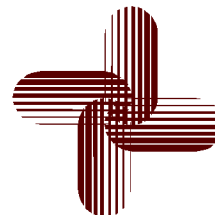


RECORDIT

The corridors and preliminary results on direct cost calculation

Athens, April 2nd, 2001.

Gruppo CLAS



The corridors:

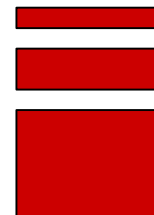
1. Freight freeway case study (Athens-Patras-Brindisi-Verona-Munich-Hamburg-Gothenburg)
2. Tri-modal case study (Genova-Basel-Rotterdam-Manchester)
3. Door to door transport including Central/Eastern Europe case study (Barcelona-Torino-Trieste-Budapest-Warsaw)



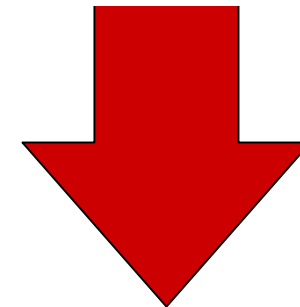
The corridors and preliminary results on direct cost calculation



From
Athens



2.930 Km

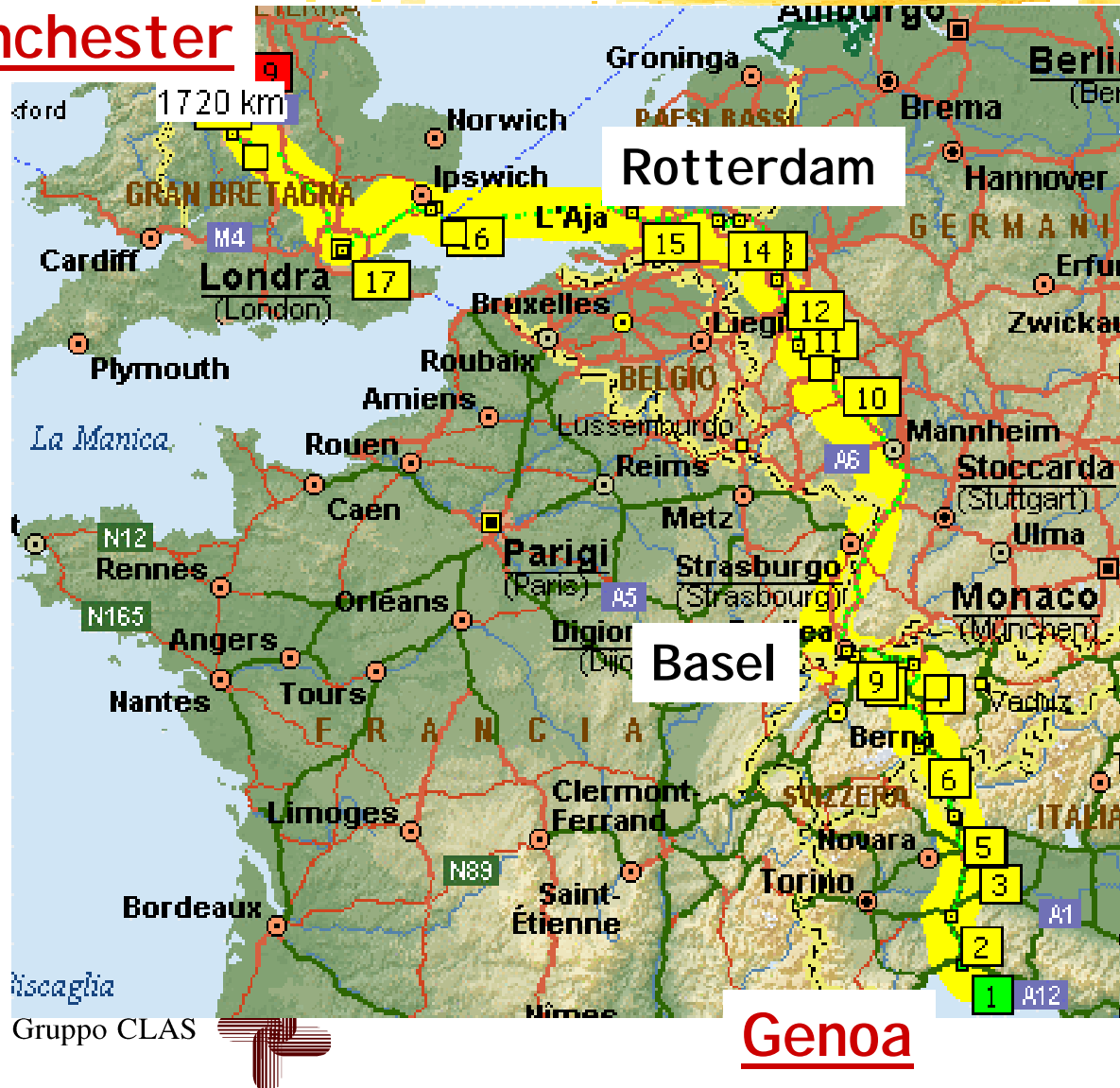


To
Gothenburg

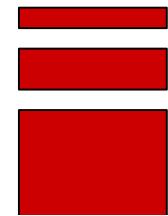


The corridors and preliminary results on direct cost calculation

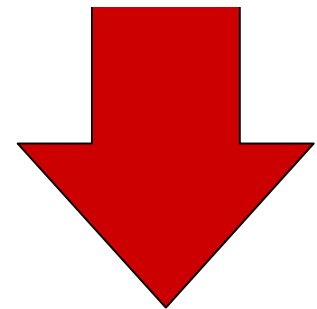
Manchester



From
Genoa

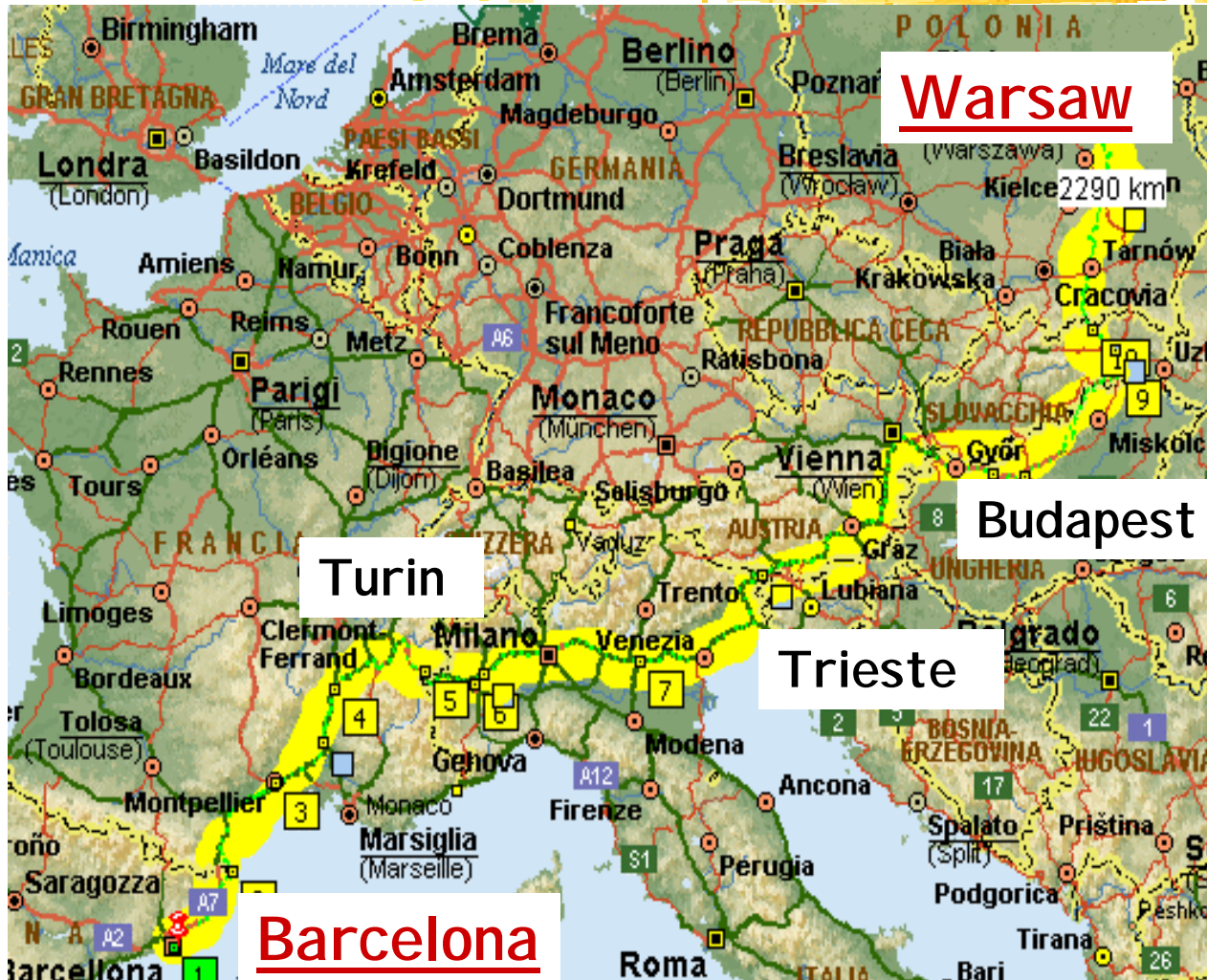


1.720 Km



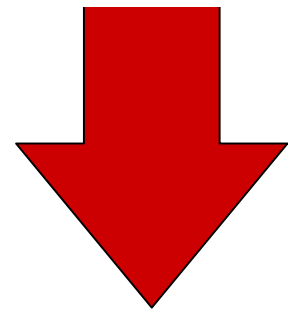
To
Manchester

The corridors and preliminary results on direct cost calculation



From
Barcelona

2.990 Km



To
Warsaw



Objects of the analysis:

- **focus on intermodal services** operating on each selected corridor.
- **calculate direct costs** of the intermodal door-to-door transportation, including transshipments and pre-post haulages (50 km) of a loading unit (swap body/semitrailer/40'container/20' container) on each selected corridor.
- **Focus on relevant cost items** of intermodal transport
- **Comparison with cost and time of all-road haulage** on the same route



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The process of cost evaluation:

- Extended field survey among operators
- Direct interviews to the main operators
- Intense exchange of information with users group
- Comparisons with the results of relevant EU research projects and national studies
- Detailed analyses of company budgets and public data



Intermodal services analysed on the corridors:

Freight freeway case study:

- Patras - Brindisi Ro-Ro shipping (Med Link)
- Brindisi-Milano-Munich rail combined haulage (CEMAT)
- Munich-Hamburg rail combined haulage (Kombiverkehr)
- Hamburg-Gothenburg (via Oeresund/Great Belt) rail combined haulage (ICF)



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Intermodal services analysed on the corridors:

Tri-modal case study:

- Genova-Basel rail container haulage
- Basel-Rotterdam barge container haulage
- Rotterdam-Felixstowe Ro-Ro shipping
- Felixstowe-Manchester rail container haulage



Intermodal services analysed on the corridors:

Door to door transport including Central/Eastern Europe case study:

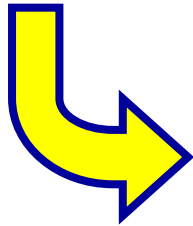
- Barcelona-Torino-Verona rail combined haulage (mixed traffic)
- Verona-Budapest rail combined haulage (CEMAT)
- Budapest-Warsaw rail combined haulage (Hungarokombi)



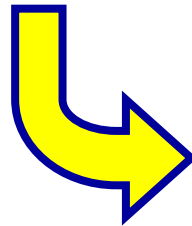
The corridors and preliminary results on direct cost calculation

The freight freeway case study - 1

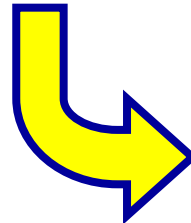
Pre haulage between Athens and Patras



Transshipment at Patras port terminal



Short sea shipping between Patras and Brindisi



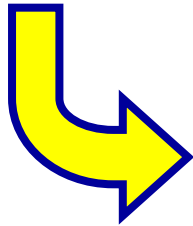
Transshipment at Brindisi port terminal



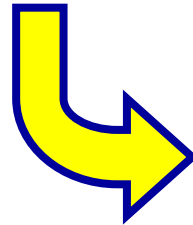
The corridors and preliminary results on direct cost calculation

The freight freeway case study - 2

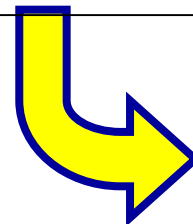
Truck haulage between
Brindisi port terminal and
Brindisi rail-road terminal



Rail haulage between
Brindisi and Milano
Smistamento



Transshipment at
Milano Smistamento
terminal



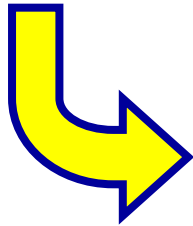
Rail haulage between
Milano and Munchen



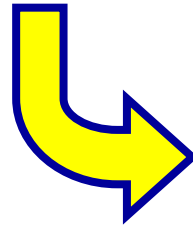
The corridors and preliminary results on direct cost calculation

The freight freeway case study - 3

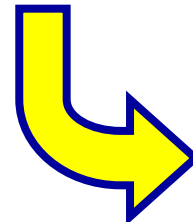
Marshalling/transshipment
at Muenchen Riem terminal



Rail haulage between
Muenchen and Hamburg



Marshalling/transshipment at
Hamburg Billwerder terminal



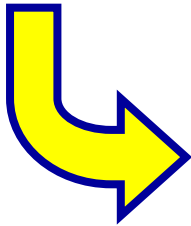
Rail haulage between
Hamburg and Malmoe



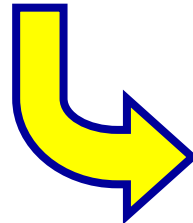
The corridors and preliminary results on direct cost calculation

The freight freeway case study - 4

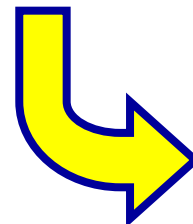
Marshalling at Malmoe terminal



Rail haulage between Malmoe and Gothenburg



Transshipment at Gothenburg terminal

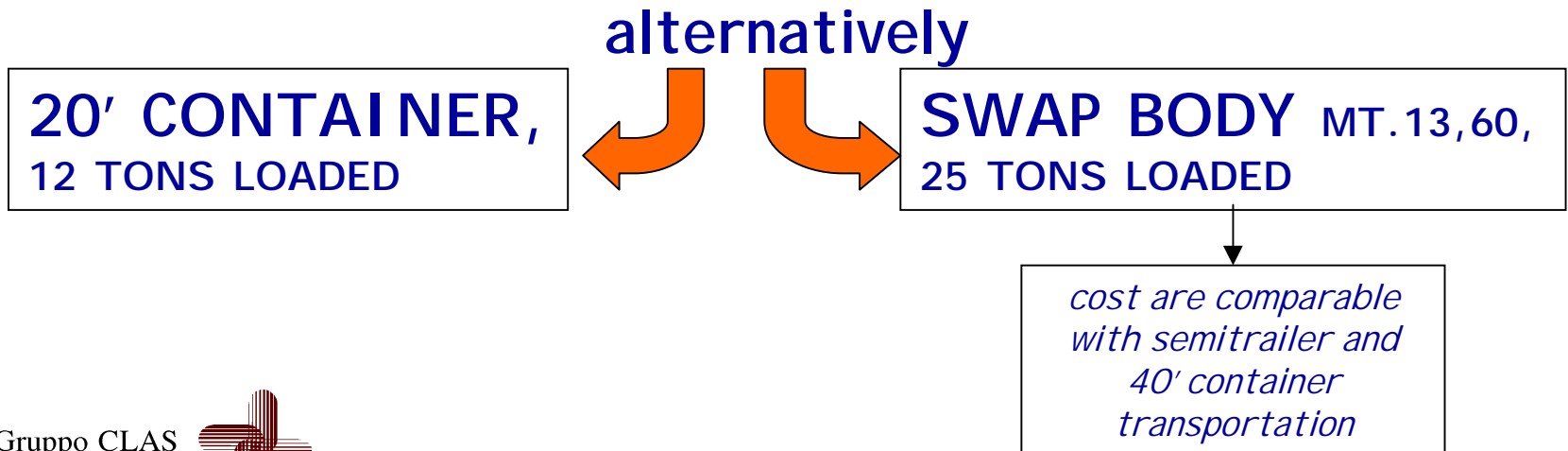


Post haulage (50 km from Gothenburg)



The freight freeway case study PREMISES ON COST CALCULATION:

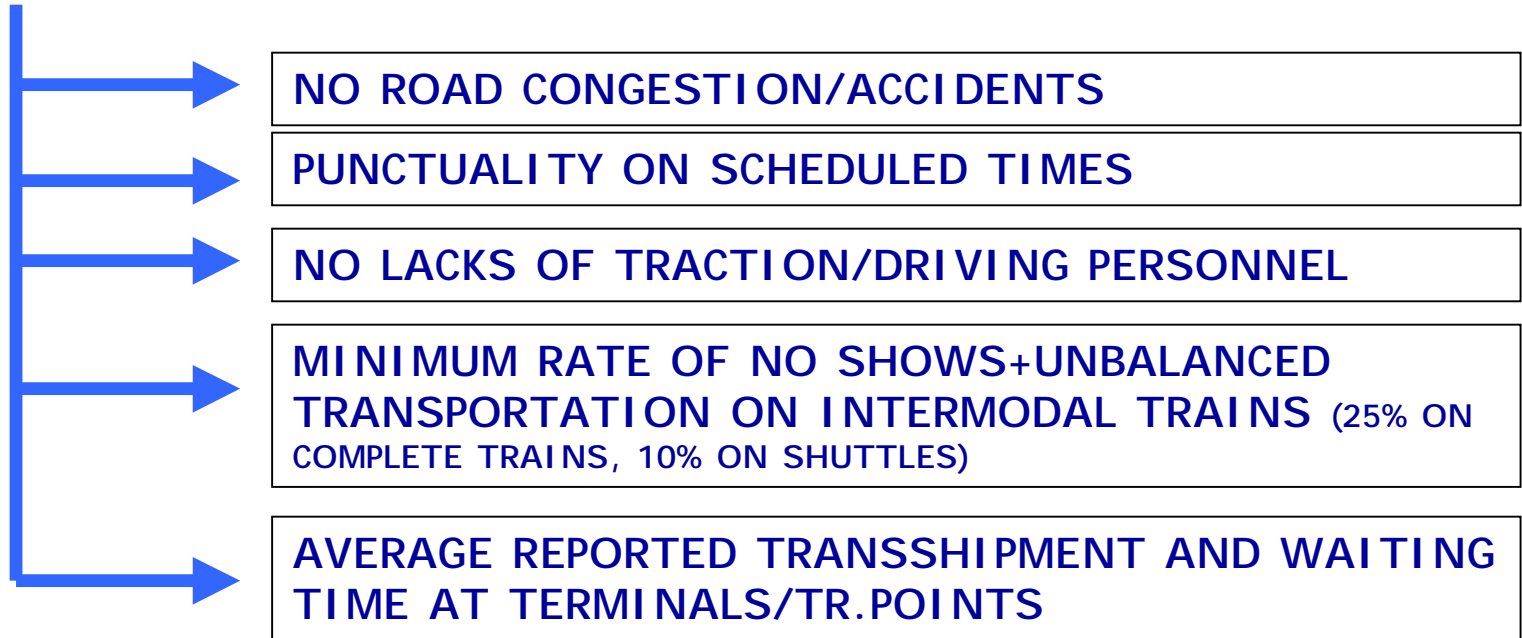
- costs were calculated for the intermodal transportation of ONE "loading unit":



The freight freeway case study PREMISES ON COST CALCULATION (2):

•costs were calculated

ASSUMING:



The freight freeway case study
PRELIMINARY RESULTS:

- total cost for a shipper/consignee of an intermodal transportation between Athens and Gothenburg:

20' CONTAINER

=

2080 €

SWAP BODY

=

3550 €



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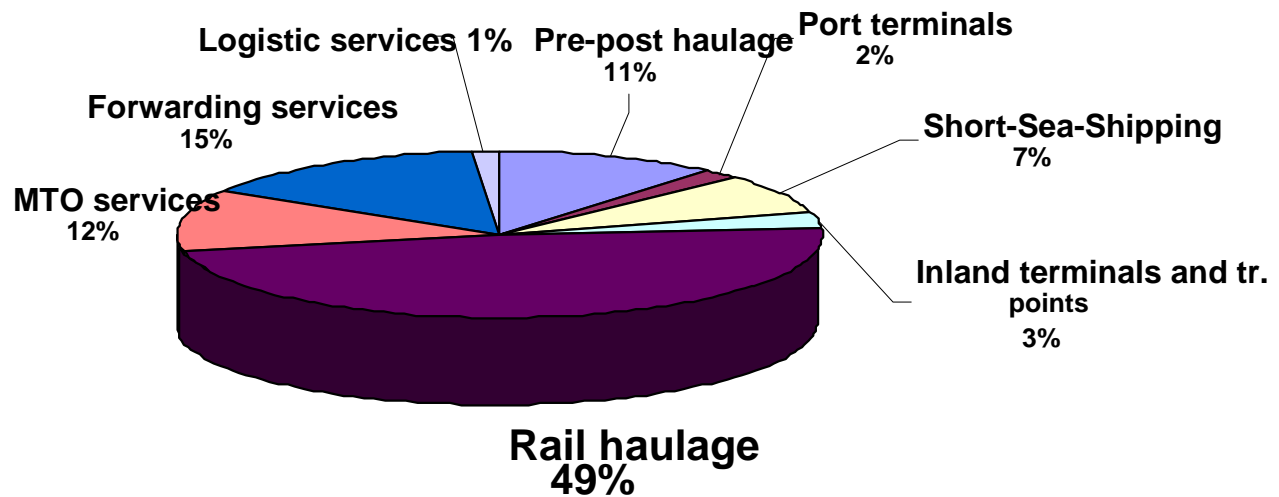
The cost of each intermodal service SWAP BODY:

<i>Modality</i>	cost	%
Pre-post haulage	395,92	11,1%
Port terminals	64,73	1,8%
Short-Sea-Shipping	266,49	7,5%
Inland terminals and tr. points	120,26	3,4%
Rail haulage	1705,56	48,0%
MTO services	417,14	11,7%
Forwarding services	533,13	15,0%
Logistic services (at the shipper/consignee's)	52,55	1,5%
<i>Total</i>	3555,78	100%



The cost of each intermodal service:

Cost components by modality - swap body



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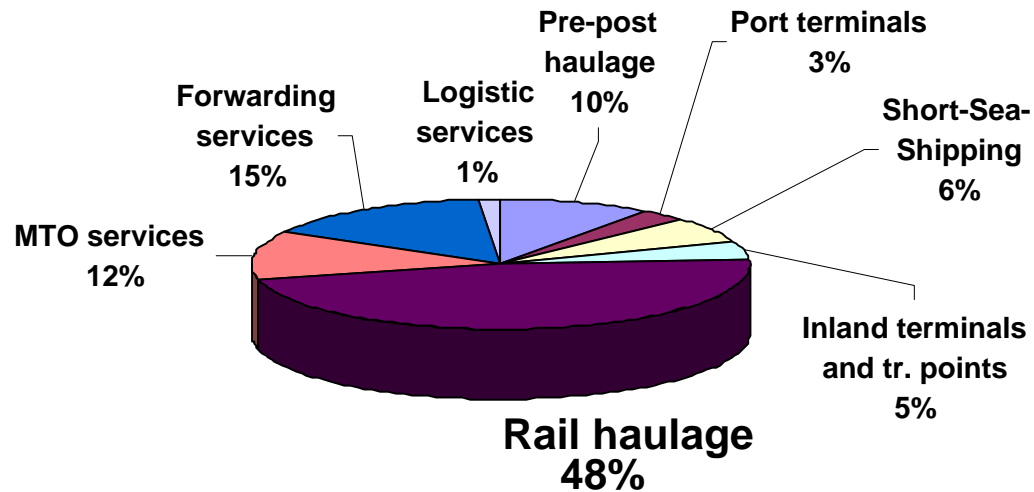
The cost of each transport block/intermodal service
20' CONTAINER:

Modality	cost	%
Pre-post haulage	200,54	9,6%
Port terminals	64,73	3,1%
Short-Sea-Shipping	133,25	6,4%
Inland terminals and tr. points	98,26	4,7%
Rail haulage	986,82	47,4%
MTO services	251,45	12,1%
Forwarding services	315,46	15,2%
Logistic services (at the shipper/consignee's)	30,76	1,5%
	2081,27	



The cost of each intermodal service 20' CONTAINER:

Cost components by modality - 20' container



COST DRIVERS BY SUBJECT OF INTERMODAL CHAIN

MTO/Inland and port terminal operator	swap body	cont. 20'
Third party services	83,0%	79,5%
Assets	8,4%	9,4%
Consumption	0,0%	0,1%
Personnel	3,6%	5,4%
Overheads costs	4,9%	5,5%
Profit	3,2%	3,0%

Assets and personnel costs rise in % for small container haulage, because **TERMINAL COST (PER CRANE MOVEMENT) ARE THE SAME FOR A LARGER SWAP BODY**

Short-sea-shipping	SW=20' cont.
Third party services	0,67%
Assets	31,71%
Personnel and overheads	53,05%
Consumption	32,81%
Profit	-18,24%

The most relevant cost category in SSS is personnel (often included in a renting "lump-sum" agreement). **FREIGHT TRAFFIC ON RO-PAX SHIPS DOESN'T PAY COSTS FOR SHIPPING**



COST DRIVERS BY SUBJECT OF INTERMODAL CHAIN (2)

Pre/post haulage	swap body	cont. 20'
Assets	22,90%	22,38%
Insurance/v'cle taxes	2,94%	2,88%
Consumption	18,38%	17,97%
Personnel	28,67%	28,02%
Overheads	5,44%	6,30%
Profit	21,66%	22,45%

- Costs are proportional for haulage of one swap body and two 20' container, nevertheless % are different because **tariffs are often cheaper for swap bodies**
- Costs for personnel** are the most relevant cost category
- Profit rates are high** because pre-haulier offer tariffs based on a minimum distance (mainly 250 km), longer than pre/post haulage considered



COST DRIVERS BY SUBJECT OF INTERMODAL CHAIN (3)

Rail haulage and marshalling	SW/20' cont.
Assets-driving	21,11%
Assets-marshalling	1,61%
Consumption	8,41%
Personnel-driving	8,27%
Personnel-marshalling	0,89%
Personnel-monitoring	3,34%
Rail track user charge	7,61%
Overheads and profits	48,76%

- 22,3% in Italy
- 17,5% in Austria
- 17,7% in Germany
- 27% in Denmark

- 15,9% in Italy
- 7,8% in Austria
- 8,3% in Germany
- 13,7% in Denmark

- 51,5% in Italy
- 40,2% in Austria
- 50,6% in Germany
- 43,6% in Denmark



COST DRIVERS BY SUBJECT OF INTERMODAL CHAIN (4)

Notes on “overheads and profit” for rail haulage

- 51,5% in Italy
- 40,2% in Austria
- 50,6% in Germany
- 43,6% in Denmark

•This very relevant cost category includes all costs not directly related to the transportation process, AND NOT OBTAINABLE BY A BOTTOM-UP APPROACH

•It was calculated assuming:

•A REASONABLE PRICE FOR RAIL HAULAGE

TO BE REPORTED: PRICES FOR RAIL HAULAGE ARE STRICTLY NOT DIRECTLY AVAILABLE

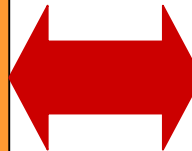
•CONSIDERATION OF COSTS FOR PERSONNEL NOT INVOLVED IN TRANSPORTATION PROCESS (FROM BALANCE SHEETS)

•It couldn't be more analytically splitted in the current general status data availability from rail companies



The freight freeway case study
**COMPARISON WITH ALL-ROAD
SOLUTION** (swap body):

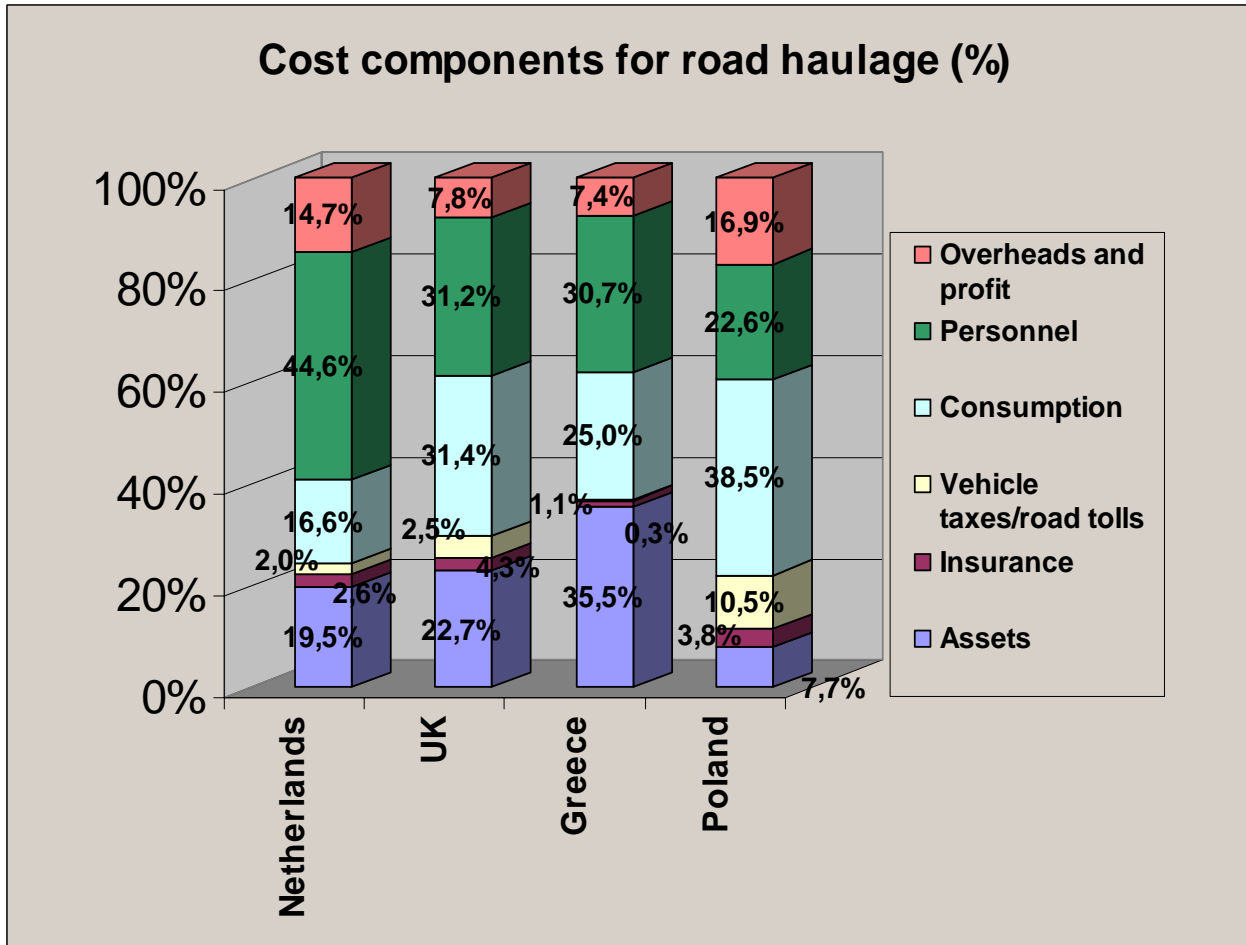
INTERMODAL:
cost: **3550 €**
min. transit time:
5 DAYS+6 HOURS



ALL-ROAD:
est.cost: **2700 €**
est. Transit time:
4 DAYS

Athens-Milan: 1000 €
Milan-Gothenburg: 1700 €

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COMPARISON BETWEEN COST COMPONENTS OF MAIN ROAD HAULAGE IN DIFFERENT COUNTRIES (figures calculated for specific segments of RECORDIT corridors)

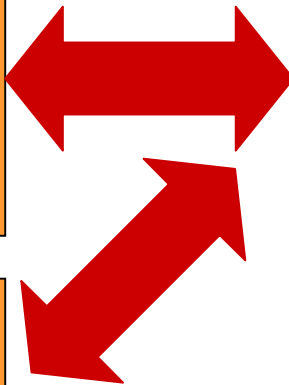


COST COMPARISONS WITH ALL-ROAD SOLUTION (other corridors):

•Genoa-Manchester (tri-modal):

INTERMODAL (VIA
INLAND SHIPPING):
cost: 2100 €

INTERMODAL (RAIL
VIA EUROTUNNEL):
cost: 1720 €



ALL-ROAD:
est.cost: 2100 €



COST COMPARISONS WITH ALL-ROAD SOLUTION (other corridors):

•Barcelona - Warsaw :

INTERMODAL:
cost: **3300 €**

ALL- ROAD
(INCLUDING SSS
BARCELONA-GENOA:
est.cost: **2800 €**

ALL- ROAD:
est.cost: **3000 €**

