 % on Athens-Gothenburg**
    - **24 % on Barcelona-Warsaw**
    - **average = 19 %**
- A better organisation to reduce “transaction costs” (pan-European operators ?)

# Cross-corridor synthesis

## Transshipments :

- 32 % on the Genova-Manchester corridor  
(for a TEU, lower for a FEU. Excessive ?)
- 5 % on Athens-Gothenburg
- 7 % on Barcelona-Warsaw

A big cost item, and cost driver

Big differences from place to place

A bottle neck on some routes ?

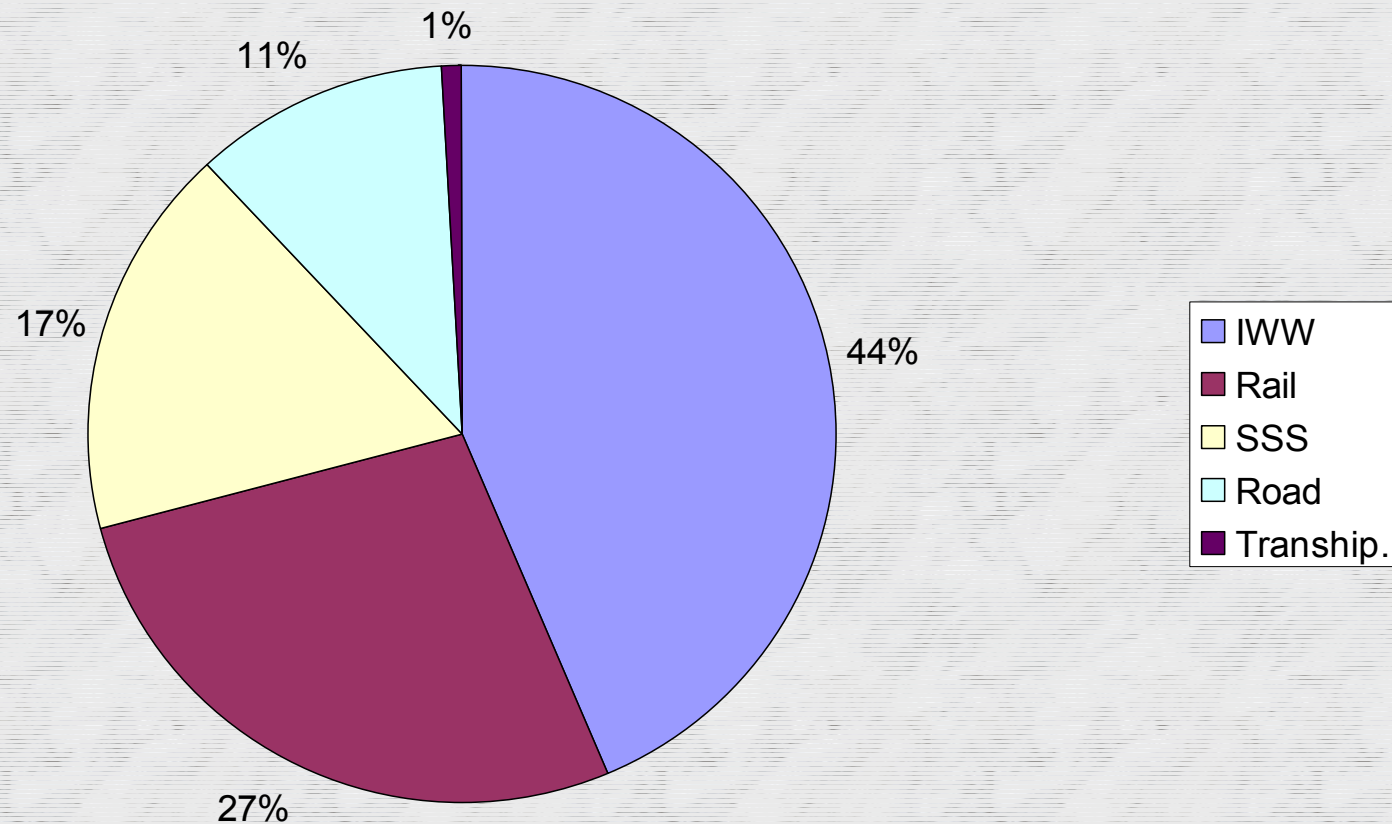
# Cross-corridor synthesis

External cost represents a rather limited margin of total door-to-door intermodal transport cost

- 16 % of total cost on the Genova-Manchester corridor
- 16 % on Athens-Gothenburg
- 10 % on Barcelona-Warsaw

# Cross-corridor synthesis

## External cost structure Genova-Manchester



**Rail is not the first external cost item!**

# Cross-corridor synthesis

## **All-road** external costs:

- 16 % of total cost on the Genova-Manchester corridor
- 27 % on Athens-Gothenburg
- 28 % on Barcelona-Warsaw

Substantial, but non decisive, compared with intermodal

Ways to reduce it are well known

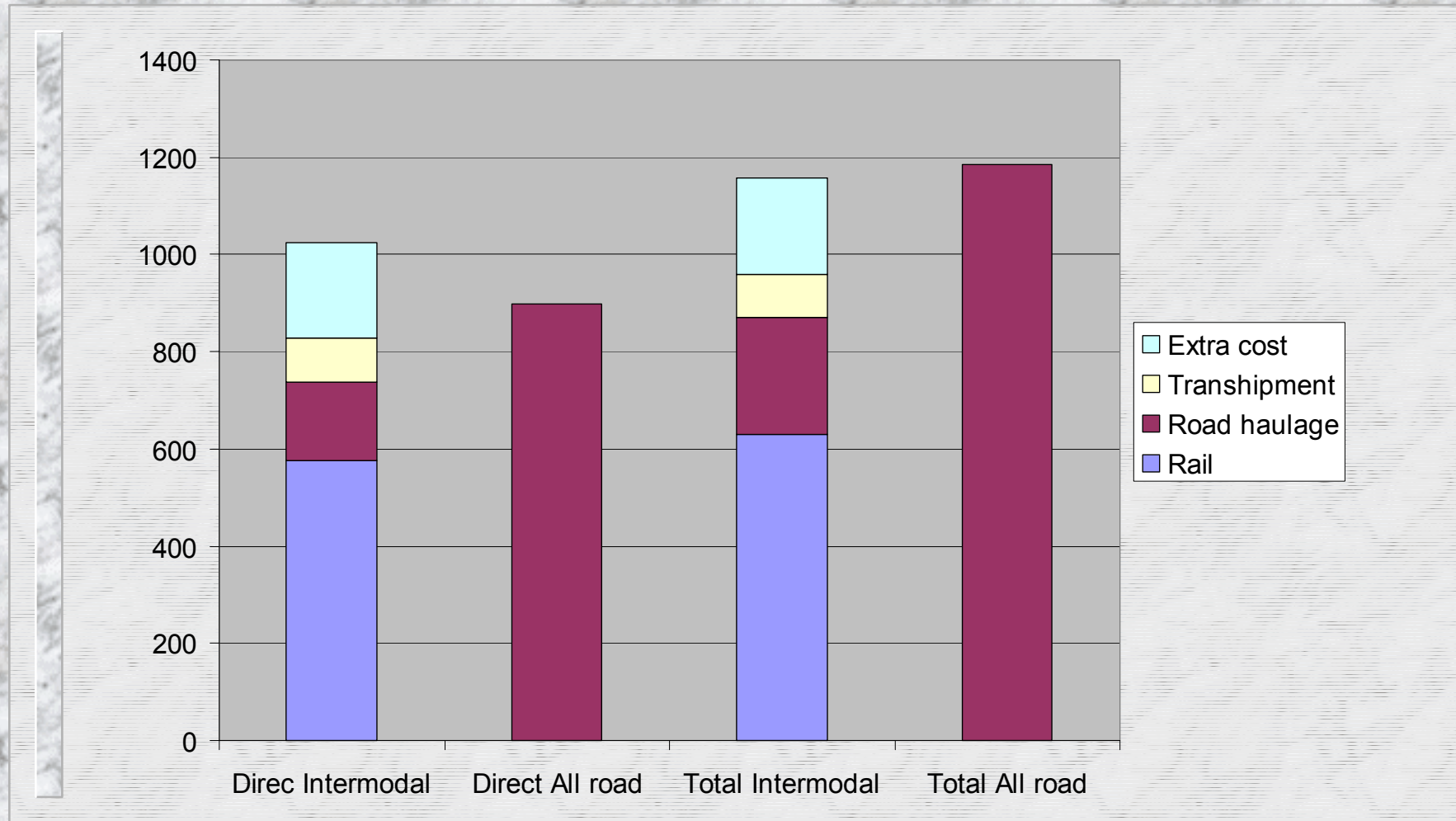
# Cross-corridor synthesis

## Average external costs

- rail : 0,05 €/LU/km
- short sea shipping : 0,58 €/LU/km
- inland waterway : 0,08 €/LU/km
- pre and post road haulage : 0,79 €/LU/km
- nearly nil for transhipments, zero for extra costs
- long distance road haulage : 0,29 €/LU/km.

# Cross-corridor synthesis

## Cost comparison for a "standard" inland link



# Cross-corridor synthesis

## Conclusions

- direct all-road transport costs are lower than IT costs
- internalisation of external costs would make intermodal transport and road transport total costs equal (independently of quality of service)
- it would not suffice to change modal split
- direct costs reduction of IT is necessary, fiscal measures are not sufficient

# Phase 3 : cost reduction possibilities

# Cost reduction possibilities

## Cost reduction elements

- **technical and organisational elements:**
  - **direct and external costs are concerned**
  - **benchmark inside RECORDIT project, best practices**
  - **state of the art (other European projects)**
- **public policy (regulation, taxes and charges, others)**
- **Orders of magnitude only matter! (experts' statements)**

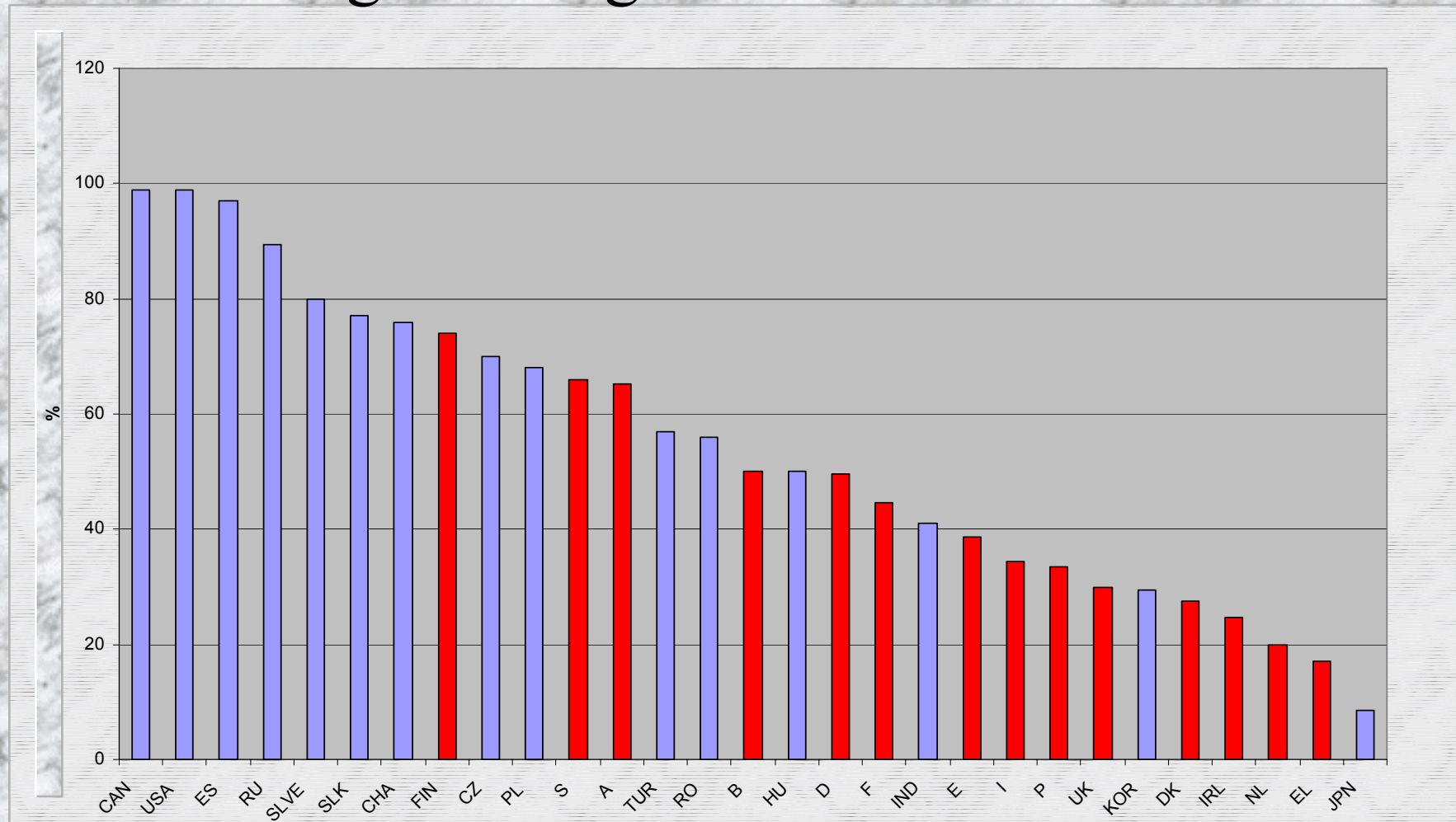
# Rail cost reduction assumptions

Rail as a key issue of pan-European transport system and common policy

- Medium term : incremental, limited reduction (20 % ?)
- Long term : break through (50 % ?):
  - international comparisons
  - dedicated network for freight traffic, at least main trunk lines

# Rail cost reduction assumptions

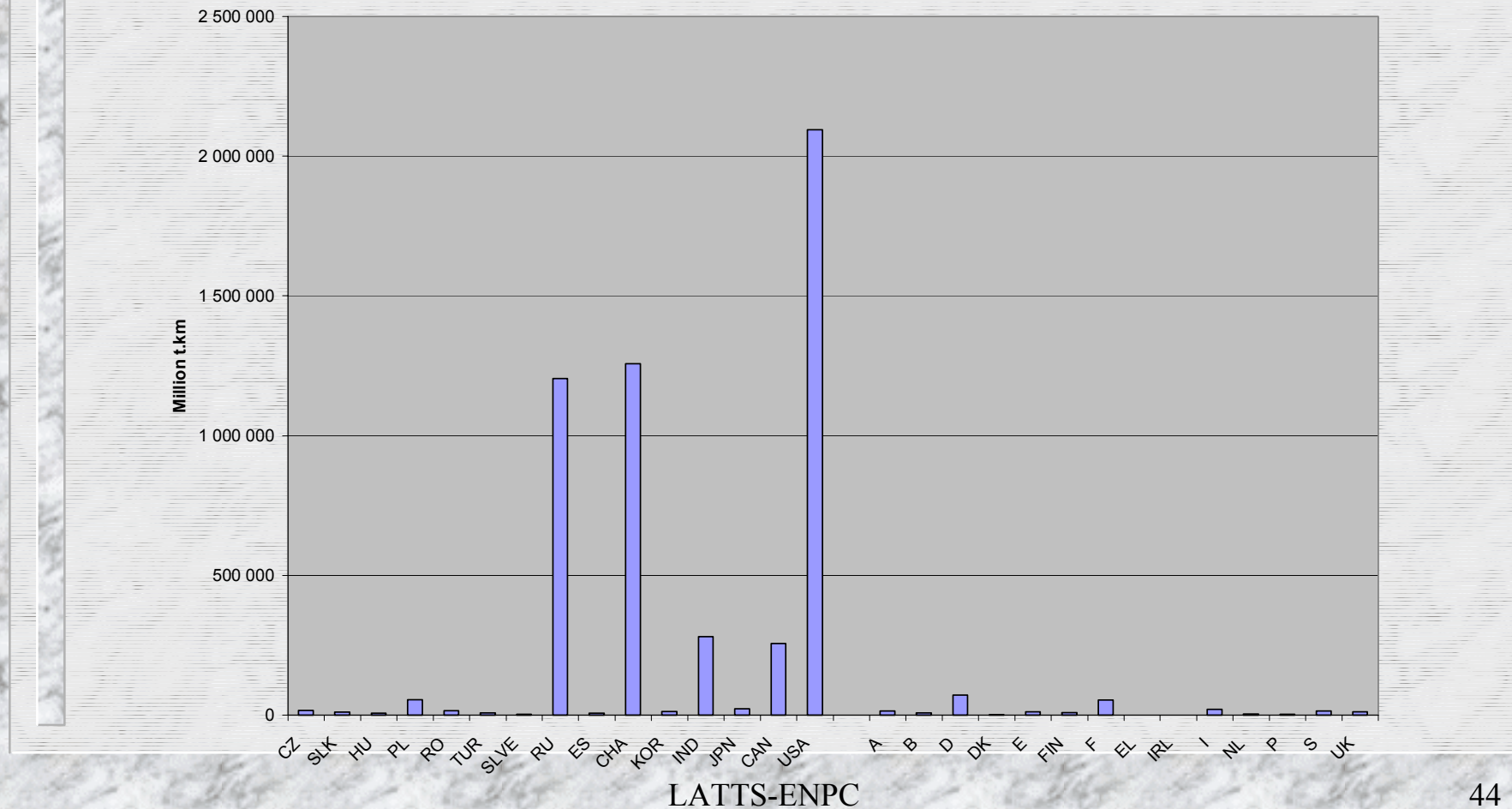
Percentage of freight traffic to total rail traffic



# Rail cost reduction assumptions

## Rail freight traffic

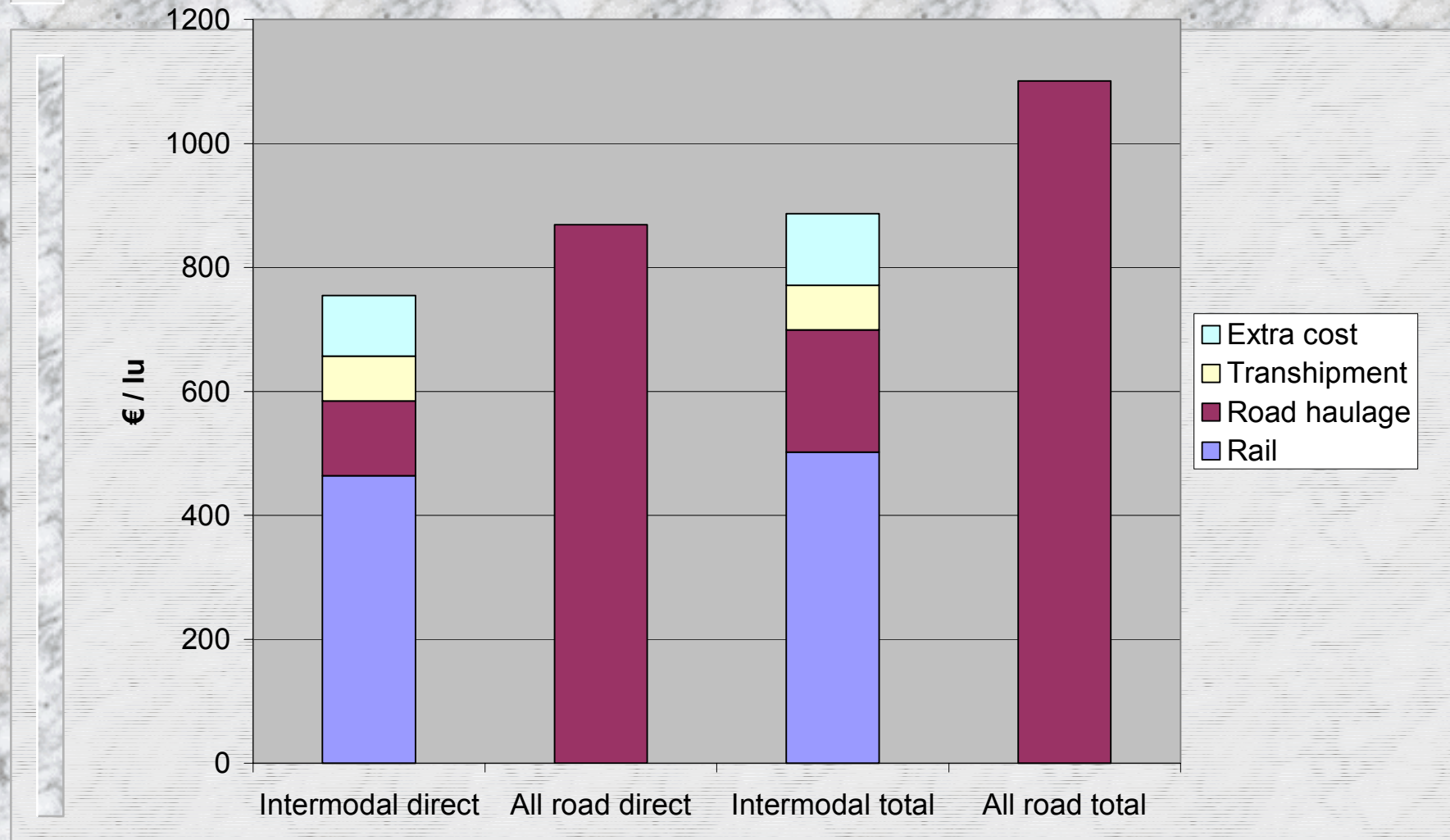
Biggest rail freight carriers are specialised networks



# Cost reduction coefficients

€/LU/km	Direct cost	Reduction(%)	External cost	Reduction(%)
<b>Rail</b>	0,61	Short term 20 Long term 50	0,05	20
<b>S. sea shipping</b>	0,53	20	0,58	40
<b>Inl. waterway</b>	0,36	20	0,08	30
<b>Pre &amp; post haul</b>	1,61	25	0,90	15
<b>Long road</b>	0,79	+10	0,29	20
<b>Transshipment</b>	30€/ move	20	0	
<b>Extra costs</b>	23,7% of other costs	15% of other costs	0	

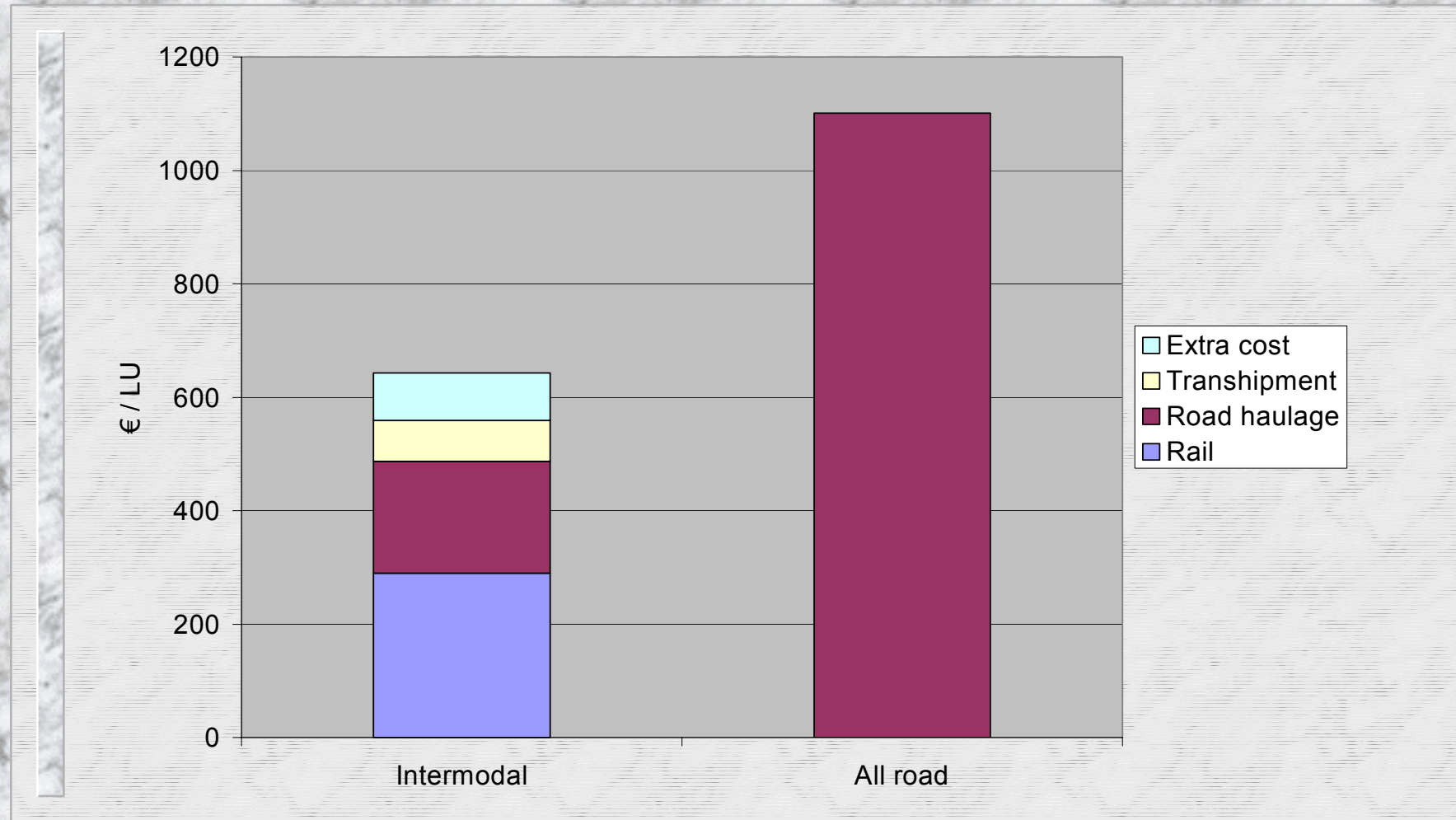
# Medium term costs



# Medium term costs

- **All-road and intermodal transport costs are close**
- **A slight advantage to intermodal transport**
- **Ignoring quality of service**
- **Will influence modal split, but not radically**

# Long term direct costs



# Long term costs

- **A dedicated rail network gives inland intermodal transport a strong competitive advantage**
- **Requires structural reforms and important investments**

# Conclusions

# Conclusions

- Intermodal transport is a complex, costly solution
  - pre and post haulage
  - transshipment
  - organisational, extra costs
- It can make progress on all components of cost, not only on long distance rail haulage (which can be strongly improved! interoperability, seamless networks, etc.)

# Conclusions

- External costs are not as important and not as different from intermodal to all-road solutions as expected (even among experts)
- Internalisation of external cost is not the miracle solution to modal shift, unless pricing goes even beyond (but is it legitimate, and politically feasible ?)

# Conclusions

- At medium term, a substantial reduction of costs can occur, if efforts are made on all elements of the chain, physical and organisational, direct and external
- At long term, a real break through can be made, if dedicated trunk lines enable a dramatic cut in rail haulage cost, as foreign examples show
- All these policies will require a strong political support, and important private and public investments