



THE DSS POLICY SIMULATION MODULE

1. THE RECORDIT DATA BASE (ALL ROAD + INTERMODAL)

- **ABOUT 800 COSTS ITEMS (EURO/LU)**
- **ALONG APPROX. 22,000 KM**
- **AVAILABLE DISAGGREGATION:**
 - **TRANSPORT BLOCKS**
 - **COST CATEGORIES**
 - **INTERMODAL OPERATORS**
 - **CORRIDOR SEGMENTS**



THE DSS POLICY SIMULATION MODULE

2.BASIC ASSUMPTIONS

- TIMESCALE OF SCENARIOS: 1998**
- GIVEN INFRASTRUCTURE PROVISION**
- GIVEN TRAFFIC FLOWS**

3.MAIN OBJECTIVES

- SIMULATING THE IMPLEMENTATION OF POLICIES**
- EVALUATING THEIR IMPACTS ON COSTS STRUCTURE (INTERNAL+EXTERNAL)**



THE SET OF POLICIES

AIMS

BLOCKS

**TRANSPORT
SOLUTIONS**

PACKAGE OF MEASURES

1.TARGETS OF ENERGY EFFICIENCY

RAIL

INTERMODAL

2.COSTS REDUCTION OPTIONS

TERMINAL

INTERMODAL

STAND ALONE MEASURE

3.VARIATION OF LOAD FACTOR

**PRE POST
HAULAGE**

**INTERMODAL
ALL ROAD**



TARGETS OF ENERGY EFFICIENCY

CONTENTS

1. REDUCTION BY 50% OF ENERGY CONSUMPTION AS FROM CTP

MEASURES APPLIED

1. NUMBER OF WAGONS TRAIN (40)

= 26% Patras-Goth.

2. NUMBER OF STOPS = 0

3. LOADING FACTOR = 95%

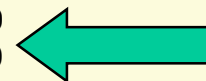
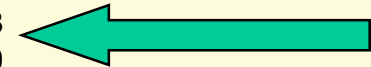
= 13% Barc.-Warsaw

4. TECHNICAL MEASURES IN ORDERT TO REDUCE UNITARY CONSUMPTION (kWh/train.km)



BARCELONA-WARSAW

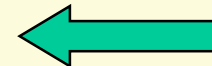
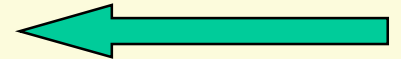
Cost Category	Intermodal Reference Cost (Euro/LU)	Intermodal Simulated Cost (Euro/LU)	Intermodal Gain (%)
Depreciation	562.40	510.57	9.22
Maintenance costs	236.86	187.76	20.73
Insurances	8.33	8.33	0.00
Energy consumption	183.46	98.00	46.58
Personnel	635.23	489.75	22.90
Third party services	136.32	136.32	0.00
Overhead costs	1187.06	1187.06	0.00
Total Internal/Direct Cost	2949.66	2617.79	11.25
Taxes	14.33	14.33	0.00
Charges	238.16	160.59	32.57
Subsidies	0.00	0.00	0.00
Total Taxes, charges, subsidies	252.49	174.92	30.72
Total Current Cost	3202.15	2792.71	12.79
External Cost - Air Pollution	69.96	30.78	56.00
External Cost - Global Warming	34.82	14.62	58.00
External Cost - Accidents	169.06	123.06	27.21
External Cost - Up & Down Stream	5.93	4.56	23.10
External Cost - Noise	46.06	34.96	24.10
External Cost - Infrastructure	388.21	388.21	0.00
Total External Cost	714.04	596.20	16.50





PATRAS-GOTHENBURG

Cost Category	Intermodal Reference Cost (Euro/LU)	Intermodal Simulated Cost (Euro/LU)	Intermodal Gain (%)
Depreciation	854.25	753.24	11.82
Maintenance costs	390.99	281.10	28.11
Insurances	19.32	19.32	0.00
Energy consumption	438.62	278.85	36.43
Personnel	717.99	556.53	22.49
Third party services	67.00	67.00	0.00
Overhead costs	1379.76	1379.76	0.00
Total Internal/Direct Cost	3867.93	3335.80	13.76
Taxes	68.42	54.71	20.04
Charges	503.96	240.95	52.19
Subsidies	0.00	0.00	0.00
Total Taxes, charges, subsidies	572.38	295.66	48.35
Total Current Cost	4440.31	3631.46	18.22
External Cost - Air Pollution	47.89	22.51	53.00
External Cost - Global Warming	42.67	19.20	55.00
External Cost - Accidents	135.28	88.50	34.58
External Cost - Up & Down Stream	14.96	13.23	11.56
External Cost - Noise	134.27	103.02	23.27
External Cost - Infrastructure	402.17	402.17	0.00
Total External Cost	777.24	648.63	16.55





COSTS REDUCTION OPTIONS

CONTENTS

- 1. ELIMINATE RAIL/RAIL TRANSHIPMENT COSTS
DUE TO AN IMPROVEMENT OF INTEROPERABILITY**
- 2. INCREASING EFFICIENCY: REDUCTION OF LABOUR COSTS
(-15%)**
- 3. INCREASING EFFICIENCY: REDUCTION OF FIXED
COSTS INCIDENCE PER LU (-33%)**



COSTS REDUCTION OPTIONS

Recordit - Set Up Policy - Cost Categories/Block Types

File

Policy:

Click on the corresponding cell to select or deselect the Cost Categories related to the Block Types, then choose File Confirm from the Menu Bar

	Depreciation	Maintenance costs	Insurances	Energy consumption	Personnel	Third party services	Overhead costs	Taxes	Charges	S
Pre/Post Haulage										
Transshipment/Terminal	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Y
Marshalling Yard	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Y
Main Haulage by Road										
Main Haulage by Train					Yes					
Main Haulage by Inland Waterway										
Main Haulage by Sea										

** K Factor = $(a * LUw * (Speed ^ 0.6) * [Exp(STOPS)] ^ 0.05) / ((b * LUw * NW) ^ 0.08)$

Start | Esp... | Post... | Rec... | ENE... | Micr... | outp... | Re... | 14:50



Recordit - Set Up Policy

File

transshipment eliminated

Click on the corresponding cell to select or deselect the Item Types Related to the Cost Categories and to the Block Types, then choose File Confirm from the Menu Bar

		Euro/yr	Euro/vkm	Euro/h	Euro/LU	km/trip
Depreciation	Transshipment/Terminal				Yes	
Maintenance costs	Transshipment/Terminal				Yes	
Insurances	Transshipment/Terminal				Yes	
Energy consumption	Transshipment/Terminal				Yes	
Personnel	Transshipment/Terminal				Yes	
Third party services	Transshipment/Terminal				Yes	
Overhead costs	Transshipment/Terminal				Yes	
Taxes	Transshipment/Terminal				Yes	



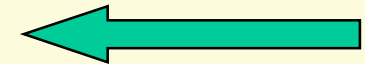
COSTS REDUCTION OPTIONS - RESULTS -

ELIMINATING RAIL-RAIL TRANSHIPMENTS COSTS

GENOVA -MANCHESTER	BEFORE	AFTER	GAIN Euro/LU	GAIN %
- INTERNAL COSTS	1,478.61	1,476.45	2.16	0.1
- EXTERNAL COSTS	146.16	145.27	0.89	0.6
TOTAL COSTS	1,624.77	1,621.72	3.05	0.2

PATRAS-GOTHENBURG	BEFORE	AFTER	GAIN Euro/LU	GAIN
- INTERNAL COSTS	4,440.31	4,354.36	85.95	1.9
- EXTERNAL COSTS	777.24	776.02	1.22	0.2
TOTAL COSTS	5,217.55	5,130.38	87.17	1.7

BARCELONA-WARSAW	BEFORE	AFTER	GAIN Euro/LU	GAIN
- INTERNAL COSTS	3,188.40	3,027.91	160.49	5.0
- EXTERNAL COSTS	714.04	712.59	1.45	0.2
TOTAL COSTS	3,902.44	3,740.50	161.94	4.1






COSTS REDUCTION OPTIONS - RESULTS - VARIABILITY BY SEGMENTS

COSTS REDUCTIONS PER SEGMENT (% GAIN)

Haulage by train Bologna-Verona	5.19%
Haulage by train Modane-Turin	4.09%
Haulage by train Port Bou-Lyon	1.47%
Haulage by train Torino-Villa Opicina	1.52%

Haulage by train (average gain)  **1.48%**



COSTS REDUCTION OPTIONS - RESULTS -

REDUCING LABOUR COSTS

	BEFORE	AFTER	GAIN Euro/LU	GAIN %	
GENOVA -MANCHESTER					
- INTERNAL COSTS	1,478.61	1,455.17	23.44	1.6	
- EXTERNAL COSTS					
TOTAL COSTS	1,478.61	1,455.17	23.44	1.6	
PATRAS-GOTHENBURG					
- INTERNAL COSTS	4,440.31	4,430.32	9.99	0.2	
- EXTERNAL COSTS					
TOTAL COSTS	4,440.31	4,430.32	9.99	0.2	
BARCELONA-WARSAW					
- INTERNAL COSTS	3,188.40	3,175.97	12.43	0.4	
- EXTERNAL COSTS					
TOTAL COSTS	3,188.40	3,175.97	12.43	0.4	

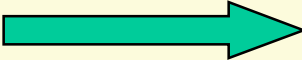



COSTS REDUCTION OPTIONS - RESULTS -

VARIABILITY BY SEGMENTS

COSTS REDUCTIONS PER TERMINAL (% GAIN)

Transshipment at Base Terminal	6.14%
Transshipment at Port of Rotterdam	5.59%
Transshipment at Port of Felixtowe	10.5%
Marshalling from dep. To Sampierdarena	3.71%

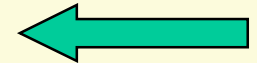
Transshipment (average gain)		5.49%
Marshalling (average gain)		3.49%



COSTS REDUCTION OPTIONS - RESULTS-

INCREASING THROUGHPUT - REDUCING FIXED COSTS -

GENOVA -MANCHESTER	BEFORE	AFTER	GAIN Euro/LU	GAIN %
- INTERNAL COSTS	1,478.61	1,392.04	86.57	5.9
- EXTERNAL COSTS				
TOTAL COSTS	1,478.61	1,392.04	86.57	5.9



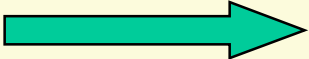

PATRAS-GOTHENBURG	BEFORE	AFTER	GAIN Euro/LU	GAIN
- INTERNAL COSTS	4,440.31	4,394.19	46.12	1.0
- EXTERNAL COSTS				
TOTAL COSTS	4,440.31	4,394.19	46.12	1.0

BARCELONA-WARSAW	BEFORE	AFTER	GAIN Euro/LU	GAIN
- INTERNAL COSTS	3,188.40	3144.827	43.57	1.4
- EXTERNAL COSTS				
TOTAL COSTS	3,188.40	3,144.83	43.57	1.4



COSTS REDUCTION OPTIONS - RESULTS -

VARIABILITY BY SEGMENTS COSTS REDUCTIONS PER TERMINAL (% GAIN)

Transshipment at Genova Port		25.04%
Transshipment at Basel Terminal		24.09%
Transshipment at Port of Rotterdam		15.83%
Marshalling from dep. To Sampierdarena		28.8%
Transshipment (average gain)		19.10%
Marshalling (average gain)		29.75%



COSTS REDUCTION OPTIONS - RESULTS-

PACKAGE OF TERMINAL POLICIES

	BEFORE	AFTER	GAIN Euro/LU	GAIN %
GENOVA -MANCHESTER				
- INTERNAL COSTS	1,478.61	1,366.44	112.17	7.6
- EXTERNAL COSTS	146.16	145.27	0.89	0.6
TOTAL COSTS	1,624.77	1,511.71	113.06	7.0
PATRAS-GOTHENBURG				
- INTERNAL COSTS	4,440.31	4,298.25	142.06	3.2
- EXTERNAL COSTS	777.24	776.02	1.22	0.2
TOTAL COSTS	5,217.55	5,074.27	143.28	2.7
BARCELONA-WARSAW				
- INTERNAL COSTS	3,188.40	2,919.85	268.55	8.4
- EXTERNAL COSTS	714.04	712.59	1.45	0.2
TOTAL COSTS	3,902.44	3,632.44	270.00	6.9



LOAD FACTOR VARIATION

Cost Category	Intermodal Gain	Intermodal	All Road Gain	All Road
	Abs. Value	Gain (%)	Cost (Euro/LU)	Gain (%)
Depreciation	29.57	3.46	22.85	2.84
Maintenance costs	38.34	9.81	33.85	5.56
Insurances	5.78	29.92	1.47	1.32
Energy consumption	48.63	11.09	38.68	6.79
Personnel	69.71	9.71	41.51	4.18
Third party services	0	0	0	0
Overhead costs	0	0	0	0
Total Internal/Direct Cost	192.03	4.96	138.36	4.03
	0		0	
Taxes	8.42	12.31	6.45	0.85
Charges	0	0	0	0
Subsidies	0	0	0	0
Total Taxes, charges, subsidies	8.42	1.47	6.45	0.47
	0		0	
Total Current Cost	200.45	4.51	144.81	3.02
	0		0	
External Cost - Air Pollution	8.06	16.83	6.41	4.61
External Cost - Global Warming	4.31	10.1	3.66	3.06
External Cost - Accidents	32.99	24.39	29.19	7.43
External Cost - Up & Down Stream	5.11	34.16	4.37	5.14
External Cost - Noise	45.45	33.85	36.08	41.24
External Cost - Infrastructure	11.12	2.76	9.85	6.58
Total External Cost	107.05	13.77	89.55	9.2

RECORDIT – FINAL CONFERENCE