



Italian Association  
of Toll Motorways  
and Tunnels Operators



# *The AISCAT study on the internalization of the external costs in the transportation sector*

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WORKING SESSION 5A:

BRINGING INTO THE CHARGING REALITY THE MODULATION

REQUIREMENTS OF THE EUROVIGNETTE DIRECTIVE





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## Italian Motorway Network operating at 31-12-2008

➤ Toll Motorway	Km 5.694,2
➤ Toll free	Km 894,0
<b>Total</b>	<b>Km 6.588,2</b>



AISCAT is the Association that gathers together all the 24 Italian Concessionary Companies for the construction and the management of toll motorways and tunnels



*AISCAT has subscribed  
the European Road  
Safety Charter*



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## Objective and basic considerations

The study done by Aiscat is aimed at defining a credible scenario, from the current to the mid-term horizon, about social and external costs of transport in Italy.

The aim was not to draft THE study” since the subject, although dealt with in many reports, is far from a real scientific agreement.

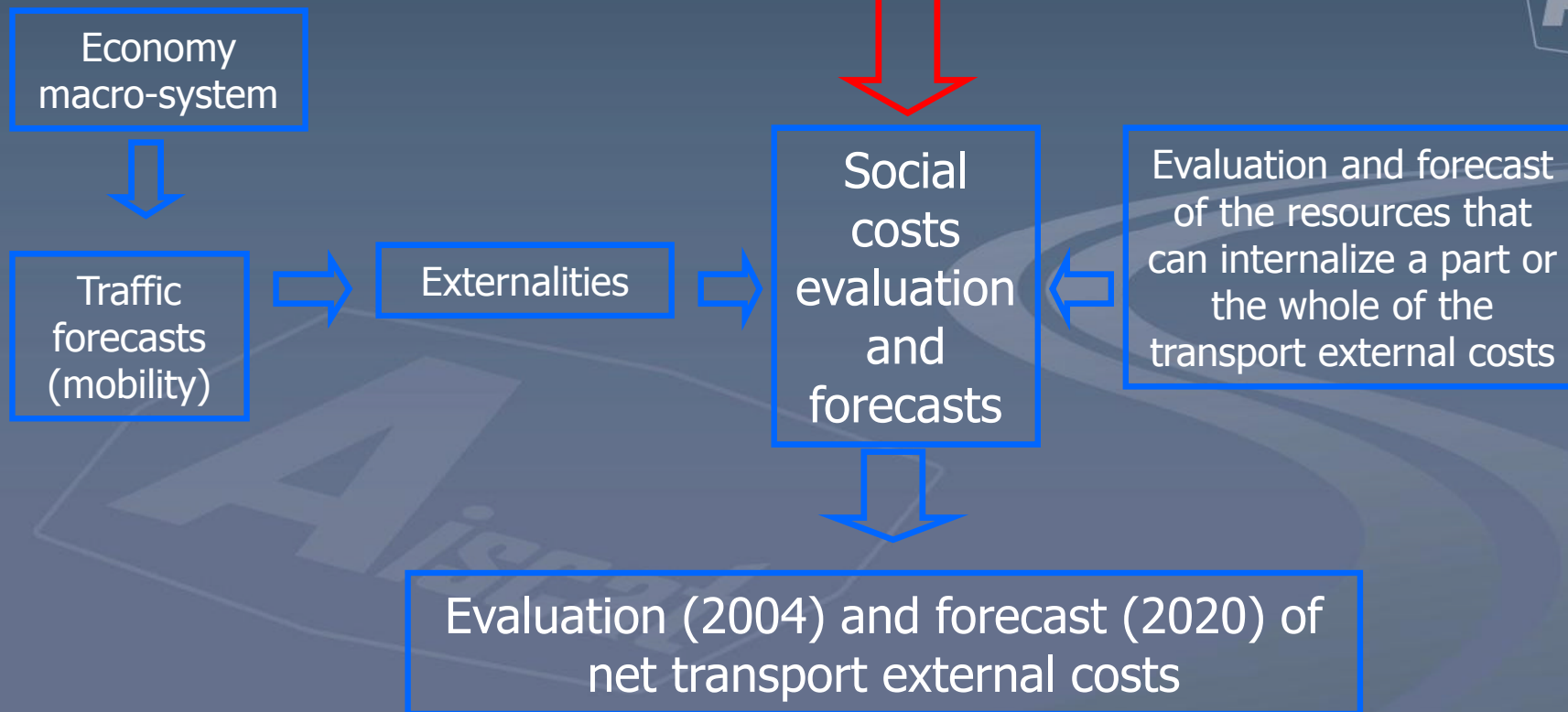
There is no agreed solution yet, rather a number of tools and criteria that, if properly tested in reliable models, can support some policy decisions.

The study highlights some of those tools and criteria.



## Structure

Externalities and external costs evaluation criteria, gathering of the available literature, analysis of the costs and benefits, choice of the best theoretical and empirical values  
**[PART ONE]**



**[PART TWO]**



## Some Definitions

**SOCIAL COST:** the amount, in financial terms, of the resources used for the production of goods or services

**SOCIAL COST = INTERNAL COSTS + EXTERNAL COSTS**

**EXTERNAL COST:** the financial value of externalities

**EXTERNALITY:** effect on a given subject of the actions of another subject, when no financial transaction is meant between the two

**INTERNAL COST:** it is composed of the production costs + the "internalizable" financial resources (taxes, charges, fees, tolls).



## Externalities in transport

Transport activities do create negative externalities (for instance environmental effects) .



This does not necessarily mean, though, that the polluter has to pay more than he already pays; a global evaluation is needed on how much it is already charged.

As an example, the amount of the taxes and other charges levied could already equal the financial value of the externalities.

If so, the externalities are already internalized in financial terms. The use of the resources can be sub-optimal (e.g. Resources used in sectors other than transport) but this is a political equity issue, that does not affect the general issue of internalization.



## What externalities

Congestion: although congestion is surveyed and analysed in the study, its value is not added in the summary tables. This choice is based on the assumption that congestion, although relevant for the efficiency of use of the infrastructures, it is already paid for by those suffering for the congestion. There is no cost for third parties, only those using the infrastructure have a disadvantage from congestion.

Environment: as elements for the analysis the following were considered, i.e. Air pollution and Greenhouse effect (CO<sub>2</sub>).

Incidents, noise are also considered.

From the available data contained in the referenced studies average values were calculated.



## Available empirical values examined from previous researches



Travel time values	20
Air pollution (local level)	27
Air pollution (global level)	23
Statistical life value	51
Incidents	21
Noise	16

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Total of the empirical values, from 80 studies: 158



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## Transport modes/means analysed



Transport sector was segmented for the analysis in the following sub-elements

- Ordinary (not tolled) road network)
- Tolled motorways
- Rail
- Sea
- Air

The choice was to investigate also the internal characteristics of the road sector



## Transport social costs (€ billion, 2004)

	RO	Autostrada	Ferrovia	Nave	Aereo	Totale
<b>2004</b>						
Incidenti	37.1	2.5	0.0	0.0	0.0	<b>39.6</b>
Inquinamento atmosferico	17.9	8.7	0.9	1.0	0.0	<b>28.6</b>
Effetto serra	13.8	5.6	0.3	0.4	1.3	<b>21.5</b>
Inquinamento acustico	4.9	1.3	0.3		0.1	<b>6.6</b>
Manutenzione infrastruttura	4.9					<b>4.9</b>
Sussidi	2.9		3.0			<b>5.9</b>
<b>Totale</b>	<b>81.6</b>	<b>18.2</b>	<b>4.5</b>	<b>1.4</b>	<b>1.4</b>	<b>107.1</b>
<b>Scenario Basso - 2020</b>						
Incidenti	36.6	2.6	0.0	0.0	0.0	<b>39.2</b>
Inquinamento atmosferico	4.9	1.4	0.9	1.1	0.1	<b>8.4</b>
Effetto serra	14.2	6.3	0.3	0.5	1.8	<b>23.0</b>
Inquinamento acustico	6.0	1.6	0.3		0.1	<b>8.0</b>
Manutenzione infrastruttura	4.9					<b>4.9</b>
Sussidi	2.1		2.2			<b>4.3</b>
<b>Totale</b>	<b>68.7</b>	<b>11.9</b>	<b>3.7</b>	<b>1.7</b>	<b>1.9</b>	<b>87.8</b>
<b>Scenario Alto - 2020</b>						
Incidenti	59.6	4.0	0.0	0.0	0.0	<b>63.7</b>
Inquinamento atmosferico	8.2	2.4	1.2	1.9	0.1	<b>13.8</b>
Effetto serra	17.4	8.6	0.4	0.8	4.1	<b>31.2</b>
Inquinamento acustico	10.0	3.4	0.4		0.1	<b>13.9</b>
Manutenzione infrastruttura	4.9					<b>4.9</b>
Sussidi	2.1		2.2			<b>4.3</b>
<b>Totale</b>	<b>102.2</b>	<b>18.4</b>	<b>4.2</b>	<b>2.7</b>	<b>4.3</b>	<b>131.8</b>

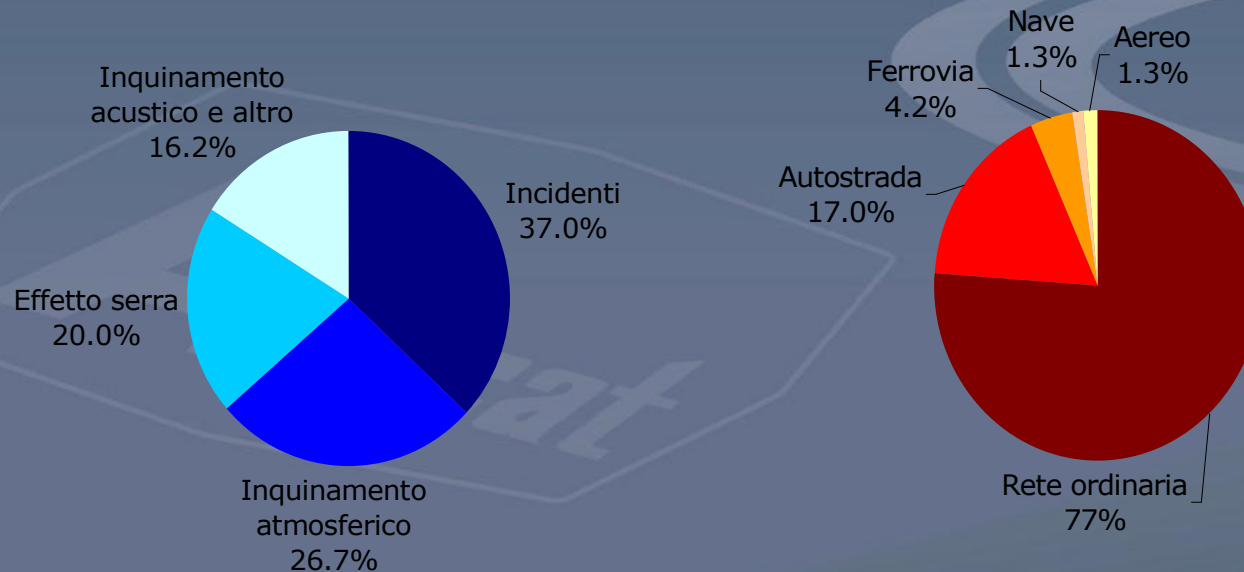




## Social costs, reference year 2004 - 2



Transport social costs – summary of monetized evaluation by externalities and by transport mode





## External costs in the reference and forecast scenarios



	<b>RO</b>	<b>Autostrada</b>	<b>Ferrovia</b>	<b>Nave</b>	<b>Aereo</b>	<b>Totale</b>
<b>COSTI ESTERNI = COSTI SOCIALI - RISORSE MONETARIE INTERNALIZZANTI</b>						
<b>TOTALE</b>						
2004	30.5	-3.7	4.1	1.3	0.8	33.1
Scenario Basso - 2020	26.6	-5.9	3.4	1.5	1.1	26.8
Scenario Alto - 2020	48.9	-11.6	3.9	2.6	2.8	46.5
<b>PASSEGGERI</b>						
2004	20.2	-4.3	2.4	0.5	0.7	19.4
Scenario Basso - 2020	20.9	-2.5	2.1	0.6	1.0	22.1
Scenario Alto - 2020	41.2	-6.2	2.4	1.1	2.6	41.0
<b>MERCI</b>						
2004	10.3	0.6	1.8	0.8	0.1	13.6
Scenario Basso - 2020	5.7	-3.4	1.4	1.0	0.1	4.7
Scenario Alto - 2020	7.7	-5.4	1.5	1.4	0.2	5.5



## Conclusions



- **Tolled infrastructures already pay for their externalities**, in practice in all the scenarios
- Other modes/means do have a deficit in their resources/externalities scenarios
- The biggest deficit pertains to the not tolled road network

**Externalities are already paid for along tolled roads,**  
any intervention should be on the not tolled roads and on  
the other transport modes