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Co-financed by the Connecting Europe Facility of the European Union

PRESENTATION
On a possible common EU approach to eco-incentive measures

European Parliament
Brussels, December 4th (2018)

Datasheet

Project	MED ATLANTIC ECOBONUS (2014-EU-TM-0544-S)
Call	CEF 2014
Type	Policy study
Member States	SPAIN, ITALY, PORTUGAL, FRANCE
Beneficiaries	Puertos del Estado (ES) Ministero delle Infrastrutture e dei Transporti (IT) Instituto da Mobilidade e dos Transportes (PT) Ministère de la Transition Écologique et Solidaire (FR)
Implementing bodies	Rete Autostrade Mediterranee S.p.A. Rina Services S.p.A.
Coordinator	Puertos del Estado (ES)
Schedule	Start date: July 2015 End date: December 2018
Budget	1,543,838 € (Funded 50%)
Contact	mae.project@puertos.es

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What is MAE Action...

- **Policy study** intended to the debate (ends at proposal level)

- Towards a **common EU approach** on eco-incentives measures to foster sustainable freight transport services (open to all modes of transport and EU regions)

- **Delivering a complete example** (ex-ante analysis) taking the motorways of the sea in the West-Med and the Atlantic regions to prove the impacts of the approach

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Why MoS example?

ROAD CONGESTION

YEARLY ROAD FREIGHT MOVED THROUGH PYRENEES: Junquera & Irún sections

Sources: WEST MOS (TEN-T) Transyt 2010. SP-FR Observatory

SP & PT ACCESSION TREATY TO ECC   CRISIS   PREDICTION
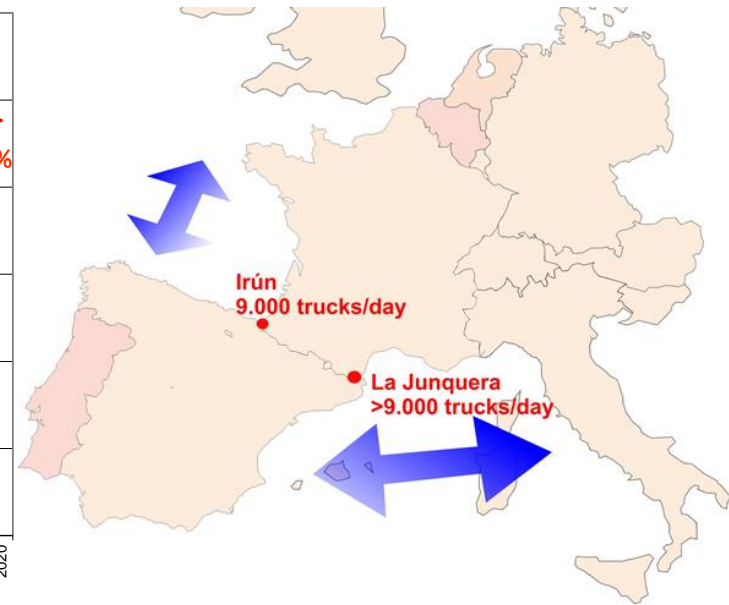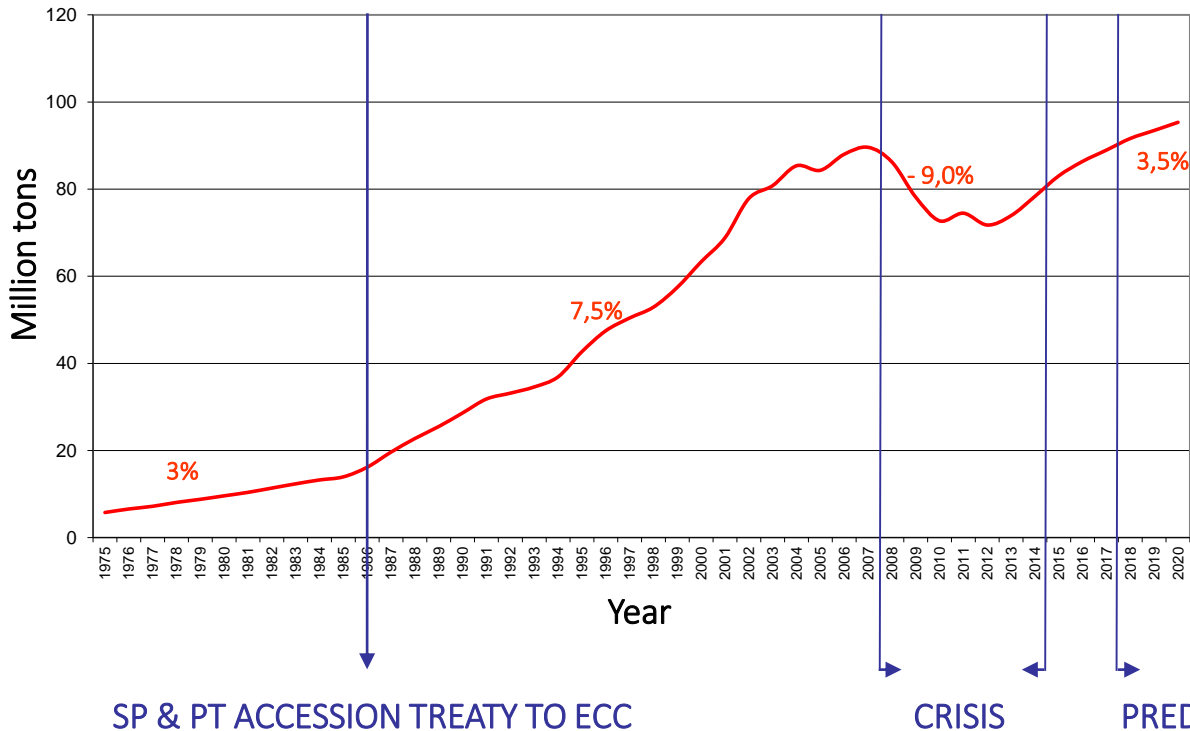
Directive (EU) 2016/802 of the European Parliament and of the Council on the reduction of the sulphur content of certain liquid fuels

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MAE approach

FOSTERING SUSTAINABLE FREIGHT TRANSPORT SERVICES: Since 1991 (white papers)

Goals: reducing carbon emissions, air pollution and social costs (congestion, …)

❑ Regulation: setting market standards for all modes of transport as regards socio-environmental performance (EURO standard, Sulphur Directive, etc.)

❑ Incentives: stimulating sustainable behavior of the market

i. Charging (stick) Directive 1999/62/EC

ii. Grants (carrot)

  o Compensating costs (for the market viability):
   • Investment costs (funding gap principle, CEF)
   • Operating costs ("start-up aid" principle, Marco Polo)

  o Targeting actual socio-environmental outcomes (in market conditions):
   • Eco-incentive schemes (to accelerate the market uptake)

iii. Other financial support (EFSI, financial instruments,…)

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Principles of the common approach

Main REFERENCES:

- Recommendations from EC and ECA after Marco Polo program
- Regulation EU 1315/2013 and Reg EU 1316/2013 on the TEN-t guidelines/CEF
- Regulation on State aids (art. 107 and art. 93) and further interpretation from EC Guidelines

Main PRINCIPLES:

- No market distortion
- Targeting actual socio-environmental outcomes in market conditions
- Incentive calculation based exclusively on demonstrated socio-environmental merits (measuring and monetizing external costs savings)
- Technologically agnostic on how the environmental merit is achieved
- Combined effort of EU and MS
- Transferable to all EU regions and all modes of transport
- Compatible with state aid rules
- Funding conditional upon results

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Principles of the common approach (cont.)

In addition, granting EU financial support to any eco-incentive action shall be conditional to an **ex ante analysis** showing whether and to what extent there is an EU added value **(ECA report)**
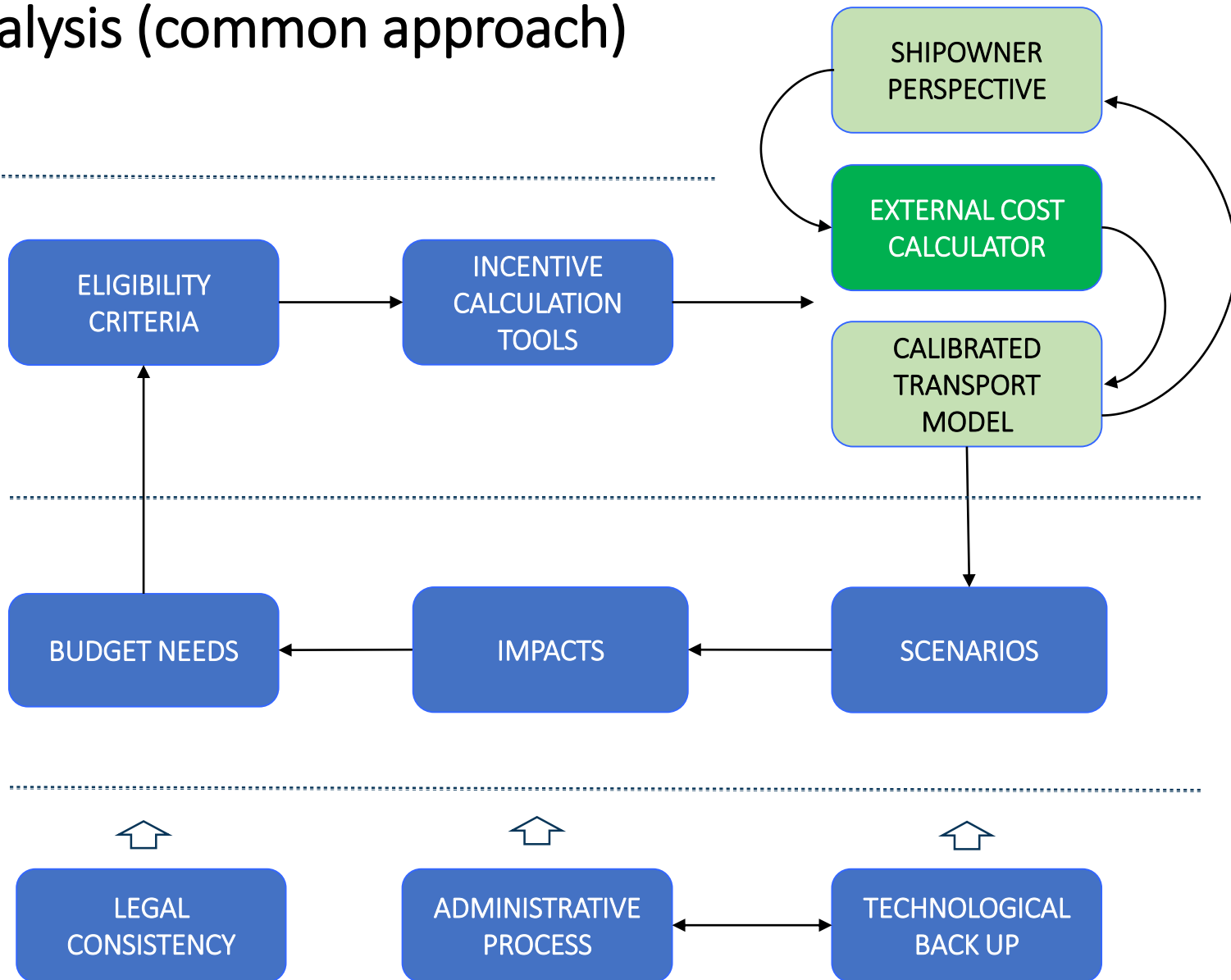

MAE example

DEFINITION:

1. Targeted market: ro-ro/ferry **motorways of the sea servicing alternative routes to the road transport** in the West Mediterranean and the Atlantic regions

2. Goal: **greener performance of the maritime leg** (while securing modal balance)

3. Environmental merit incentivized: External costs savings from **freight units using the maritime service compared to the road-only alternative** due to a green action in the maritime leg

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Ex-ante analysis (common approach)
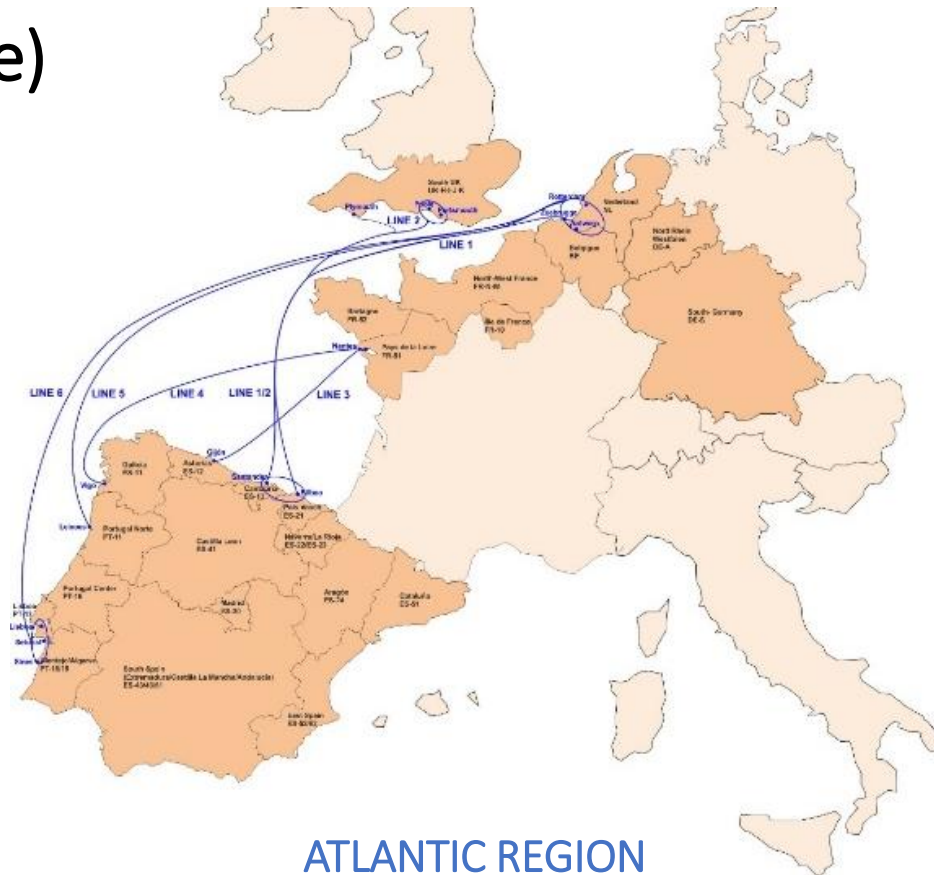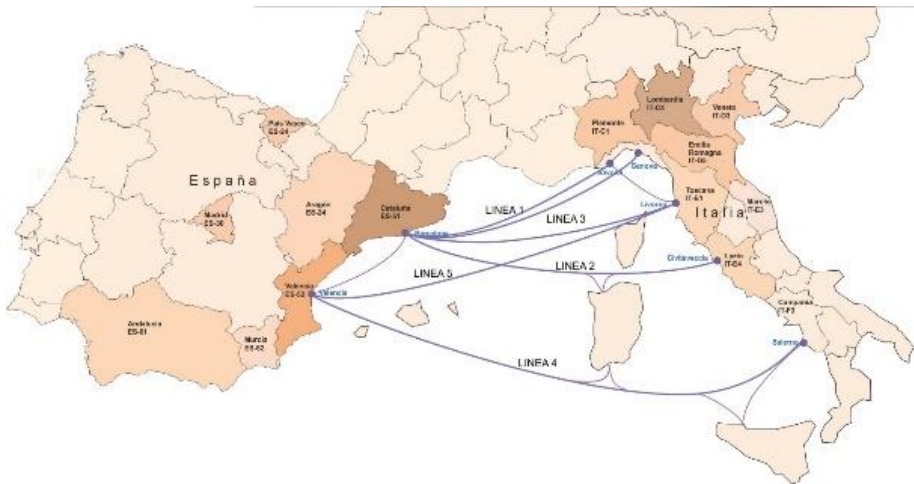
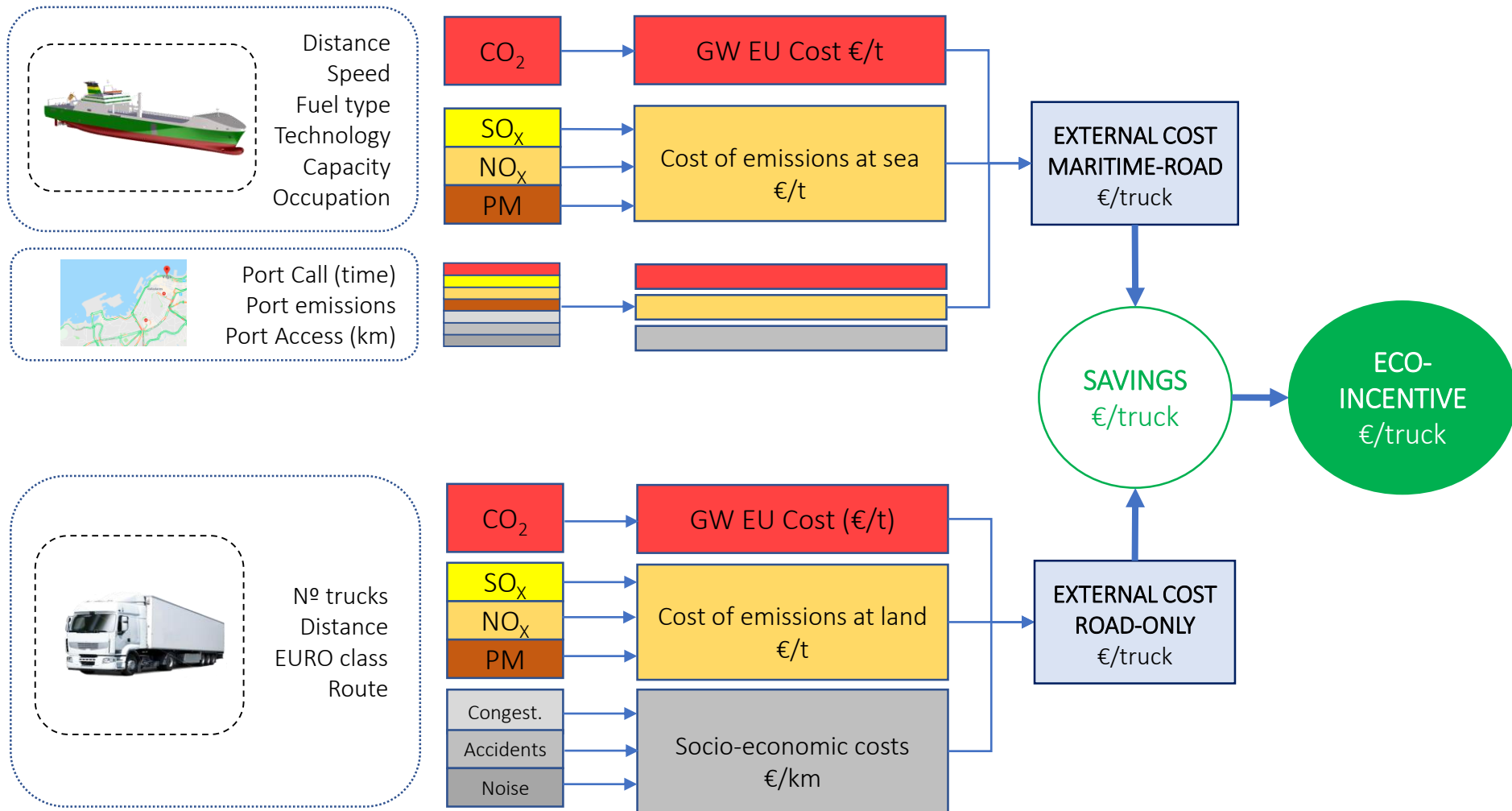# Ex-ante analysis (MAE example)

WEST MED REGION

ATLANTIC REGION

Relevant eligibility criteria:

- Only for trucks using the maritime services. Road is the direct beneficiary → Demand approach (IT Ecobonus)

- Only for maritime services demonstrating a socio-environmental merit due to a green action in the maritime leg. Such merit shall be quantified → External Cost Calculator

External cost calculator (MAE example)

- Designed *ad hoc* to estimate the socio-environmental merit per line and per unit

- Using EU references (Handbook of external costs)

- External costs considered: greenhouse gases (CO_2), air pollution (NOx, Sox and PM) and social costs (congestion, accidents and noise only for the road-only alternative).

- External costs of infrastructure are not considered

- Prepared to measure the main possible green actions to be taken by the shipowners (technology and not technology based)

- Featuring the specific performance for each vessel

- Accepting direct values if they are provided

- Including impacts at ports due to road access (urban areas) and vessels during port call.

- Allowing simulation with different values of CO_2 cost (significant gaps depending on the criteria used)

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External cost calculator (MAE example)

Distance
Speed
Fuel type
Technology
Capacity
Occupation

Port Call (time)
Port emissions
Port Access (km)

CO_2 → GW EU Cost €/t

SO_X
NO_X → Cost of emissions at sea €/t
PM

EXTERNAL COST MARITIME-ROAD €/truck

Nº trucks
Distance
EURO class
Route

CO_2 → GW EU Cost (€/t)

SO_X
NO_X → Cost of emissions at land €/t
PM

Congest.
Accidents → Socio-economic costs €/km
Noise

EXTERNAL COST ROAD-ONLY €/truck

SAVINGS €/truck

ECO-INCENTIVE €/truck

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MAE External cost calculator results

AVERAGE LINE
GEO 75% SPEED 18kn Med CAPACITY 2800 LM (131 trucks)
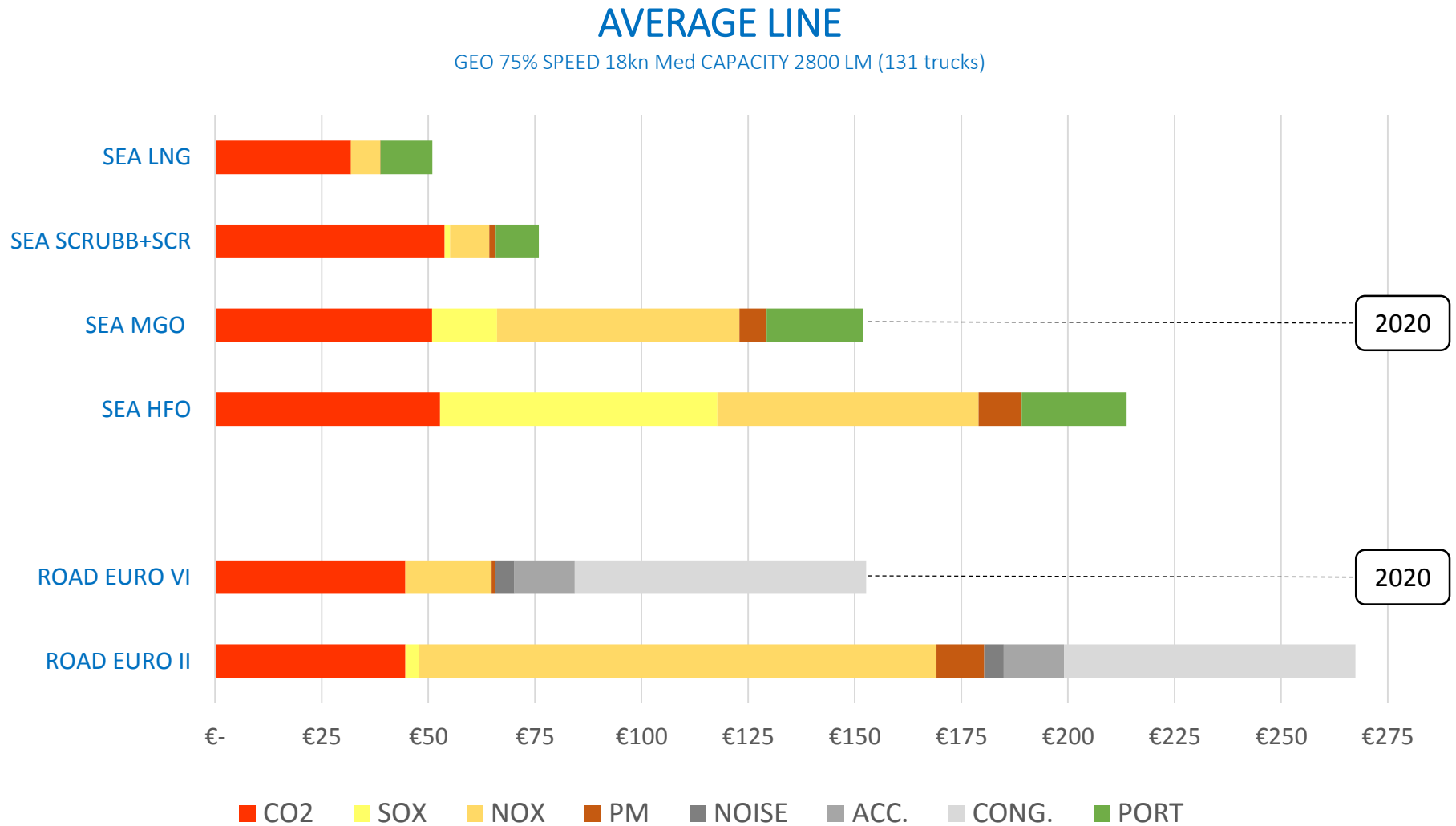
Simulation exercise (scenarios)

GREEN SCENARIO
- All vessels **switch to LNG** → MAXIMUM ECO-INCENTIVE GIVEN (*)
- Sea rates are maintained → **Modal shift effect**

2020 ——— 5 years period ——— 2024

BASE SCENARIO
- **No green action** in the maritime leg → NO ECO-INCENTIVE GIVEN
- Strict compliance with sulphur directive → "Regulation merit"
- All vessels using 0,5% sulphur fuel (more expensive)
- Average increase of 12% in the sea rates → **Modal back shift effect**

(*) <u>LNG is taken just as example</u>, to provide maximum budget needs (from today's perspective LNG is the maritime cleanest technology available on deployment)

IMPACT ASSESSMENT = GREEN SCENARIO – BASE SCENARIO ("regulation merit")

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Simulation exercise (eco-incentives)

Eco-incentives in the GREEN SCENARIO

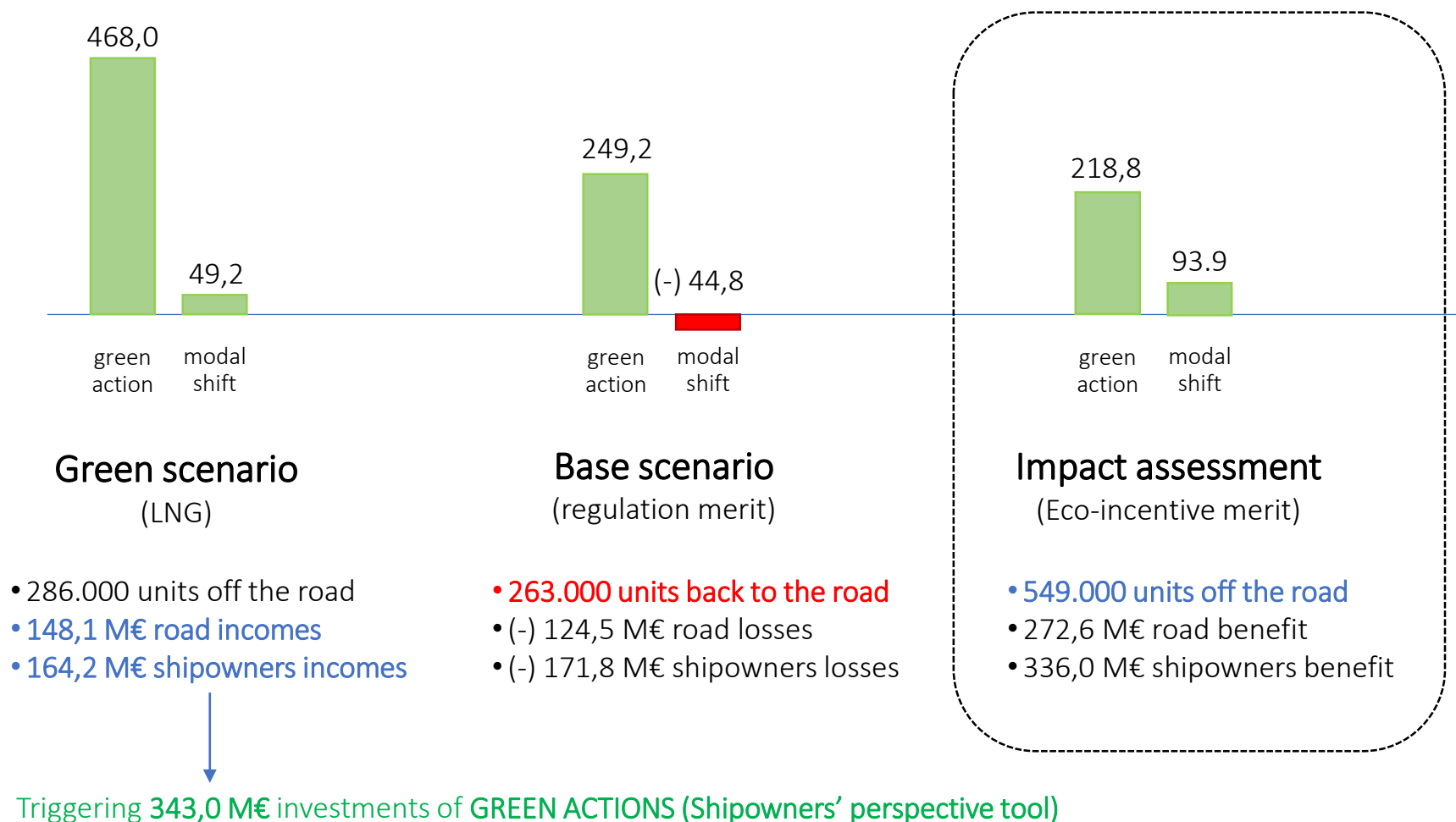| Line	Region	Eco-incentive (€/unit)	Discount (%)
Valencia Salerno	West Med	161	23
Leixoes Zeebrugge	Atlantic	146	12
Lisbon Zeebrugge	Atlantic	123	10
Valencia Livorno	West Med	92	13
Vigo-Nantes	Atlantic	89	12
Barcelona Civitavechia	West Med	86	12
Barcelona Livorno	West Med	84	12
Gijon-Nantes	Atlantic	67	11
Santander Portsmouth	Atlantic	60	7
Barcelona Genoa	West Med	52	10
Bilbao-Zeebrugge	Atlantic	44	4

Great variety of intensities:
- **Geographical factors:** the maritime distance and the 'shortcut' over the road-only route
- **Other factors** (behaving): Vessels' capacity and speed

The eco-incentives are simulated as **virtual discounts over the sea rates**, using a Calibrated Transport Modelling tool

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Simulation exercise (main outcomes)

EXTERNAL COSTS SAVINGS (accumulated 2020-2024)
Green Scenario, Base Scenario, Final Assessment (M€)

Green scenario
(LNG)

- 286.000 units off the road
- 148,1 M€ road incomes
- 164,2 M€ shipowners incomes

Base scenario
(regulation merit)

- 263.000 units back to the road
- (-) 124,5 M€ road losses
- (-) 171,8 M€ shipowners losses

Impact assessment
(Eco-incentive merit)

- 549.000 units off the road
- 272,6 M€ road benefit
- 336,0 M€ shipowners benefit

Triggering 343,0 M€ investments of GREEN ACTIONS (Shipowners' perspective tool)

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Simulation exercise (main outcomes)

● **TOOLS**

EXTERNAL COSTS SAVINGS
Final Assessment (x1000 €)

PERIOD 20-24			
	ECO-INCENTIVE	**IND. INCOMES**	**GREEN ACTIONS**	**EXT. SAVINGS**
WEST MED	98.324	58.892	162.586	157.714
ATLANTIC	49.813	105.275	180.454	154.983
TOTAL	**148.137** ①→	**164.167** ②→	**343.040** ③→	**312.697**

③

27,9 M€ on CO_2 reduction

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Final remarks

- Taken as example, the total cost of the scheme would be 148 M€ on a 5-years period.

- According to the proposed common EU approach, this would be the budget submitted for EU co-financing (combined effort EU/MS)

- The budget would be implemented by the MS, ensuring a multilateral and regional perspective but based on common principles

- The risk of demand is reduced by definition. This fact might grant better financing conditions to the green actions (EU financial instruments)

- EU support might be modulated by the global impacts (CO2 reduction) whereas MS support by the more localized ones (air pollutants and social costs).

- The common EU approach seems to be feasible under the regulatory and operational structures of the EU/MS support, as well as consistent with the priorities.

- Also the case used as example seems to prove positive impacts.

- Nevertheless, the results are based on different assumptions that require broad consensus at all levels and concerning many aspects (intended to debate)

- The estimation and monetization of external costs is one of the most critical.

- Ultimately, the validation of the approach by the EU institutions and the MS is essential to provide with the legal basis and funding objective within the financial instruments

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SUPPORTING SLIDES

MAE common EU approach (basing grants on actual environmental outcomes)

A main aspect of the proposed approach to eco-incentive measures has to do with the way in which the grants are calculated and awarded, irrespective of the type of Actions that are considered as eligible by the funding instruments (for instance CEF). In fact, the MAE example considers green Actions incurring investment costs on LNG vessels (343M€), which is a type of eligible Action within CEF.

In this regard, what is important to be noticed about the approach is that the grant is calculated on the grounds of the actual socio-environmental outcomes attained by the Action. Whereas with the current approach, following the "funding gap" principle, the calculation of the grant is basically based (as regards investments) on the financial needs of the Action to reach the financial break even.

In other words, the eco-incentive approach, as proposed, leaves the financial risk to the market and modulates the grant based on the actual external cost savings that the Action is demonstrating, making the funding conditional upon results (this is why a common reference to the external cost calculations is so critical in this approach).

Conversely, the "funding gap" approach, which for instance is driving the current EU support through the CEF work programs, modulates the grant based on the financial risks that the Action demonstrates, regardless of the intensity of the actual external cost savings that the Action brings.

Therefore, one question which is raised to the debate by the study is whether the funding instruments (for instance CEF) should consider other possible means to award the grants, based on actual socio-environmental merits that could accelerate the uptake of the market towards the greenest Actions possible (the ones with the highest savings, not with the highest financial risks).

As well, under the eco-incentive approach the grant might be directed not directly through the promoter of the Action (supply approach) but also indirectly through the users (demand approach) in order to attain additional effects regarding the optimization and integration of transport which also contribute to improve sustainability.

Basically, these two aspects (enabling grants based on actual socio-environmental outcomes and felxibilizing the funding instrument to allow a demand approach) are the main issues that the MAE study could bring to the debate on CEF2.

Ultimately, in a context where very ambitious environmental targets and strategies are being set (short, mid and long term), the eco-incentive approach for EU/MS grants is just aimed at raising to the debate an additional way to accelerate the transition towards a sustainable transport behaving. Therefore, this approach is not intended to replace the "funding gap" approach in this field (which for instance has proved to be very effective for pilot Actions), but to complement it in order to improve the effectiveness of the different incentive mechanisms supported by the EU and the MS (including charging measures, grants and other financial support such as EFSI, financial instruments, etc.)
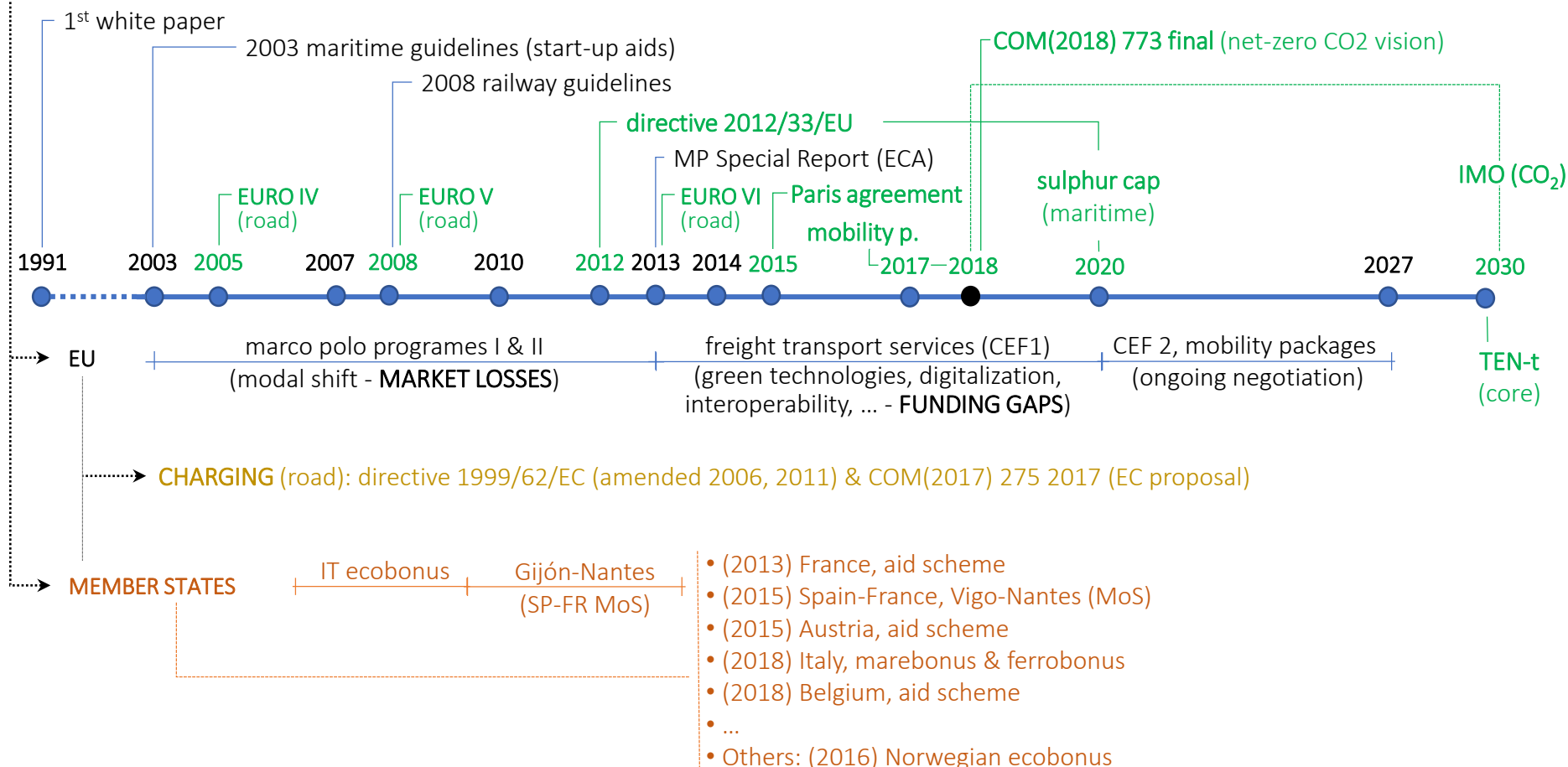
Framework

SUPPORTING SUSTAINABLE FREIGHT TRANSPORT

Goals: reducing carbon emissions, air pollution and social costs

Means of achievement: Integration, Optimization, Modal balance, Resource efficiency, Technology, Clean fuels, etc.

1st white paper
2003 maritime guidelines (start-up aids)
2008 railway guidelines
directive 2012/33/EU
COM(2018) 773 final (net-zero CO2 vision)
MP Special Report (ECA)
EURO IV (road)
EURO V (road)
EURO VI (road)
Paris agreement
mobility p.
sulphur cap (maritime)
IMO (CO_2)

1991 | 2003 | 2005 | 2007 | 2008 | 2010 | 2012 | 2013 | 2014 | 2015 | 2017 | 2018 | 2020 | 2027 | 2030

EU
marco polo programes I & II (modal shift - **MARKET LOSSES**)
freight transport services (CEF1) (green technologies, digitalization, interoperability, ... - **FUNDING GAPS**)
CEF 2, mobility packages (ongoing negotiation)
TEN-t (core)

CHARGING (road): directive 1999/62/EC (amended 2006, 2011) & COM(2017) 275 2017 (EC proposal)

MEMBER STATES
IT ecobonus | Gijón-Nantes (SP-FR MoS)

- (2013) France, aid scheme
- (2015) Spain-France, Vigo-Nantes (MoS)
- (2015) Austria, aid scheme
- (2018) Italy, marebonus & ferrobonus
- (2018) Belgium, aid scheme
- ...
- Others: (2016) Norwegian ecobonus

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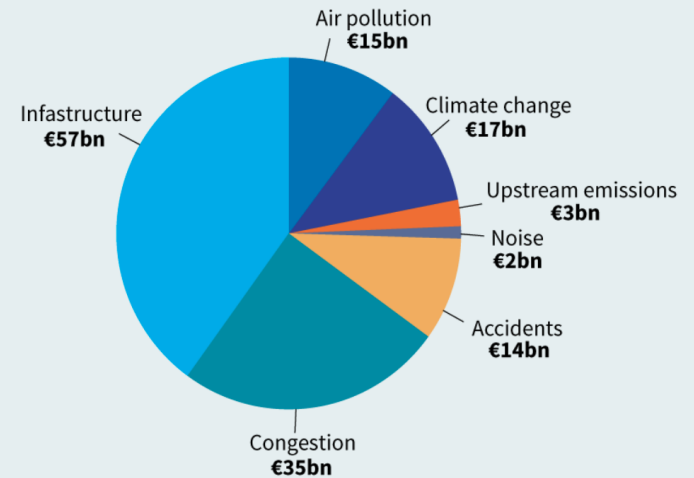
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Preliminary assumptions for the MAE example (i)

External costs on infrastructure (provision and maintenance) are excluded for the maritime and the road transport.
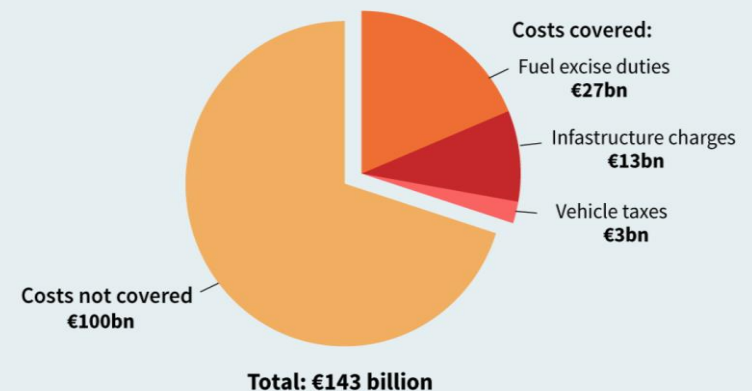
- Maritime transport is already paying for the port infrastructure (port dues)

- Road transport seems to not be paying all infrastructure costs. However, there are charging measures for the road on the debate (COM(2017)0275 on the amending of Directive 1999/62/EC)

Assumption: Level playfield for the modes of transport with regards to socio-environmental externalities

**The external costs of heavy goods vehicles (in bn euro)**

- Air pollution €15bn
- Climate change €17bn
- Upstream emissions €3bn
- Noise €2bn
- Accidents €14bn
- Congestion €35bn
- Infrastructure €57bn

How much of the external costs of trucks are being covered?

Costs covered:
- Fuel excise duties €27bn
- Infrastructure charges €13bn
- Vehicle taxes €3bn
- Costs not covered €100bn

Total: €143 billion

Source: CE Delft, 2016. Revenues from HGV taxes and charges in the EU28 in 2013. Addendum to 'External and infrastructure costs of HGVs in the EU28 in 2013', Delft: CE Delft

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# Preliminary assumptions for the MAE example (ii)
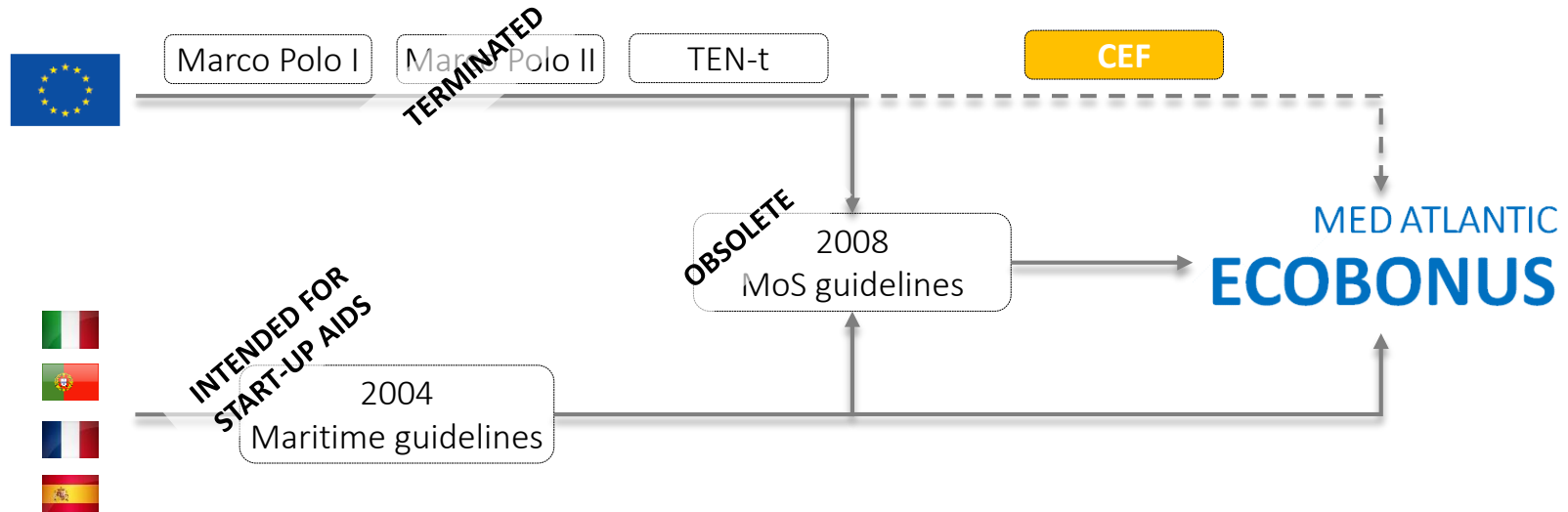
- It is unlikely that the 2004 maritime guidelines are amended (variety of topics)

- 2008 motorways of the sea guidelines are more likely to be amended to meet the CEF standards on aid's maximum intensities and duration

- MAE example takes 5 years as a reference

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Ex-ante analysis

The simulation implements **THREE TOOLS** in a sequence:

1 The **external cost calculator** estimates the merit and calculates the eco-incentive per unit and per specific line

2 The eco-incentive feeds the **calibrated transport model** as a virtual discount on the sea rate, returning the following impacts:

- On modal (back) shift → new shares
- On the total externalities savings due to (i) the green action (GOAL) and (ii) the modal shift (CONSEQUENCE)
- On the total eco-incentive given (BUDGET NEEDS)
- On the additional incomes to shipowners as a result of the modal shift effect

3 The **shipowners' perspective tool** performs a basic financial assessment taking the additional incomes against the direct costs that would be incurred by shipowners as a result of the green action

3 SHIPOWNER PERSPECTIVE

1 EXTERNAL COST CALCULATOR

2 CALIBRATED TRANSPORT MODEL

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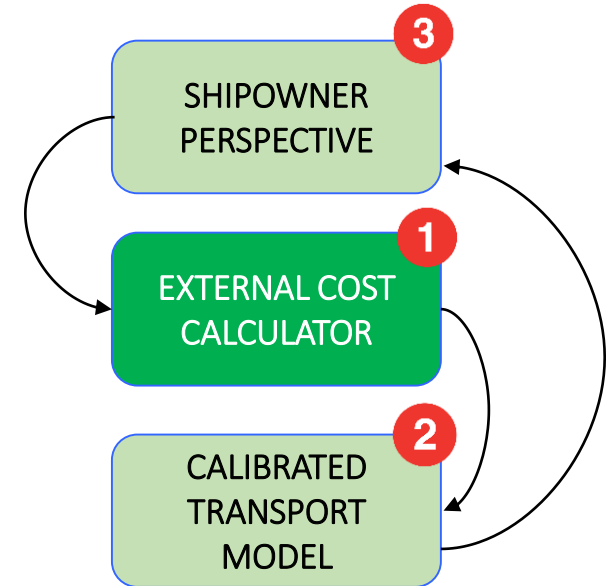
Shipowners perspective (example West Med)

Line details	BCN-GEN	BCN-CIV	BCN-LIV	VAL-SAL	VAL-LIV
	Barcelona Genoa	Barcelona Civitavechia	Barcelona Livorno	Valencia Salerno	Valencia Livorno
	Mediterranean Sea	Mediterranean Sea	Mediterranean Sea	Mediterranean Sea	Mediterranean Sea
Fuel saving per trip	9.311 €	19.812 €	9.334 €	22.876 €	17.384 €
Induced modal shift	1 K units	33 K units	17 K units	32 K units	22 K units
Unit net contribution	400 €	580 €	540 €	560 €	580 €
Indirect benefits	342.549 €	19.130.713 €	9.035.129 €	17.770.427 €	12.613.527 €
Unit investment	23.362.069 €	29.913.793 €	15.172.414 €	18.103.448 €	18.103.448 €
Incremental LNG inv.	23.362.069 €	59.827.586 €	30.344.828 €	36.206.897 €	36.206.897 €
cost of LNG Kw	667 €	598 €	702 €	754 €	754 €
Annual fuel saving	2.904.954 €	12.362.770 €	2.912.153 €	7.137.159 €	5.423.849 €
Additional income/investment	1%	32%	30%	49%	35%
Additional income/operation	1%	8%	7%	13%	13%
WITH **NPV**	6.240.147 €	79.797.641 €	6.301.793 €	49.755.647 €	28.498.696 €
IRR	11%	25%	11%	26%	19%
Payback	14 years	5 years	14 years	6 years	7 years
WITHOUT NPV	5.712.920 €	64.441.166 €	-1.198.004 €	35.571.241 €	18.247.189 €
IRR	11%	20%	7%	19%	14%
Payback	14 years	7 years	NEVER	7 years	9 years

- The **financial returns** of the investment are **clearly improved** and the **paybacks are reduced**
- Only in one case the eco-incentive is determinant to the viability of the investment
- The **co-financing rate** for the shipowner would be placed over **30%**
- The weight over operating costs remains **within state aid rules limits** for max. intensities

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Possible scheme implementation
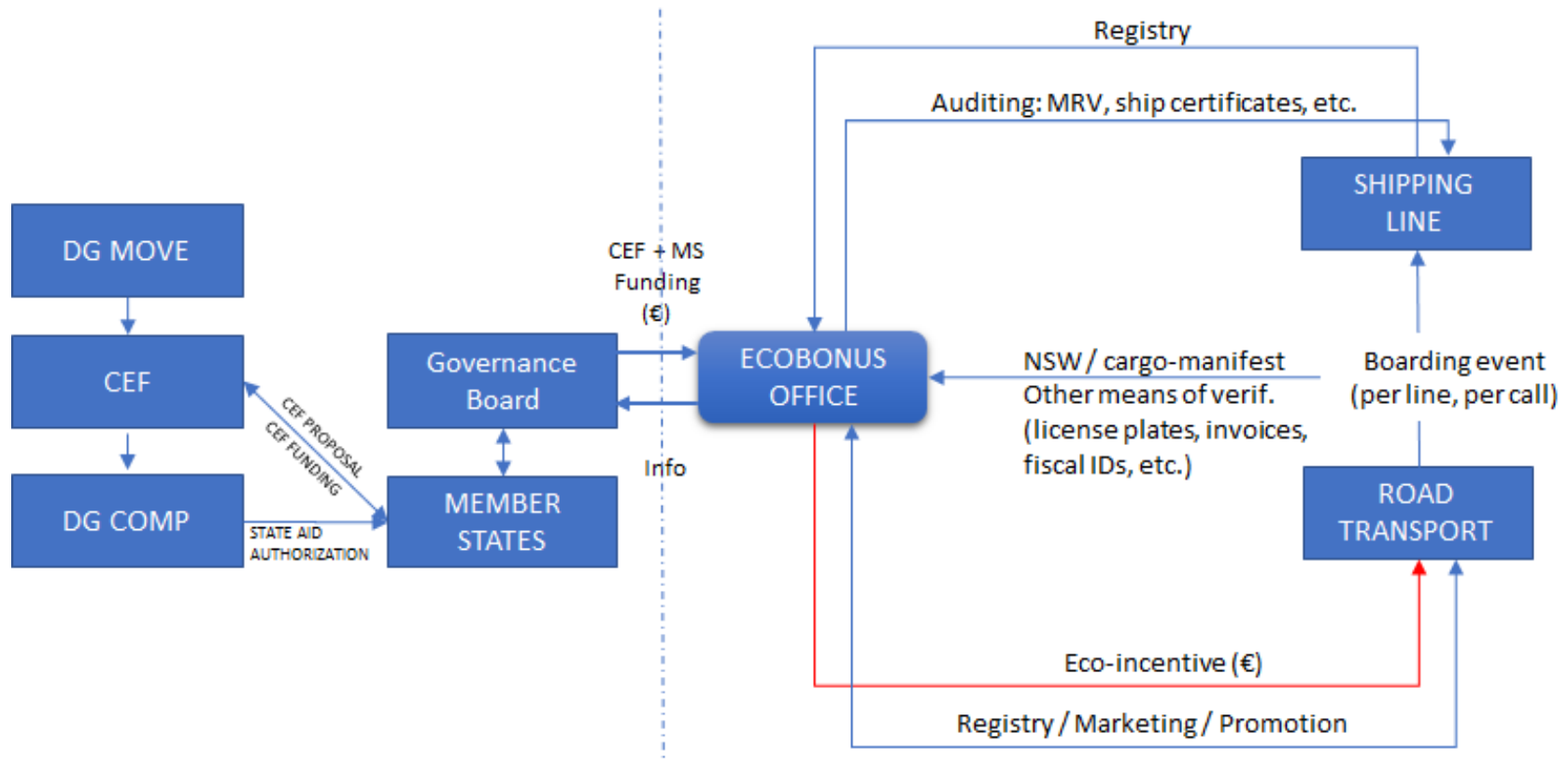
- Minimize the risk of fraud
- Minimize additional bureaucracy
- Demonstrate the performance achieved
- Meet the operational structures of the EU funding program to which the scheme is submitted (for instance CEF)

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