



European Commission
JRC - Institute for Energy
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Contents of Presentation

The EU Renewables Directive

1. Mandatory targets
 2. Grid access
 3. Sustainability criteria
 4. Standards
- Relevant References and Contact Details

Binding Renewable Energy Targets by 2020

Renewable Energy Directive (2009/28/EC)

- **20% share** in overall final energy consumption
- **10% share** in all forms of transport (*not limited to biofuel*)
- **Biofuels count** for them all

Fuel Quality Directive (2009/30/EC)

- **6% reduction** greenhouse gas emissions from road transport fuels

Note: Energy and climate policy also demands 20% increase in energy efficiency and 20% reduction in CO₂ emissions by 2020

The New Renewables Directive

Definitions:

"biomass" means the biodegradable fraction of products, waste and residues from biological origin from agriculture (including vegetal and animal substances), forestry and related industries including fisheries and aquaculture, as well as the biodegradable fraction of industrial and municipal waste;

The Renewables Directive

- **Grid Access: Electricity and Gas**

Article 16 (7):

Member States shall ensure that charging of transmission and distribution tariffs does not discriminate against electricity from renewable sources, in particular in peripheral regions.

Member States shall ensure that charging of transmission and distribution tariffs does not discriminate against gas from renewable sources

The New Renewables Directive

- Grid Access: Gas

Article 16 (9):

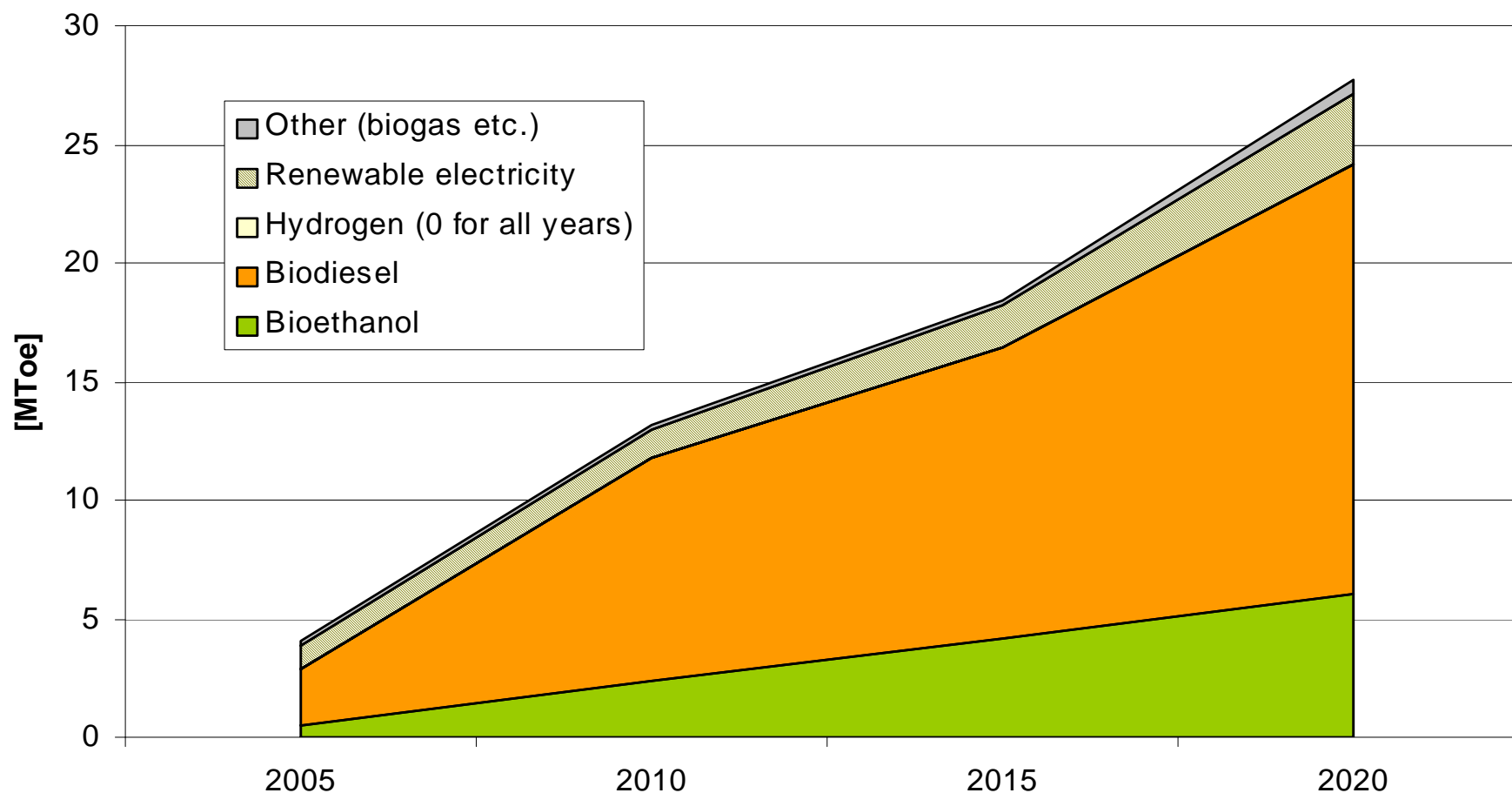
Where relevant, Member States shall assess the need to extend existing gas network infrastructure to facilitate integration of gas from renewable sources

Article 16 (10):

Where relevant, Member States shall require grid operators to publish technical rules regarding network connection (viz. gas quality, odourisation, pressure) and publish connection tariffs for renewable gas sources

RES in Transport towards 2020 (based on 19 NREAPs)

Biofuels in 19 Member States



Mandatory sustainability criteria for biofuels

- **GHG saving of at least 35%**
 - 50% from 2017
 - 60% for new installations from 2018
 - default values and calculation method for actual values included (Annex V)
- **No raw material from converted land with:**
 - high biodiversity value
 - Primary forest, protected areas, biodiverse grassland
 - high carbon stock
 - Forests, peatland, wetlands

The New Renewables Directive

- Calculation of GHG Impact

Article 19 (1)

Defines the method for calculation, using the methodology given in Annex V.C. Typical and default values for GHG emissions for "cultivation", "transport" and "processing" steps are given in Annex V.D & E

Here, the clear difference between the GHGs for biofuels produced from energy crops and those produced from wastes/residues are clearly seen

Some life cycle assessment examples

- Default GHG savings compared with fossil petrol/diesel (Annex V.A)

<i>Biogas* from municipal organic waste</i>	<i>73%</i>
<i>Biogas* from wet manure</i>	<i>81%</i>
<i>Biogas* from dry manure</i>	<i>82%</i>
<i>Rapeseed biodiesel</i>	<i>38%</i>
<i>Palm oil biodiesel (process not specified)</i>	<i>19%</i>
<i>Palm oil biodiesel (CH₄ capture at mill)</i>	<i>56%</i>
<i>Sugar beet ethanol</i>	<i>52%</i>
<i>Sugar cane ethanol</i>	<i>71%</i>

(* in the form of compressed biomethane compatible with natural gas)

What about biogas from energy crops ?

Biomethane (as compressed natural gas):

from maize: cultivation* = 20 gCO_{2eq}/MJ
 transport = 2 gCO_{2eq}/MJ
 processing** = 11 gCO_{2eq}/MJ

60% saving !!

Source of data: Renewable Energy
Directive 2009 (Annex V.D)

* EU cultivation

** data for dry manure

Still to Come for Cultivated Crops !!!

Land Use Change component still to be added to calculation of GHG Impact!!!

Article 19 (6)

*Concerning the as yet un-quantified effects of **Indirect Land Use Change (ILUC)***, safeguards to be provided to ensure certainty for investment undertaken before the ILUC methodology is applied. So, for installations producing biofuels before 2014, measures shall not apply before 2018, provided they then achieve a GHG saving of at least 45%*

** Report on ILUC effects due by 31-12-2010*

Market Support

- **Proposed European Standards for Biogas/Biomethane**

DG ENER mandate to CEN* to formulate new standards supporting the exploitation of biofuels, particularly biogas.

Specific targeted standards:

- composition of biogas for injection into natural gas pipelines (CEN/TC234/WG9)
- fuel quality standard for biomethane use in transport applications (CEN/TC19)

* The European Standards Organisation

The Strategic Energy Technologies Plan (SET-Plan)

- Steering group (SG) + Information System (SETIS)
- European Industrial Initiatives:

Launched in June 2010

- Wind
- Solar: photovoltaic and concentrated solar thermal power
- Carbon Capture & Storage
- Electricity grids

Launched in November 2010

- Bio-energy
- Nuclear fission

European Industrial Bioenergy Initiative (EIBI)

- **Bring to commercial maturity the most promising technologies for advanced biofuels and highly efficient combined heat and power from biomass (large scale and sustainable production)**
- **General objective : at least 14% of the EU energy mix would be from cost-competitive, sustainable bioenergy by 2020**
- **9 billion € needed - 200 000 jobs expected**

European Industrial Bioenergy Initiative

The 7 Value Chains

1. Synthetic liquid fuels/hydrocarbons (gasification)
2. Biomethane & other synthetic gaseous fuels (gasification)
3. High efficiency heat & power generation (IGCC)
4. Intermediate bioenergy carriers (pyrolysis & torrefaction)
5. Ethanol & higher alcohols (chemical & biological processes)
6. Renewable hydrocarbons (chemical or biological synthesis)
7. Bioenergy carriers from micro-organisms (algae, bacteria)

Horizontal Actions:

Resource availability and Public acceptance

Other Relevant Legislation

Waste Framework Directive (WFD) 2008/98/EC (22.11.2008) – with impacts on treatment of biowaste and digestate/compost

End-of-waste criteria for “Biodegradable Waste Subject to Biological Treatment”, Technical Working Group kick-off meeting, March 2nd 2011

New Industrial Emissions Directive (IED) 2010/75/EU (24.11.2010) – “recast” IPPC directive and now the guiding directive for BREFs

Thank you for your attention

Relevant References and Contact Details

- **Energy and Climate Change website:**
http://ec.europa.eu/energy/strategies/2008/2008_01_climate_change_en.htm
 - **Bioenergy and Sustainability**
http://ec.europa.eu/energy/renewables/bioenergy/sustainability_criteria_en.htm
 - **Europa – Biomass/Biogas/Biofuels:**
http://ec.europa.eu/energy/res/sectors/bioenergy_en.htm
 - **Waste Framework Directive:**
<http://eur-lex.europa.eu/JOHtml.do?uri=OJ:L:2008:312:SOM:EN:HTML>
 - **Industrial Emissions/BREFS:** <http://eippcb.jrc.es/reference/>
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- **Contact Point for Waste and Biomass Related Activities at JRC-Institute for Energy:** <http://ie.jrc.ec.europa.eu/>
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