

Status of European Transportation Regulations Related to Renewable Fuels

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CRC LCA Workshop

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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

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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>

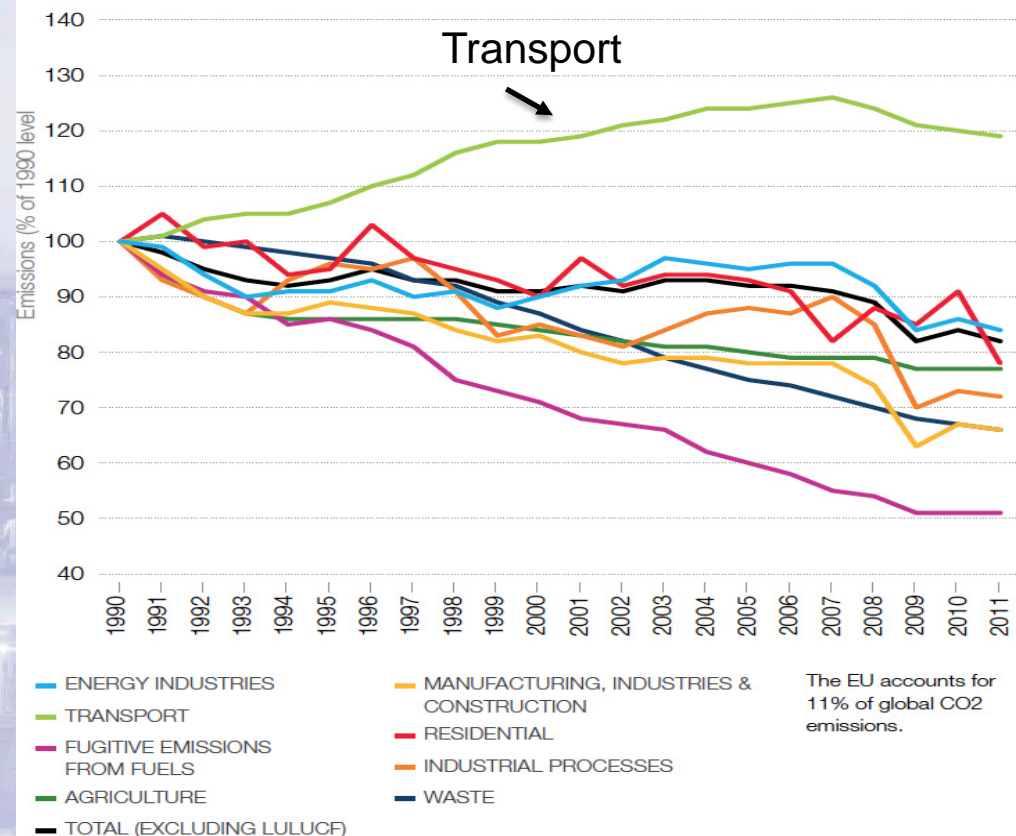
➤ 2015: Projects in progress

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



CO₂ EMISSIONS TREND BY SECTOR

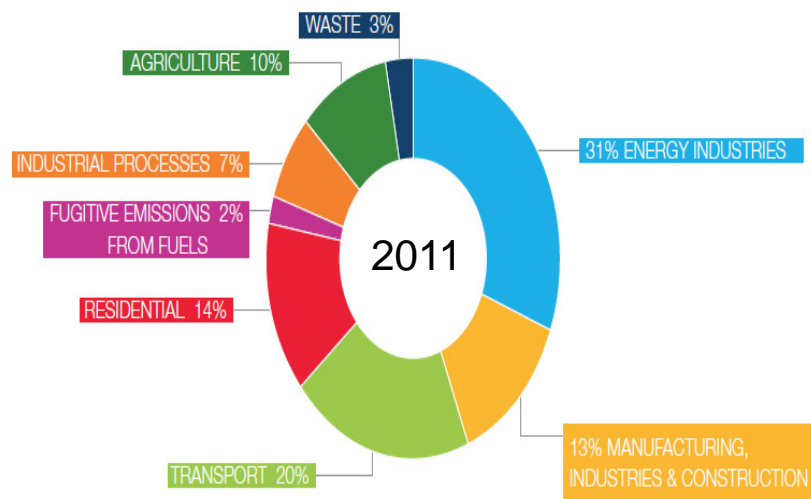
Source: European Commission



GHG EMISSIONS BY SECTOR IN THE EU

N 2011

Source: European Environmental Agency, 2013



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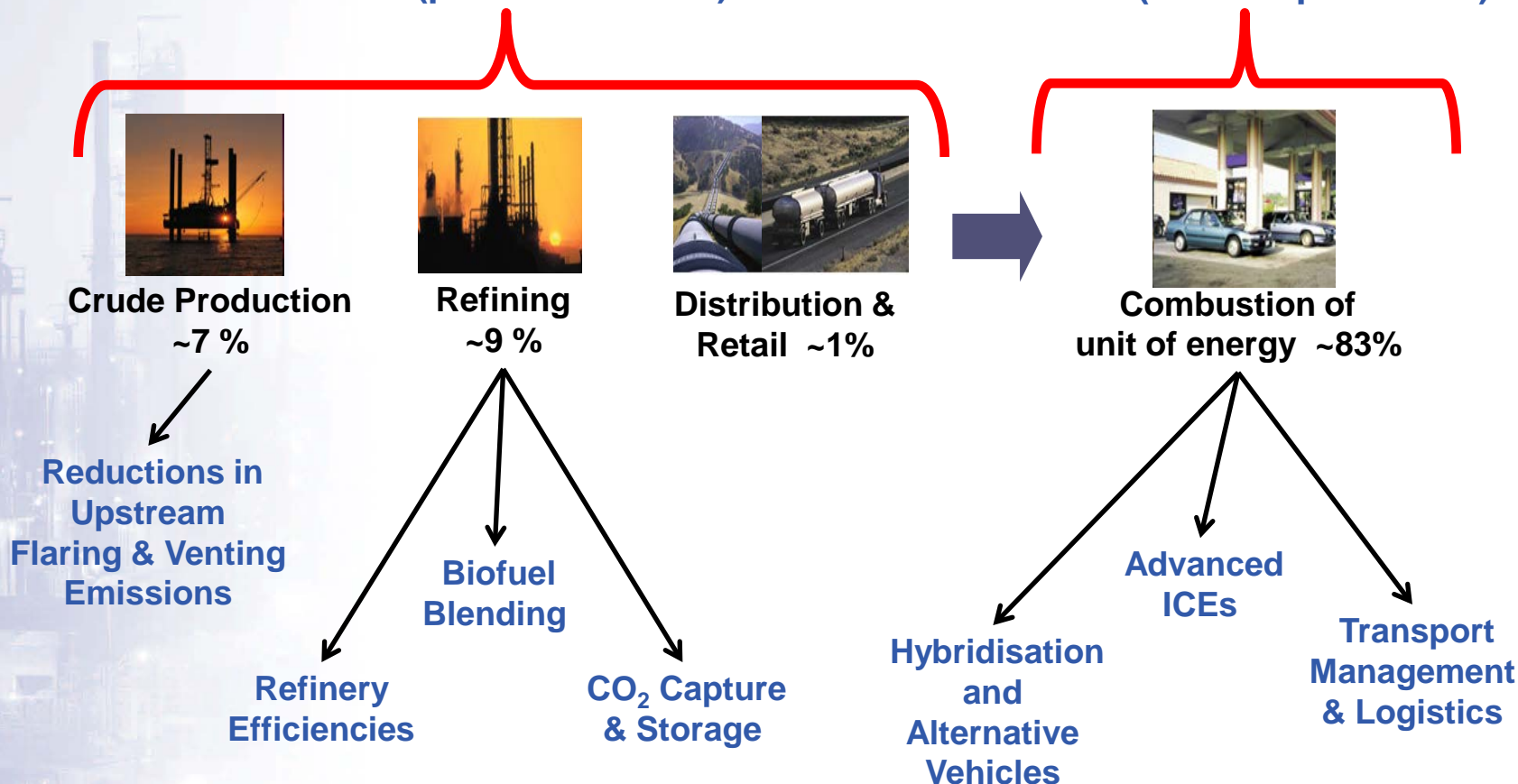


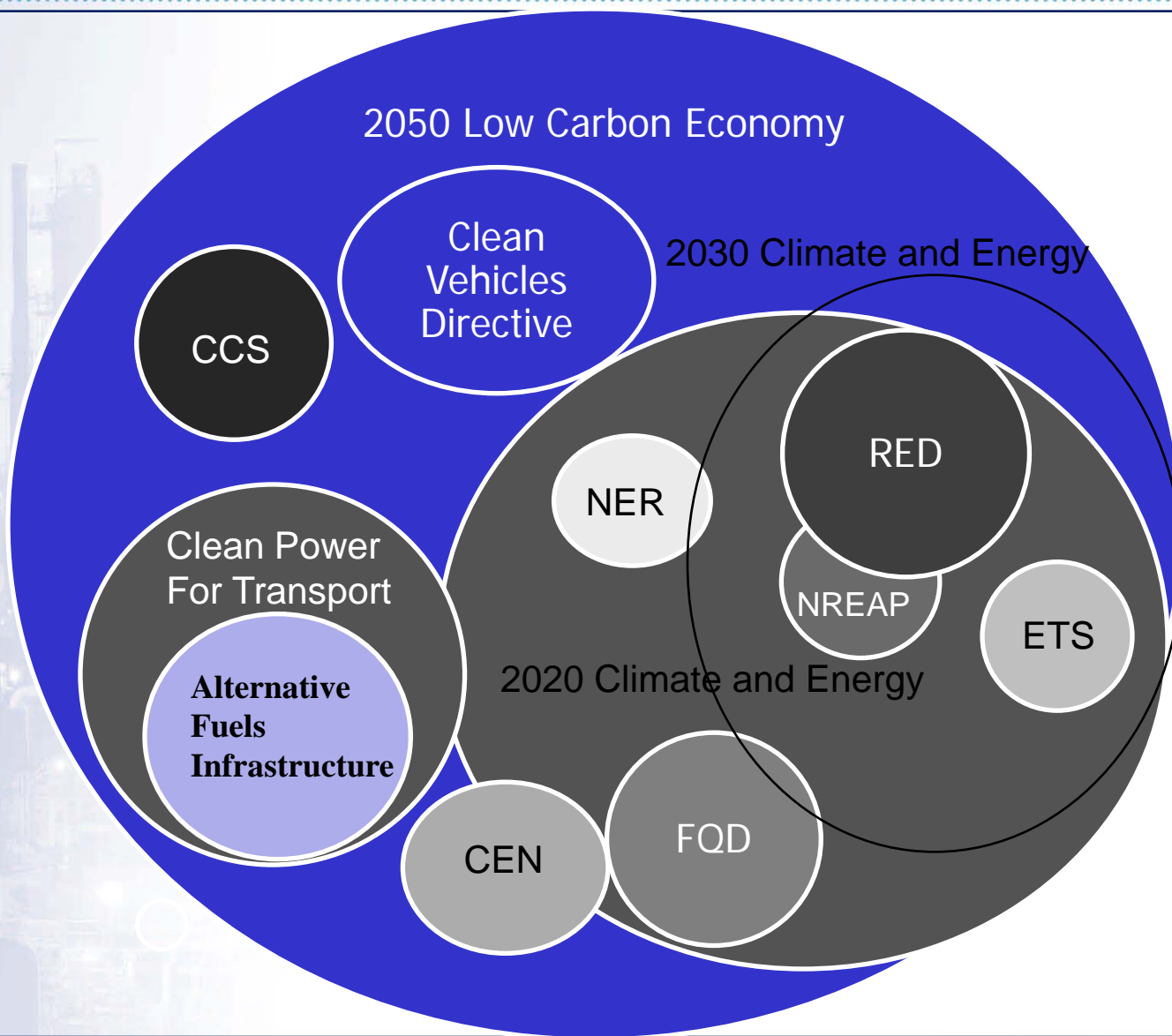
Well-to-Tank (WTT)

~17% (production side)

Tank-to-Wheels (TTW)

~83% (consumption side)





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- ▶ 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

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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

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Fuel Quality and Renewable Energy Directive Review (ILUC Directive)

- ▶ 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

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Fuel Quality and Renewable Energy Directive Review (ILUC Directive) (cont)

- ▶ 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

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- ▶ 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

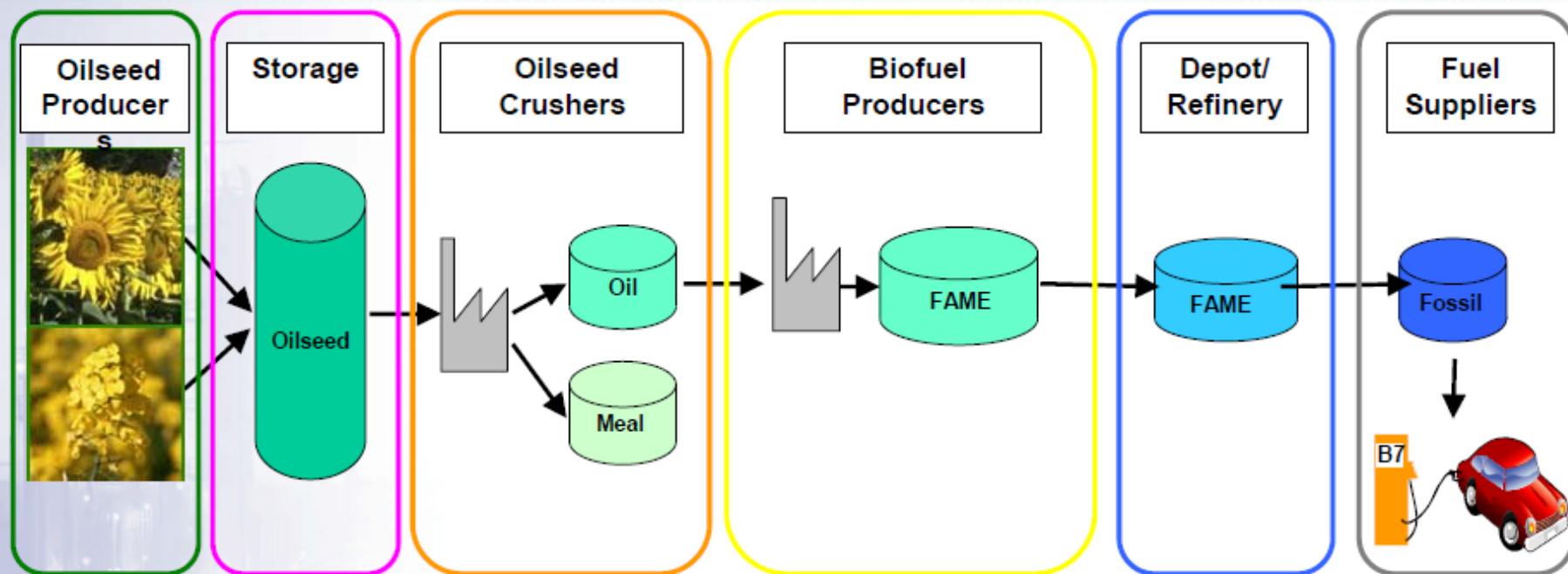
(2) Only in member states with H2 already present (#14)

- 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)

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Biofuel Sustainability Certification



- ▶ 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

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- ▶ 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!

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