



European Commission
JRC - Institute for Energy
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The New EU Renewables Directive

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The new Renewable Energies Directive (RED) 2009/28/EC

DIRECTIVE 2009/28/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 23 April 2009

on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC

(Text with EEA relevance)

- Binding national targets 20 % share of RES in final energy consumption, 20 % increase in energy efficiency
- **10% renewable energy target in transport**
- Sustainability criteria and monitoring for biofuels; harmonised approach with Fuel Quality Directive

The New Renewables Directive

- Target for 2020: “energy from renewable sources in all forms of transport is at least 10% of final consumption (in each Member State)”

Article 3 (4):

- a) For calculation, the total of petrol, diesel, biofuels for transport and electricity is taken into account.*
- b) All types of renewable used in all forms of transport shall be taken into account*
- c) For electricity, its consumption shall be considered to be 2.5 times the energy content of the biomass input.*

The New Renewables Directive

So, the 10% target is not limited to biofuels as the only source of renewable energy for transport

Electricity is an important component of the renewable fuel mix - and so is hydrogen

Note: there is no intermediate target for "biofuels" before 2020. Also, there is no specified mix of individual contributions of biofuels and electricity to the 2020 target

The New 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

The New Renewables Directive

- Sustainability

Article 17 (2)

The greenhouse gas (GHG) emission saving from use of biofuels shall be 35%

With effect from 2017 the GHG saving shall be 50%. For new installations starting production after start of 2017 the target shall be 60% (i.e. from January 2018)

Savings shall be calculated according to the method defined in Article 19(1)

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 from defined stages of the production pathway are given in Annex V.D & E

Here, we see the clear difference between the GHGs for biofuels produced from energy crops and those produced from wastes/residues

The New Renewables Directive

- Specific Provisions for Biofuels

Article 21 (2)

For purposes of compliance with national renewable energy obligations, the contribution made by biofuels produced from wastes, residues, non-food cellulosic material, and ligno-cellulosic material shall be considered to be 2x that made by other biofuels

(i.e. promotion of 2nd generation biofuels)

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)

Some life cycle assessment examples

- Estimated typical GHG savings - "2nd generation biofuels*" (Annex V.B)

Farmed wood F-T diesel 93%

Waste wood F-T diesel 95%

Wheat straw ethanol 87%

Farmed wood ethanol 76%

Waste wood ethanol 80%

**The text actually refers to, "biofuels that are not, or in negligible quantities, on the market in January 2008"*

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 TREN is providing a 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

Biowaste

- **Biowaste is one component of the new EU Waste Green Paper [COM(2008)811 - 03/12/2008] Framework Directive: 2008/98/EC (Article 22)**

Member States shall encourage:

- (a) the separate collection of bio-waste with a view to composting and digestion;*
- (b) the treatment of bio-waste in a way that fulfils a high level of environmental protection;*
- (c) the use of environmentally safe materials produced from bio-waste.*

The Commission shall carry out an assessment on the management of bio-waste.

The assessment shall examine the opportunity of setting minimum requirements for bio-waste management and quality criteria for compost and digestate from bio-waste.

The Strategic Energy Technologies Plan (SET-Plan)

- Steering group (SG) + Information System (SETIS)
- European Industrial Initiatives: strategic technology alliances (being set up in 2010)
 - Wind
 - Solar photovoltaic
 - Concentrated solar power
 - Bio-energy
 - Nuclear fission
 - Smart electricity grids
 - Carbon Capture & Storage
 - Fuel cell & Hydrogen
 - Nuclear fusion.

The European Industrial Bioenergy Initiative

- Currently under preparation in cooperation with the Biofuels Technology Platform and other Biomass Associations
- Expected total budget in the range € 6-8 billion
- Development of bio-resources (crops & waste) 1 billion €

The European Industrial Bioenergy Initiative

Value Chains and Support Activities

- Synthetic fuels/hydrocarbons via gasification
- Synthetic natural gas via gasification
- High efficiency power generation via gasification
- Intermediate bioenergy carriers via thermochemical processes
- Ethanol and higher alcohols from carbohydrate biomass
- Hydrocarbons via biological and/or chemical processes
- Bioenergy and carriers from CO_2 and sunlight via micro-organism based production

Feedstock production and harvesting systems

Identification and demonstration of new value chains

Education and training

The European Industrial Bioenergy Initiative

Demonstration plants:

First call: will be published in 2010

Scope: address one of the seven value chains or any combination of thermochemical and biological processes derived from them

Budget: 5 to 10 projects each applying for 40 to 80 M€ public funding, with a maximum allocation of 600 M€ of public funding. No more than 2 projects will be selected for each value chain (As a general rule private actors will cover at least 50% of project costs).

Reference plants:

First call: 2011; up to 3 reference projects

Budget: total estimated budget of 2 billion Euros, (including 500M€ public funding). A similar estimate is envisaged for the second call in 2013 (As a general rule private actors will cover 75% of project costs).

Thank you

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>
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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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