MED ATLANTIC

ECOBONUS

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CALIBRATED TRANSPORT MODEL TOOL
Version for SIMULATION / user manual
October 2018

About MAE Calibrated Transport Model - SIMULATOR

- A complete calibration exercise of a 4-step transport model has been designed and calibrated for the targeted market in the MAE project example: Atlantic and West Mediterranean MoS.

- Statistical data are taken from existing surveys, port authorities and ship operators

- The designing of the models is based on the logit formulation based on transport prices and frequencies of the maritime services as explanatory variables. The goodness of the calibration is considered good from the statistical perspective, allowing prediction for total freight mobility, modal share between the 'road only' and the sea based routes and distribution amongst maritime lines.

- In addition, the tool uses the external cost calculator tool to give also the externalities savings as part of the simulation exercise.

- The model has been developed in Excel

- For an easy use, a limited simulator has been designed in Excel working as a front end of the modeling tool comparing two different scenarios. When opening the excel file with the simulator two supporting excels are opened automatically presenting the supporting tables with the main data used for the calibration.
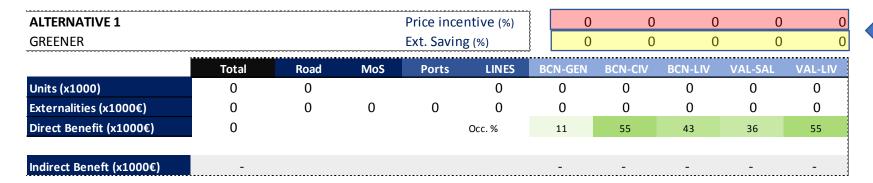
How to use it (1/5)

	Total	Road	MoS	Ports	LINES	BCN-GEN	BCN-CIV	BCN-LIV	VAL-SAL	VAL-LIV
ALTERNATIVE 1					Price incentive (%)	0	0	0	0	0
GREENER					Ext. Saving (%)	0	0	0	0	0
Units (x1000)	0	0			0	0	0	0	0	0
Externalities (x1000€)	0	0	0	0	0	0	0	0	0	0
Direct Benefit (x1000€)	0				Occ. %	11	55	43	36	55
Indirect Beneft (x1000€)	-					-	-	-	-	-

1. **Price incentive (%)** Eco-incentive as a discount of the average sea rate (+) or price increases (-)

2. **Ex. Saving (%)** Externality savings as a result of the improvement on the environmental performance of the line due to a green action.

3. **Units**: Refers to the increase (+) or decrease (-) of units in each alternative, over a 5 year period expressed in thousands.

4. **Externalities** : Total externalities savings (+) or increase (-) due to both the green action the modal (back) shift effects.

5. **Direct Benefit**: Additional incomes/losses for the users of the maritime services under the green/base scenario

6. **Indirect Benefit**: Additional incomes/losses for the shipowners due to the modal (back) shift effects (measured as a net contribution from the additional units).

7. **Occ.%** Average occupation level of the line (referred only to incentivized units)

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How to use it (2/5)

| ALTERNATIVE 1 | Price incentive (%) | 0 | 0 | 0 | 0 | 0 |
| GREENER | Ext. Saving (%) | 0 | 0 | 0 | 0 | 0 |

	Total	Road	MoS	Ports	LINES	BCN-GEN	BCN-CIV	BCN-LIV	VAL-SAL	VAL-LIV
Units (x1000)	0	0			0	0	0	0	0	0
Externalities (x1000€)	0	0	0	0	0	0	0	0	0	0
Direct Benefit (x1000€)	0				Occ. %	11	55	43	36	55
Indirect Beneft (x1000€)	-					-	-	-	-	-

- Enter the effects on price as a discount over the sea rate using the first row (in red), and on the external cost savings as a result of a green action (in yellow), per line.

- By default the tool is prepared to simulate the effects of certain scenarios (including the green and base scenarios as described in the MAE example).

- For each scenario, the model returns the impact on modal balance (units shifted or (back) shifted), the total external cost savings and the direct and indirect benefits to the users and to the shipowners.
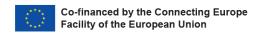
How to use it (3/5)

ALTERNATIVE 1
GREENER

| | Price incentive (%) | 10 | 12 | 12 | 23 | 13 |
| | Ext. Saving (%) | 82 | 82 | 85 | 85 | 85 |

	Total	Road	MoS	Ports	LINES	BCN-GEN	BCN-CIV	BCN-LIV	VAL-SAL	VAL-LIV
Units (x1000)	-25	-129			104	1	33	17	32	22
Externalities (x1000€)	290.430	18.466	271.964	-8.336	280.300	29.274	113.304	34.309	57.907	45.506
Direct Benefit (x1000€)	98.324				Occ. %	12	61	47	44	61
Indirect Benefit (x1000€)	58.892					343	19.131	9.035	17.770	12.614

ALTERNATIVE 2
CONSERVATIVE

| | Price incentive (%) | -12 | -12 | -12 | -12 | -12 |
| | Ext. Saving (%) | 38 | 38 | 46 | 46 | 46 |

	Total	Road	MoS	Ports	LINES	BCN-GEN	BCN-CIV	BCN-LIV	VAL-SAL	VAL-LIV
Units (x1000)	20	111			-91	-2	-38	-17	-11	-23
Externalities (x1000€)	132.716	-15.725	148.441	6.851	141.590	13.596	52.622	18.777	31.691	24.904
Direct Benefit (x1000€)	-67.572				Occ. %	11	49	38	33	49
Indirect Benefit (x1000€)	- 51.313					- 691	-22.231	- 9.340	- 5.999	-13.051

DIFFERENCES	Total	Road	MoS	Ports	LINES	BCN-GEN	BCN-CIV	BCN-LIV	VAL-SAL	VAL-LIV
Units (x1000)	-45	-240			195	3	71	34	42	44
Externalities (x1000€)	157.714	34.191	123.523	-15.187	138.710	15.679	60.682	15.532	26.216	20.601
Direct Benefit (x1000€)	165.897				Occ. %	1	11	9	11	12
Indirect Benefit (x1000€)	110.205					1.033	41.362	18.376	23.770	25.664

- The two upper tables represent scenarios to be compared.
- Data can be altered editing the red and yellow boxes.
- The table DIFFERENCES is just a direct subtraction or ALTERNATIVE1 – ALTERNATIVE2 scenarios

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How to use it (4/5)

ALTERNATIVE 1					10	12	12	23	13
GREENER			Price incentive (%)		82	82	85	85	85
			Ext. Saving (%)						

	Total	Road	MoS	Ports	LINES	BCN-GEN	BCN-CIV	BCN-LIV	VAL-SAL	VAL-LIV
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Indirect Benefit (x1000€)	58.892					343	19.131	9.035	17.770	12.614

ALTERNATIVE 2					-12	-12	-12	-12	-12
CONSERVATIVE			Price incentive (%)		38	38	46	46	46
			Ext. Saving (%)						

	Total	Road	MoS	Ports	LINES	BCN-GEN	BCN-CIV	BCN-LIV	VAL-SAL	VAL-LIV
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Buttons: Reset | LNG | Scrubber+SCR | Reset | MGO

- The tool gives the possibility to paste predefined scenarios (LNG and SCRUBBER + SCR) in the upper table using the MAE external cost calculator tool

- Under ALTERNATIVE2 , the tool gives the possibility to paste the base case scenario (MGO).

- The bottom table, DIFFERENCES, returns the MAE case study outcome when the LNG is compared with the MGO case.

- If wanted, the tool allows free data entering as previously described.

Using the tool

For further information about MED Atlantic Ecobonus
and the Modal Choice Model tool
please contact: mae.project@puertos.es

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