

# Meeting with Henrik Hololei, Director General, DG MOVE

and his Team

Ref. Ares(2017)2634495 - 24/05/2017

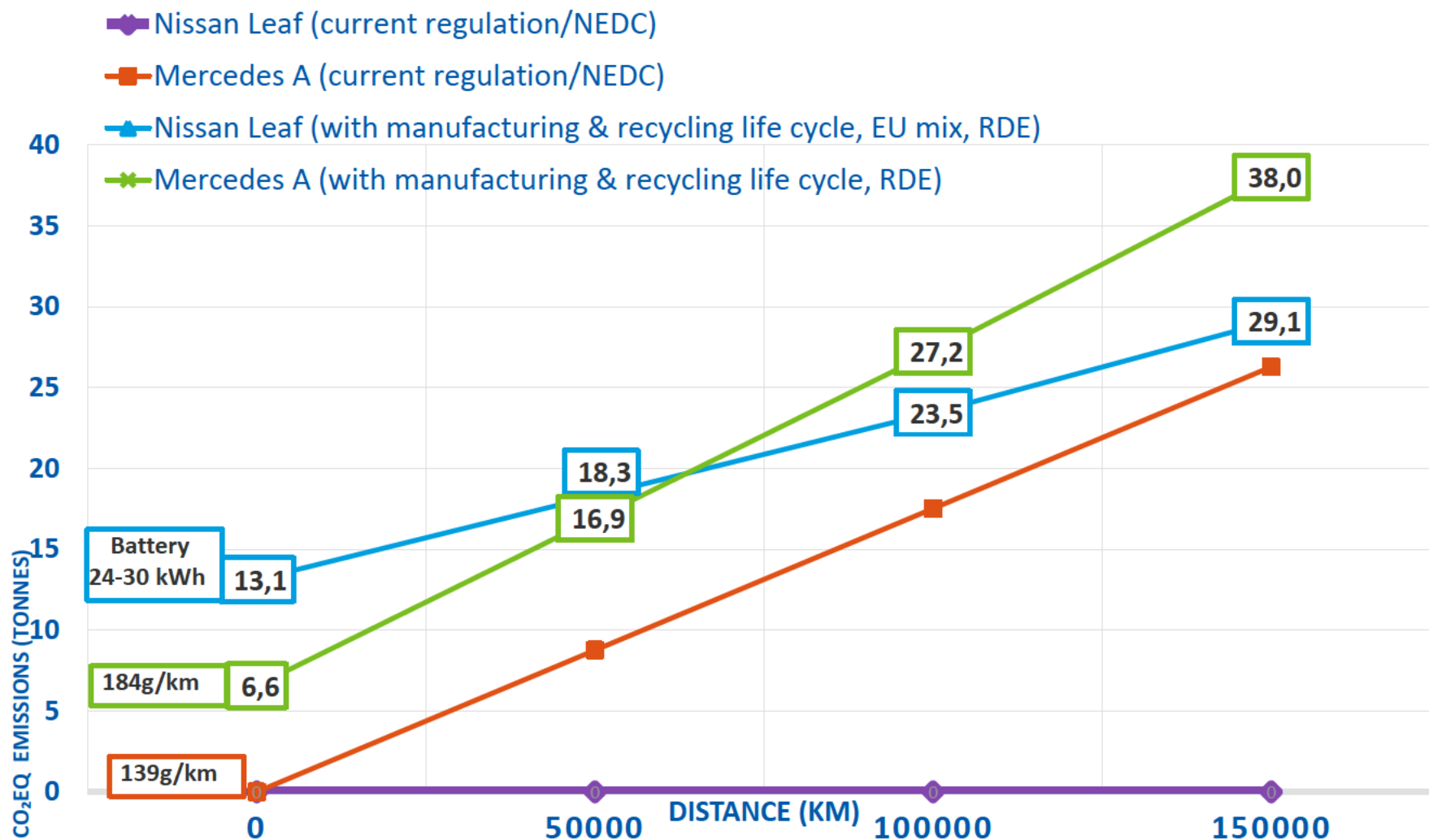


# Agenda

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- Low carbon mobility
- Renewables in transport and vehicle efficiency standards post- 2020
- Marine fuels: implementation of IMO decision

## Life cycle GHG Impact: Nissan Leaf vs Mercedes A class



Sources: Concawe 2017, based on studies from Trondheim University, JEC & ICCT

## Life Cycle comparison of e-vehicles with similar sized ICE vehicles

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### The analyses demonstrate:

- Marketing and regulating e-vehicles on a claim of zero tail pipe CO<sub>2</sub> emissions does not represent the full picture
- Manufacturing of batteries for e-vehicles is CO<sub>2</sub> emissions intensive
- Replacing the battery before the normal end of life for the whole vehicle would result in a step increase in CO<sub>2</sub> emissions for the e-vehicle
- Our long term policy for vehicles and their energy should take account of the full life-cycle decision costs and benefits
- This gives us a clearer picture of how to allocate support for new technologies

## Addressing air quality: Concawe study (2016)

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### Particulate Matters (PM):

- From Euro 4 onwards, dramatic reduction of PM levels from diesel vehicles, in both official certification tests and real driving conditions.
- The major contribution to the total primary PM emissions is and will be the **domestic sector**.
- By 2020, primary PM emissions from road transport will mainly consist of non-exhaust emissions from **tyres, brakes or road abrasion** (i.e. independent from the vehicle technology).

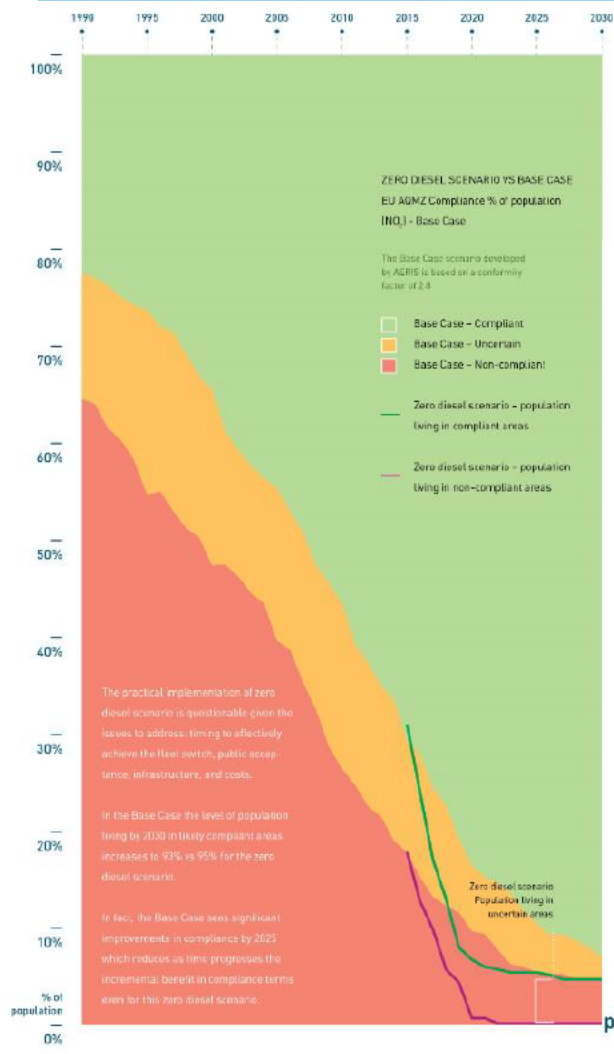
### NOx:

- Euro standards have not been as successful at reducing NOx as for PM: reductions recorded in official certification tests, but not always achieved in real driving conditions.
- Transport is the main – but NOT the only - source of NOx in cities.
- EURO 6 is successful: Fully compliant diesel vehicles already on the road: e.g. BMW X5 with SCR technology.
- Addressing NOx in a cost-effective way:
  - Robust implementation of Euro 6, with RDE and WLTP
  - Support for Fleet turnover & removal of worst emitters
  - Enforcement of maintenance standards
  - Address residual areas of non-compliance through targeted measures (e.g. electric buses)

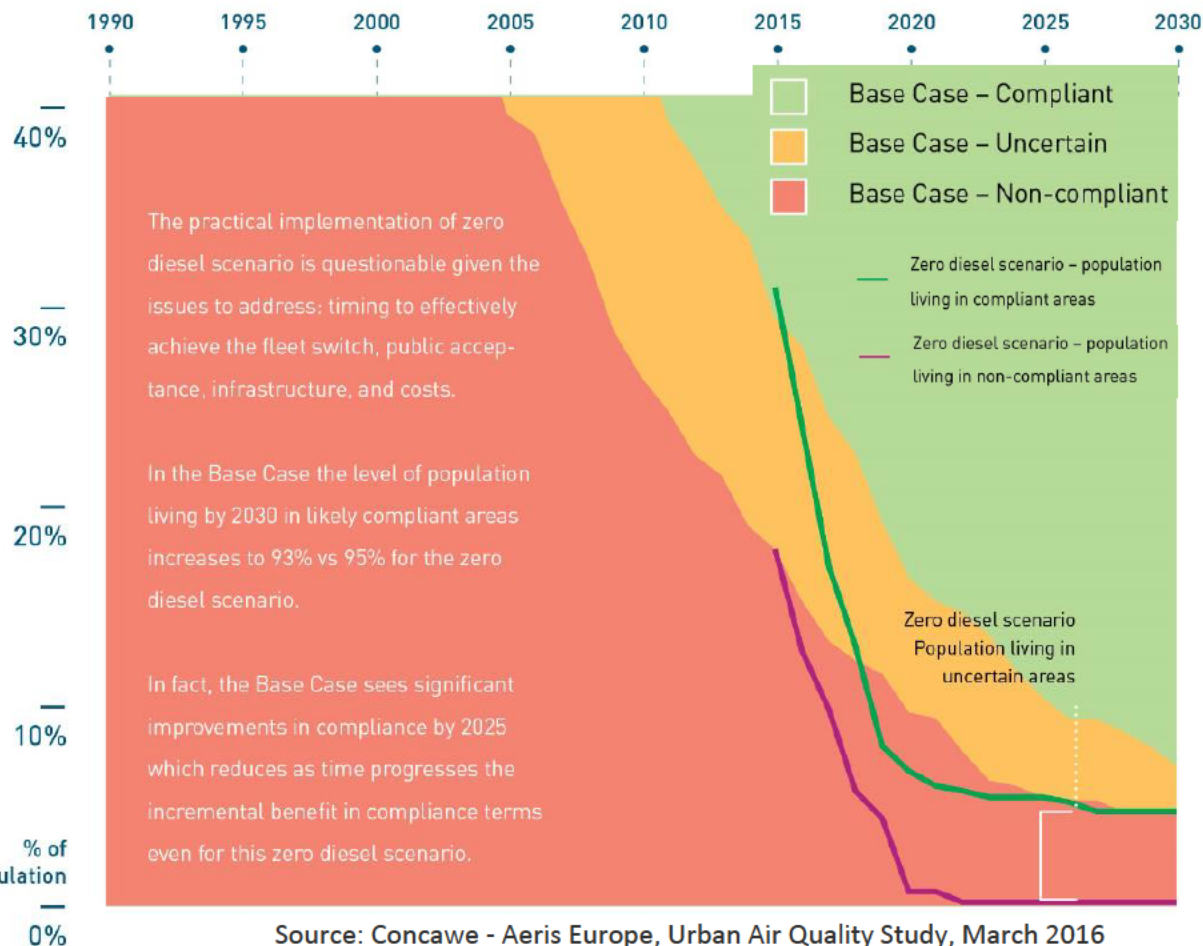


# Addressing the Urban Quality challenge

Fleet turnover and full EURO6/RDE implementation substantially meets EU air quality objectives

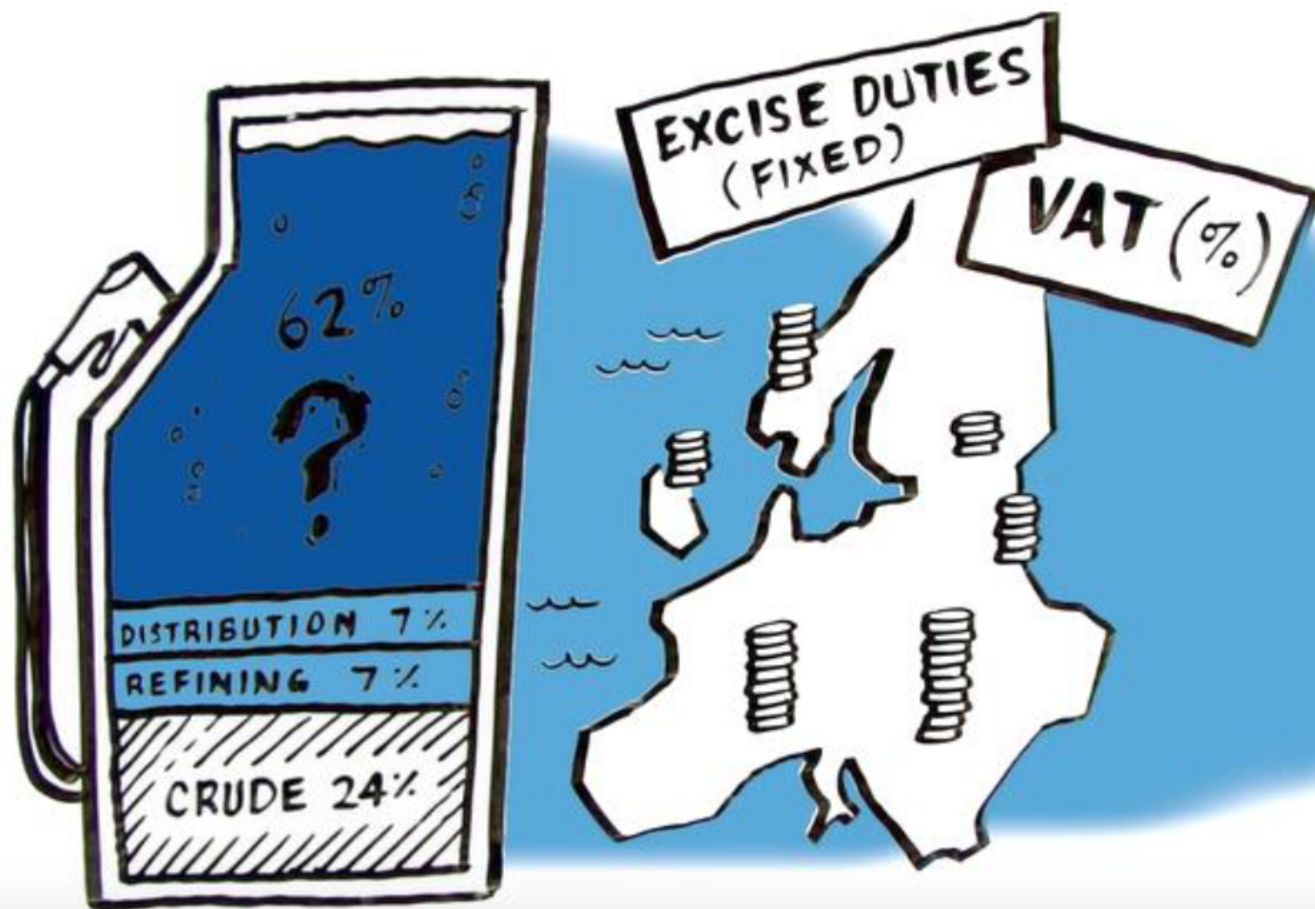


Base case on a regular fleet turnover and a conformity factor is equal to 2.8 on average over the period.

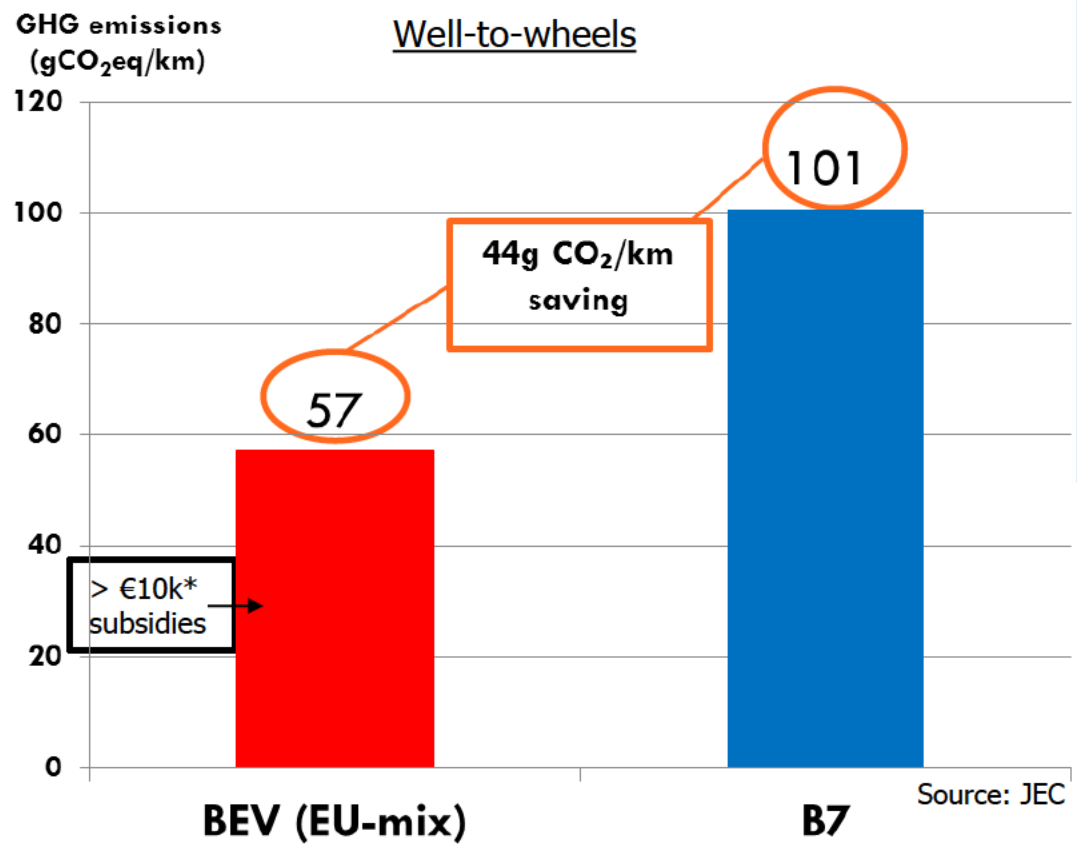


Source: Concawe - Aeris Europe, Urban Air Quality Study, March 2016

## The forgotten incentive – lack of fuel tax



# Current vehicle regulation can drive solutions that have very high carbon costs



INCREMENTAL COSTS (per vehicle):	
Manufacturing cross subsidy	≈ €4k
Government purchase grant	≈ €5k
Loss of fuel excise duties	≈ €5k
Less fuel savings	≈ -€4k
<b>TOTAL</b>	<b>≈ €10k</b>

**CO<sub>2</sub> savings 44g x 200k Km = 8800 Kg**

**8800 Kg savings for €10k = €1136 / tonne CO<sub>2</sub>**

**Decarbonisation by electrification is expensive**

\* Manufacturer cross-subsidy, government purchase grant, loss of fuel excise taxes – adjusted for fuel savings



## What about costs for the taxpayer?

### Share of EVs in total EU car fleet

250,000,000 –  
Number of all cars  
in the EU

375,000 –  
Number of EVs in  
the EU

0.15% - EVs share  
in EU car fleet

### Associated costs

€10,000 –  
subsidy per car  
(see previous  
slide)

€10,000 x 375,000  
(no. of EVs) =  
€3,750,000,000

### Economic burden to subsidize EVs

0.15% EVs share  
in EU car fleet -  
€3,750,000,000

1%  
-  
€25,000,000,000




5%  
-  
€125,000,000,000

Full fleet turnover  
at incentives  
250,000,000 cars

€2.5 Trillion !







## Reducing Fossil Fuel imports to Europe. How much per car?

### ICE vehicles – import value per car

	135g/km	95g/km	75g/km
			
Crude cost	\$3,200*	\$2,255*	\$1,780*

\*Based on 200,000 km, crude oil \$50/bbl. Diesel ICE cars

### Battery Electric vehicles – import value per car

	90 kWh 	24.2 kWh 	27 kWh 
			
Car price	€92,000	€38,000	€37,000
Fuel battery price	€22,500	€6,000	€6,750
Battery Cell price	€13,500?	€3,600	€4,050

\*Based on fuel battery price €250/kWh. Battery cell cost €150/kWh

## Reduction of Import Dependency

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- Electric cars may not reduce import dependency.
- We may swap oil 'dependency' for battery cell and battery materials dependency.
- Europe is far behind on battery manufacture.
- The full picture of battery materials supply should be examined before we can show improvement in international trade balance from large-scale light transport electrification.

## Industrial Opportunity for Europe?

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- **EU – Leader in the ICE production, especially diesel**
- **BATTERIES:** EU car producers use batteries developed by Asian producers, such as Panasonic, LG Chem and Samsung.
  - Panasonic supplied 38% of the electric vehicle batteries over the past 12 months
  - LG Chem – Audi, Renault, Daimler, Volvo
  - Panasonic – Volkswagen, (Tesla & Ford)
  - “In a five-year time frame, we are looking at Panasonic, LG and Samsung SDI making up about 80% of the market” Cosmin Laslau, a battery expert with Lux Research (WSJ, Auto Industry’s Ranks of Electric-Car Battery Suppliers Narrow)
- **JOBS:** *“A switch to sales of only zero-emission cars puts thousands of German auto industry jobs at risk since the powertrain of an electric car requires only a tenth of the staff to be assembled when compared with a combustion-engined equivalent, which needs more workers to assemble cylinders, spark plugs, and gearboxes”* (source: Reuters, 8 Sept 2016, “German push to ban combustion-engine cars by 2030 wins support”)

## Renewables in transport: RED II

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- Transport can play an important role in achieving the 27% renewables in 2030 target
- The combination of high quality liquid fuels (including sustainable biofuels) and efficient internal combustion engine is a very effective way to:
  - *Reduce (Life-cycle) GHG emissions from transport*
  - *Address air quality issues*
  - *Increase use of renewable energy*
- Two big advantages of biofuels vs. other alternative technologies in transport:
  - *No need of new infrastructures*
  - *The GHG benefits can be delivered immediately by the current fleet of cars and trucks*
- The development of advanced biofuels requires R&D and long-term investments. Therefore regulatory certainty and predictability are essential. The advanced biofuels mandate provides a strong investment signal.
- In some cases the development of advanced biofuels may be underpinned by and stem from the evolution of the production of first-generation biofuels.



## Renewables in transport: RED II

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- All biofuels – both first-generation and advanced – must count provided they meet robust and science-based sustainability criteria
- Advanced biofuels can be increased by promoting diversified biofuel production technologies and a broad range of raw materials including waste-based feedstocks.
- All biofuel targets (including the proposed one on advanced biofuels) must be realistically achievable. A “reality check” is needed and, if necessary, target must be revised
- The single market needs to be preserved.
- Marine and aviation: support for a multiplier factor to stimulate use of sustainable biofuels
- The RED II is blind to the GHG benefits of certain technologies, and as such does not provide incentive to the development of e.g. very efficient non-renewable liquid fuels or the use of sustainable renewable hydrogen in the fuels production process. Solutions should be sought to allow such developments to be captured under the RED II as an alternative compliance mechanism, expressed for example as an equivalent renewable advanced fuels.

## Vehicle efficiency standards post- 2020

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### In the short-term, CO<sub>2</sub>-vehicle efficiency standards should:

- Be based on ambitious but realistic TTW targets which enable the contribution of all vehicle drive-train technologies in a technology neutral way.
- Recognise the contribution of fuel improvements in the vehicle emission standards. Biofuels' GHG emission savings should be accounted for.
- Evaluate how an LCA approach could be introduced in vehicle CO<sub>2</sub>-efficiency regulation, in-line with the review process of the regulation.
- Revise the non-compliance penalty downwards.

### In the medium-term

- Assess the real GHG savings based on LCA CO<sub>2</sub> emissions.

### In the long-term

- Overcome the current sectoral regulatory approach and adopt an economy-wide approach to reduce emissions.
- A regulatory transition should lead to the eventual convergence of the cost of GHG emission reduction in transport and other sectors.

## Marine fuels: implementation of IMO decision

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- **The IMO has taken its decision for a global switch to 0.5 % sulphur in marine fuels as of 1.1. 2020 (outside of the SECAs)**
- **Global** compliance with IMO's decision is needed to avoid:
  - Competitive distortions between regions, ports & fuel suppliers; and
  - Reputational risks for the relevant industries.
- All world regions should ensure
  - Consistent implementation of IMO's decision and of any agreed transitional measures.
  - Effective enforcement measures in both national and international waters.
  - Global adoption of uniform, clear and easily enforceable measures.
  - Fuel quality guidelines, while maintaining options open to allow development of new fuel formulations.

# THANK YOU FOR YOUR ATTENTION

This document was presented by:

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