

Status of European Transportation Regulations Related to Renewable Fuels

Heather DC Hamje

Science Executive, Fuels Quality and Emissions

CRC LCA Workshop

27th October, 2015



CONservation of Clean Air and Water in Europe

The Oil Companies' European association for health, safety and environment in refining and distribution
(founded in 1963)



Operating Principles:

- ✓ Sound science
- ✓ Cost-effectiveness of options
- ✓ Transparency of results

- Automotive Emissions & Fuel Quality
- Air Quality
- Water/Soil Quality & Waste
- Oil Pipelines
- Safety
- Refinery Technology Support
- Health Science
- Petroleum Products
- Risk Assessment
- REACH & GHS Implementation



Membership of the Association



- ▶ 43 members, representing ~100% of European refining capacity
- ▶ Open to companies owning refining capacity in the EU

Reproduction permitted
with due acknowledgement





The **JEC** research collaboration was initiated in 2000 by:

- **JRC**: Joint Research Centre of the European Commission
- **EUCAR**: European Council for Automotive R&D
- **CONCAWE**: Research Association of the European Oil Refining Industry

Collaborative Projects

➤ 2000-2014: Projects Completed

- Well-to-Wheels (WTW) Study Versions 1, 2b, 2c, 3
- WTW Study Version 4: enhancing pathways and vehicles
- Impact of ethanol on vehicle evaporative emissions (SAE 2007-01-1928)
- Impact of ethanol in petrol on fuel consumption and emissions
- JEC Biofuels Study for a 2020 time horizon (2011, updated in 2014)
- <http://ies.jrc.ec.europa.eu/about-jec>

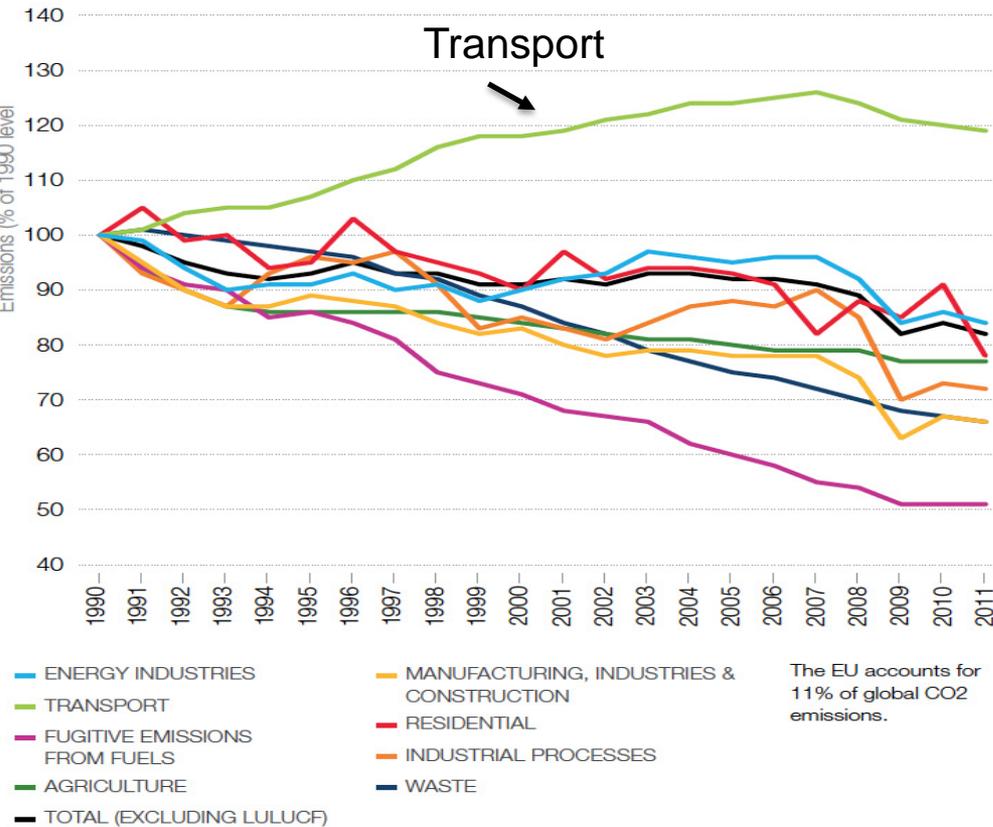
➤ 2015: Projects in progress

- Expected update 2017-18: JEC WTT, TTW and WTW Reports (Version 5)
- Planned update 2016: JEC Biofuels Study



CO₂ EMISSIONS TREND BY SECTOR

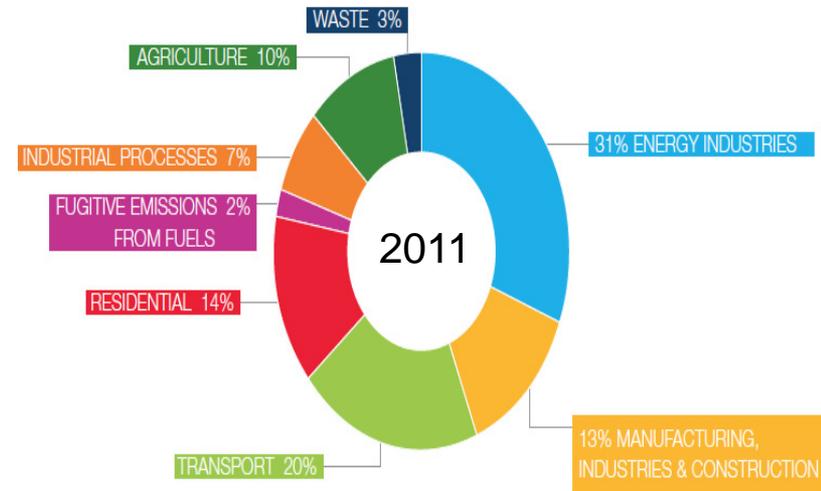
Source: European Commission



GHG EMISSIONS BY SECTOR IN THE EU

N 2011

Source: European Environmental Agency, 2013

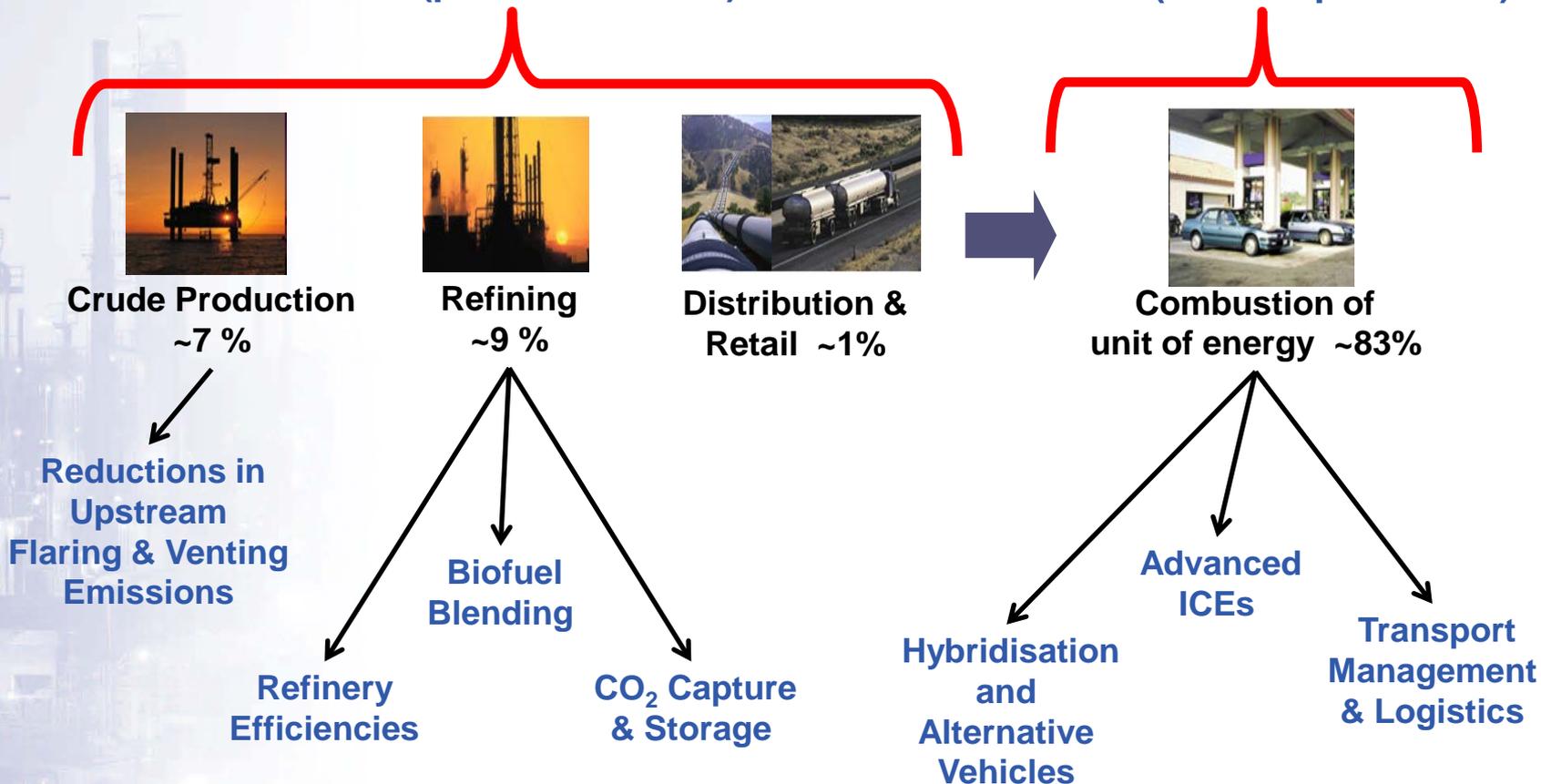


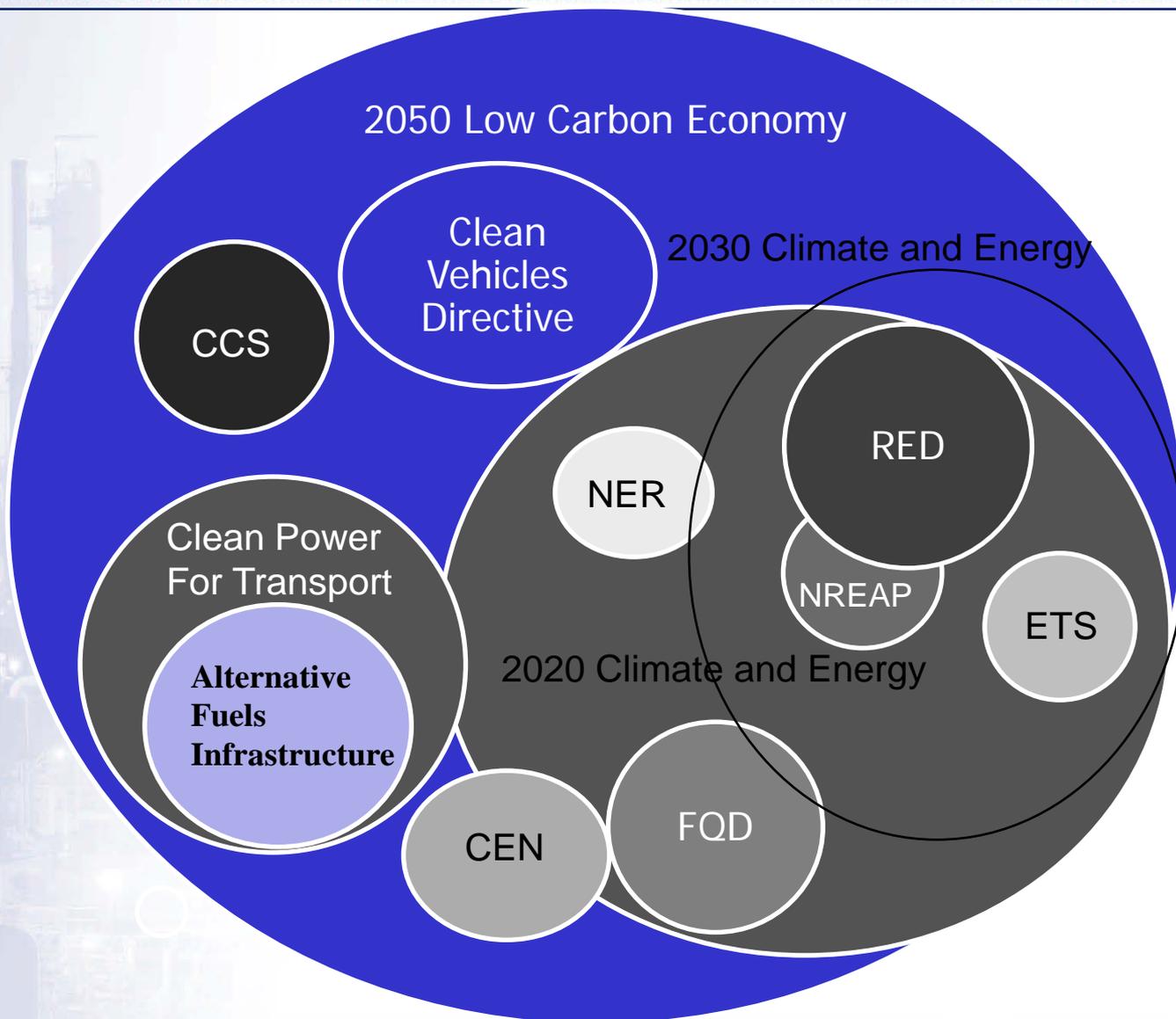
Reproduction permitted with due acknowledgement



Well-to-Tank (WTT)
~17% (production side)

Tank-to-Wheels (TTW)
~83% (consumption side)





Reproduction permitted with due acknowledgement



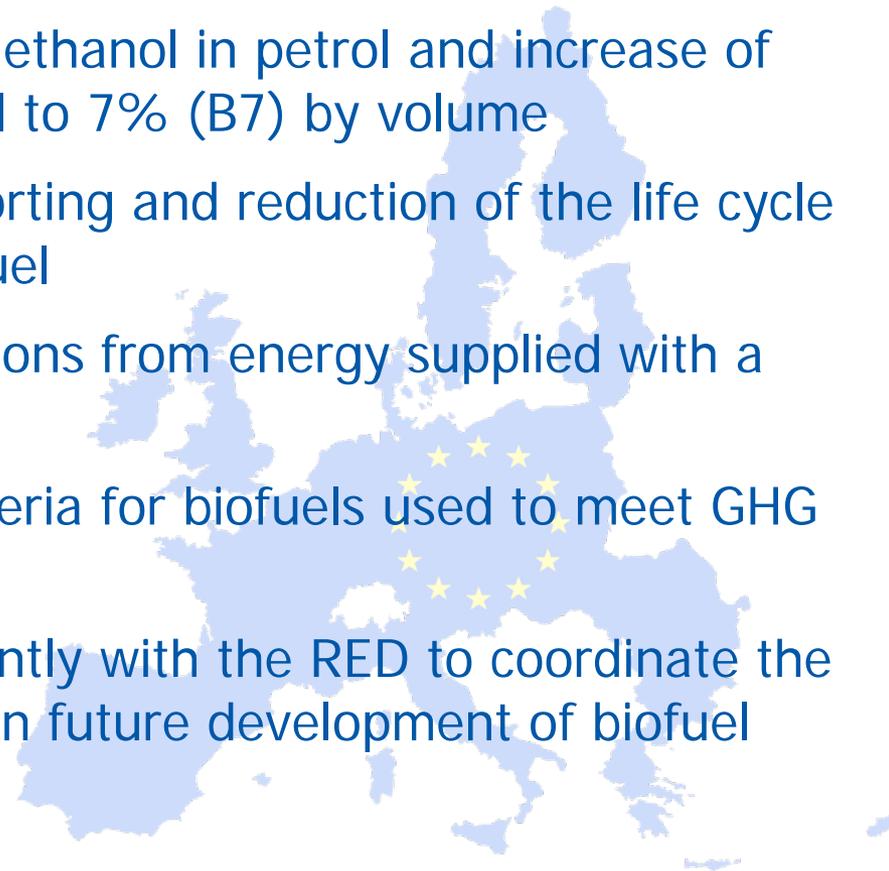
- ▶ Renewable Energy Directive was approved by the European Parliament in December 2008
- ▶ By 2020, 20% share of renewables in final energy consumption, 20 % increase in energy efficiency
 - ▶ 10% target for RES in transport
 - ▶ National Renewable Energy Action Plans required
- ▶ GHG emission saving from the use of biofuels shall be at least 60% for biofuels produced in installations starting operation after 5 October 2015
- ▶ For installations in operation before 5 October 2015 biofuels shall achieve a GHG emission saving of at least 35% until 31 December 2017, and at least 50% from January 2018
- ▶ Biofuels from waste, residues, non food cellulosic material, and lignocellulosic material will count twice for RES transport target
- ▶ No biofuels from carbon rich or biodiverse land
- ▶ Establishment of a committee for sustainability of biofuels

Reproduction permitted
with due acknowledgement



The 2009 amendment to the Fuel Quality Directive was aimed at:

- ▶ Further tightening environmental quality standards for a number of fuel parameters
- ▶ Enabling more widespread use of ethanol in petrol and increase of allowed biodiesel content in diesel to 7% (B7) by volume
- ▶ Introducing a mechanism for reporting and reduction of the life cycle greenhouse gas emissions from fuel
- ▶ Reduction in life cycle GHG emissions from energy supplied with a binding target of 6%
- ▶ Incorporation of sustainability criteria for biofuels used to meet GHG reduction requirement.
- ▶ Creation of specific Committee jointly with the RED to coordinate the energy and environment aspects in future development of biofuel sustainability criteria



Reproduction permitted
with due acknowledgement

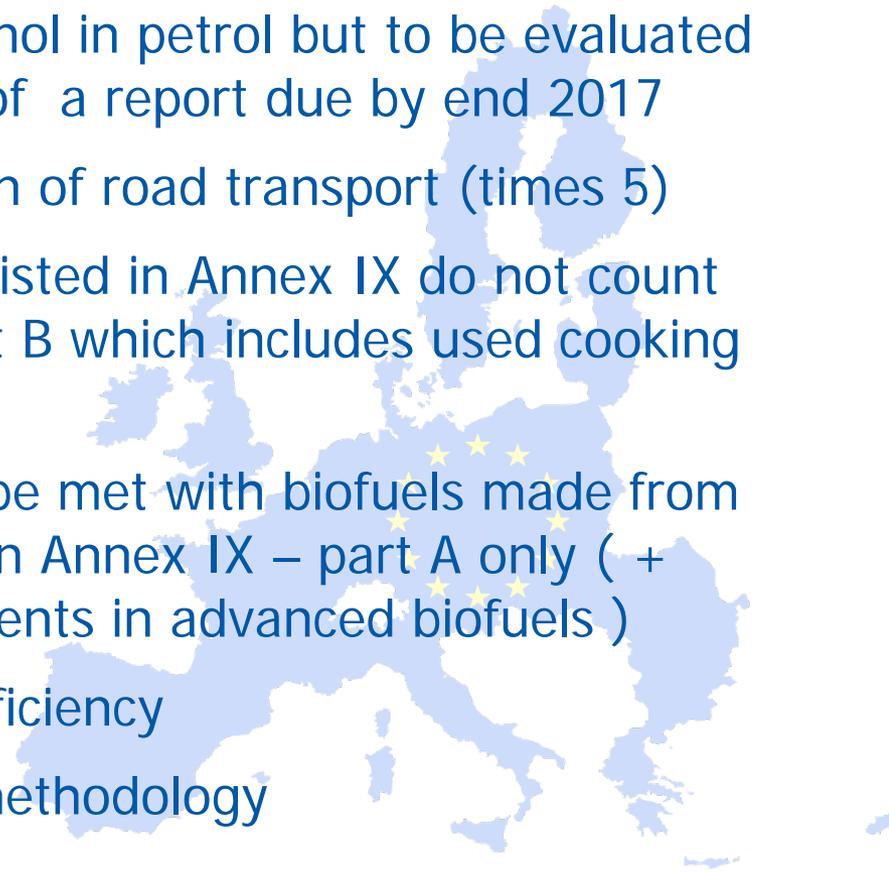


- ▶ European Parliament adopted RED/FQD review on April 28th 2015 after it's second reading
- ▶ Caps 1st Gen. biofuels at 7%. but member States can reduce this cap based on EU law
- ▶ Includes non-food energy crops under 1st Gen. if these crops are grown as main crops primarily for energy purposes on agricultural land
- ▶ An advanced biofuels national target to be defined 18 months after publication of the directive which the member state shall endeavor to achieve. The reference value is 0.5% in energy terms. Conditions for setting lower reference values are defined
- ▶ ILUC included in reporting only : in FQD by the Fuel Supplier and in RED and FQD by the Commission
- ▶ Double counting of biofuels from Annex IX (parts A and B) allowed towards the 10% renewables target

Reproduction permitted
with due acknowledgement



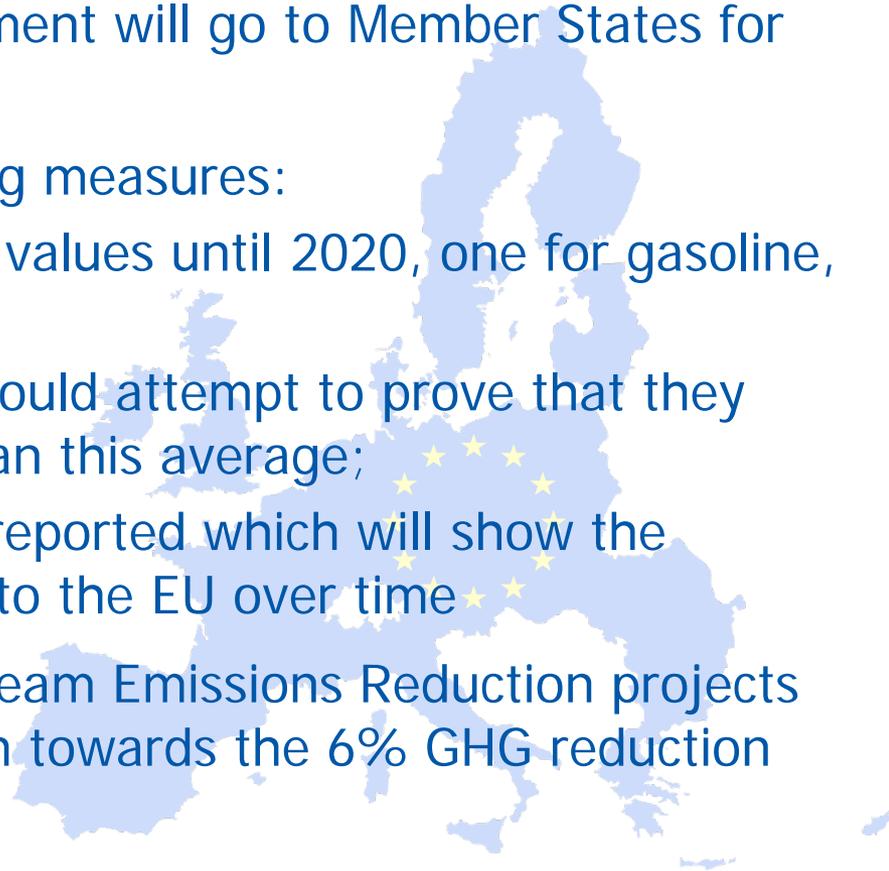
- ▶ Clear indications towards the need for a post 2020 policy, although without specific requirement to propose an FQD post 2020 target.
- ▶ No mandatory target on 6.5% ethanol in petrol but to be evaluated further by the Commission as part of a report due by end 2017
- ▶ High incentives for the electrification of road transport (times 5)
- ▶ Biofuels produced from feedstocks listed in Annex IX do not count towards the 7% CAP (including part B which includes used cooking oils and animal fat based biofuels)
- ▶ The reference target of 0.5% is to be met with biofuels made from feedstock and other fuels as listed in Annex IX – part A only (+ protection of already made investments in advanced biofuels)
- ▶ No sub-target of 12% on energy efficiency
- ▶ Likely need for standardization of methodology



Reproduction permitted
with due acknowledgement



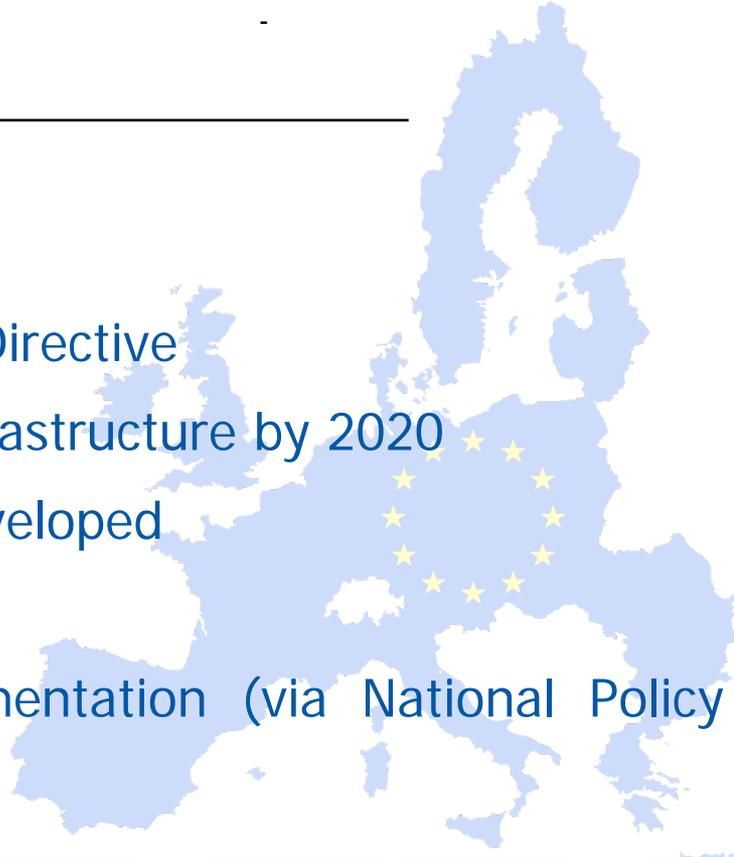
- ▶ Article 7a includes the 6% GHG intensity reduction from road transportation
- ▶ On December 17th, 2014 the Commission proposals approved by Council and not blocked by Parliament will go to Member States for implementation
- ▶ The proposals include the following measures:
 - ▶ EU wide GHG intensity default values until 2020, one for gasoline, one for diesel
 - ▶ No “opt in”, where suppliers could attempt to prove that they have a lower GHG intensity than this average;
 - ▶ Crude feedstock origins to be reported which will show the evolution of the mix coming into the EU over time
- ▶ EC is working to define how Upstream Emissions Reduction projects can be included in the contribution towards the 6% GHG reduction



Max. distance between refuel points (# units)	LNG	CNG	H2	Electricity
ROAD	400 km on TEN-T roads (#144)	150 km (# 654)	300 km (2) (#77)	8 Million (10 % publicly assessable)
MARINE	All main EU ports (#139) (1)	-	-	-

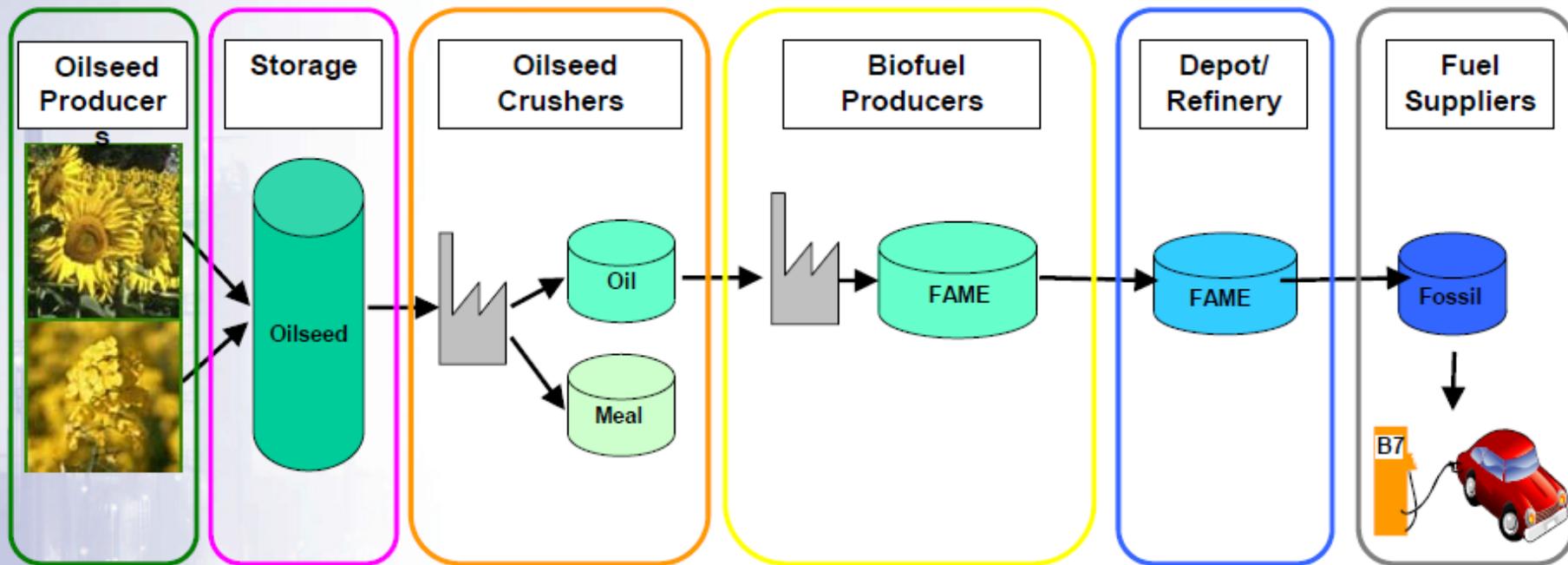
(1) % years later for inland waterway ports : 31.12.2025
(2) Only in member states with H2 already present (#14)

- As part of the Clean Power for Transport Directive
- Mandate to Member States to build up infrastructure by 2020
- EU-wide standards to be used or to be developed
- CEN standards for fuel labelling
- Reporting by Member States on implementation (via National Policy Framework)



Reproduction permitted with due acknowledgement





- ▶ Biofuels can bring environmental benefits but a robust and implementable certification system is needed to:
 - ▶ Encourage biofuel technology improvements that reduce GHG emissions and energy on a Well-to-Wheels basis
 - ▶ Avoid major biodiversity loss and deforestation

- ▶ Ideal characteristics of sustainability certification schemes:
 - ▶ Clearly demonstrate the environmental benefits, including favourable reductions in GHG and energy
 - ▶ Common approach across European countries with the potential for global reach
 - ▶ Chain of custody scheme to ensure that relevant information is passed along the chain from production to use
 - ▶ Measurement, auditing, and verification methodologies
- ▶ 18 Sustainability Certification “Voluntary” Schemes and 1 tool are currently approved by the EC
 - ▶ Need for further harmonization to avoid “cherry picking”
- ▶ CEN approved ‘Sustainably-produced biomass for energy applications’ (2012): Part 4. Calculation methods for GHG balance (EN16214)
 - ▶ But no requirement to use CEN standard
- ▶ There appeared to be other sources of variability between schemes
 - ▶ e.g. interpretation of RED requirements, which could give different results depending on the scheme methodology

Reproduction permitted
with due acknowledgement



- ▶ RED allows use of calculated actual values, default values or combination
 - ▶ Large amounts of information can't be transmitted through the custody chain
 - ▶ Actual values from cultivation can only be determined at the origin
- ▶ Recent communication from EC (DG Energy) to voluntary schemes provides additional guidance:
 - ▶ Default values can only be applied if the feedstock and process technology match the exact scope and description
 - ▶ All information needed for establishing compliance needs to be communicated through the chain of custody
 - ▶ It is necessary to split the total amount of emissions into all elements of the GHG emission calculation formula that are relevant
 - ▶ Voluntary schemes should lay down in detail how the required information is transmitted through the chain of custody and how the calculations are performed
 - ▶ For raw materials and interim products GHG emissions have to be provided in the unit g CO₂eq/dry-ton feedstock or g CO₂eq/dry-ton intermediary product



- ▶ Guidance on the correct usage of average values e.g. NUTS 2
- ▶ Additional guidance on application of feedstock factors to take account of energy losses from transportation, processing, drying etc.
- ▶ Guidance on use of co-product allocation factors
- ▶ Additional guidance on carbon capture and replacement
- ▶ Use of standard calculation values is recommended and justification of non-standard values for e.g. chemicals and energy inputs
- ▶ Recommends use of EU average value for electricity grid GHG where grids are linked across borders
- ▶ Required that all relevant information concerning the calculation of actual GHG emissions is made available to the auditors in advance of the planned audit



- ▶ Renewable fuels make an important contribution towards the EU meeting their renewable energy targets
- ▶ The legislative framework for GHG emissions reduction is well developed
- ▶ The Fuels and Renewable Energy Directive (ILUC directive) has recently been adopted by the European Parliament which includes ILUC in reporting only
- ▶ The EC proposals as a result of the FQD Article 7a review have been adopted
- ▶ The alternative fuel infrastructure directive encourages labelling to increase customer confidence in compatibility between fuels and vehicles
- ▶ Bio-certification is carried out by voluntary schemes approved by the EC
- ▶ Additional guidance has come out recently which has clarified interpretation of the RED
 - ▶ This will help with harmonization of the various approved schemes



Thank you for your attention!

Reproduction permitted
with due acknowledgement

