

BIOREFINERY RESEARCH IN THE ENERGY THEME OF FP7

Wiktor Raldow
European Commission, DG Research, Energy



EUROPEAN CONFERENCE on BIREFINERY RESEARCH

19 and 20 October 2006

Helsinki – Marina Congress Center

Biorefineries

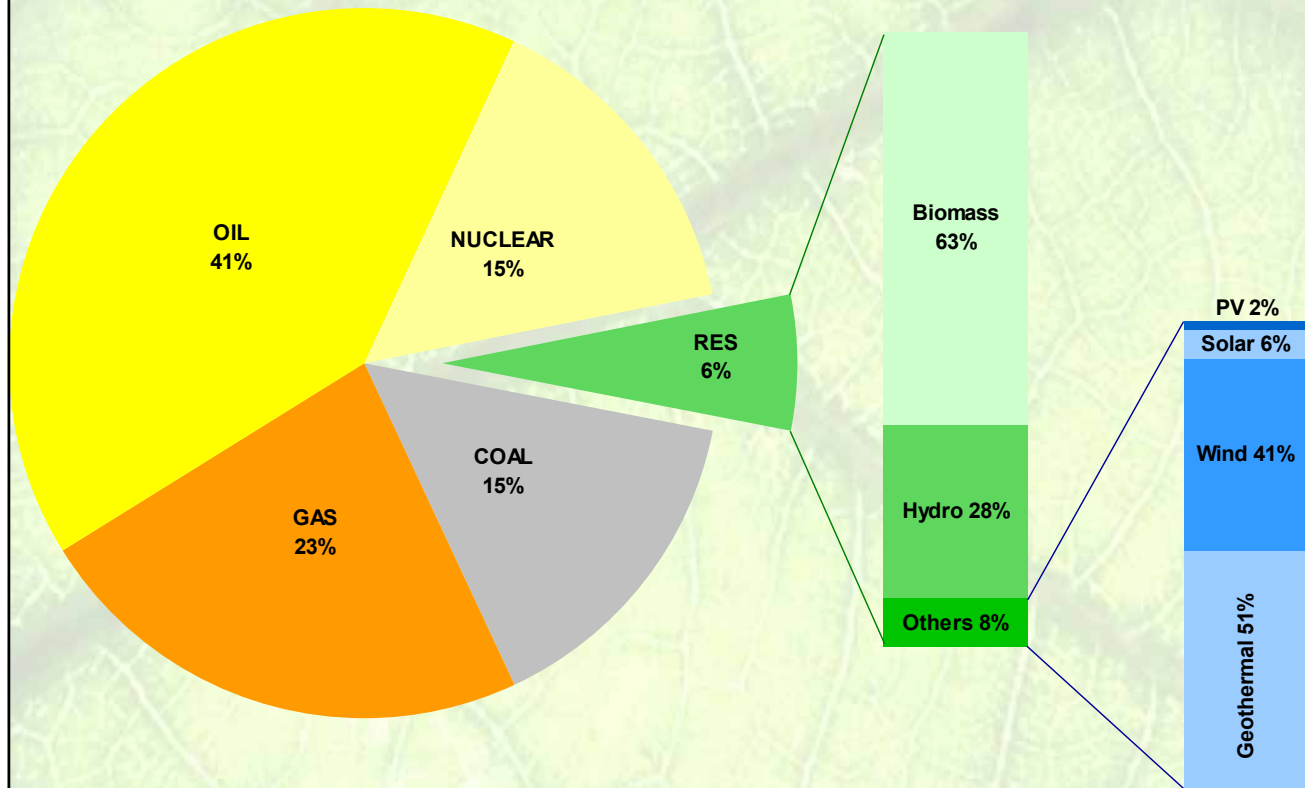
Wood, Crops, Grasses
Forestry or Agricultural Residues
Animal or Municipal Waste

Heat, Electricity, Fuels
Chemicals
Materials
Food, Feed, Fibre

Biochemical
and/or Thermo-chemical
Conversion

will be supported in two FP7 Themes:
Food, agriculture and bio-technology and Energy

Renewable energy sources in the energy supply (EU-15, 2002)

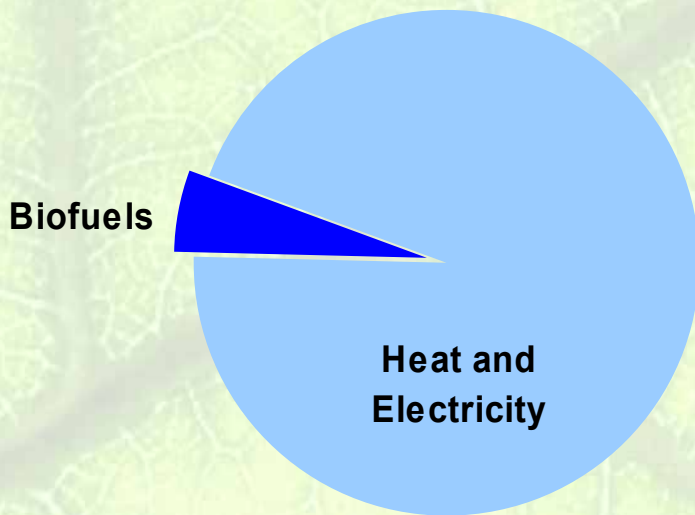


Bioenergy

- **Biomass for heating**
Most competitive
- **Biomass for electricity generation and CHP**
Highest greenhouse gas benefits
- **Transport biofuels**
Highest contribution to energy security

Sustainable use of biomass will be promoted in all three sectors

Bioenergy use (EU-25, 2004)



72 Mtoe

Source: Eurostat

How much bioenergy can Europe produce without harming the environment?

European Environmental Agency report 2006

To reach the European renewable energy target in 2010, an estimated 150 Mtoe of biomass is needed

Environmentally-compatible primary biomass potential: 190 Mtoe in 2010 increasing to around 295 Mtoe in 2030

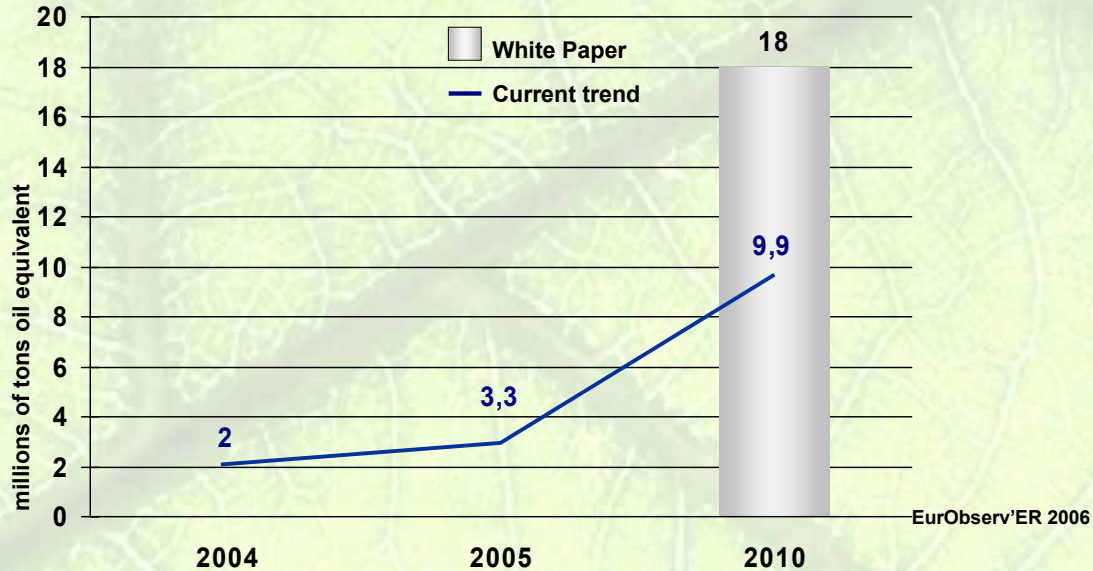
In the short-term, the largest potential for bioenergy comes from the biowaste streams with around 100 MtOE.

In the long-term, bioenergy crops from agriculture provide the largest potential.

Forestry is able to provide around 40 MtOE

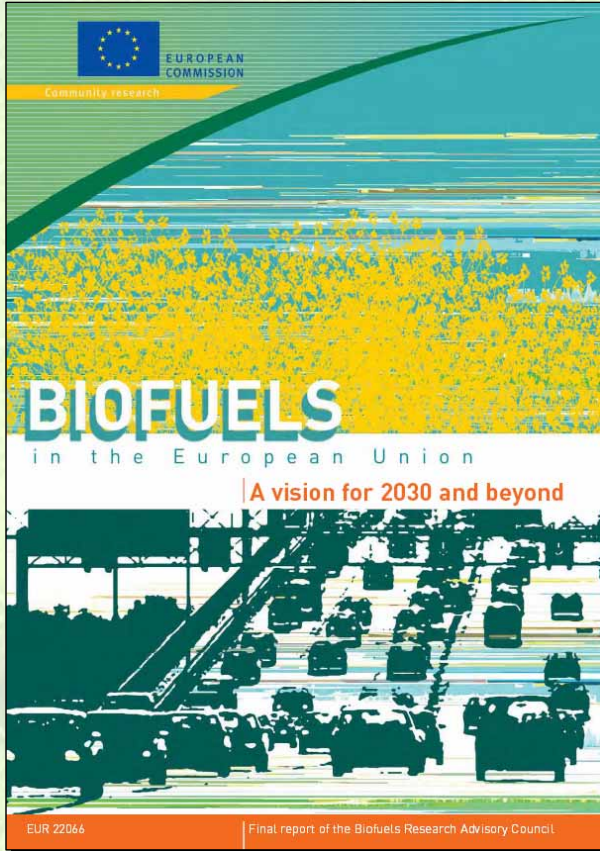


Biofuels: current trend



EU objective for 2010: 5.75% of biofuels in the transport sector

Biofuels vision



By 2030, the European Union covers **one fourth** of its road transport fuel needs by clean and CO₂-efficient biofuels.

A substantial part is provided by a competitive European industry. This significantly decreases the EU fossil fuel import dependence.

Biofuels are produced using sustainable and innovative technologies, creating opportunities for biomass providers, biofuel producers and the automotive industry

FP6 projects, DG Research

Funding ~81 M€
(not including demonstration actions)

Bio-fuels for transport 34 %

Bio-refineries 18 %

Gasification and H₂ production 23 %

Bio-residues and energy crops 5 %

Combustion 10 %

Others 10 %

Energy Theme in FP7

Hydrogen and fuel cells

CO2 capture and storage
technologies for zero
emission power generation

Renewable
electricity
generation

Clean coal
technologies

Renewable
fuel production

Smart energy
networks

Renewables
for heating and cooling

Energy savings
and energy efficiency

Knowledge for energy policy making

Renewable fuel production

Improved conversion technologies for the sustainable production and supply chains of solid, liquid and gaseous fuels from biomass, in particular for transport.

Emphasis on new types of biofuels and new production and distribution routes for existing biofuels, integrated production of energy and other added value products: **biorefinery.**

Research will focus on improving energy efficiency, enhancing technology integration and use of feedstock.

Renewable fuel production

Technology development

Biorefinery

- Developing biorefinery schemes to be integrated in existing industrial complexes
- Forest based biorefinery
- New uses for glycerine in biodiesel plants

First generation biofuels

- Cost reduction of bioethanol production from sugar and starch crops
- Cost reduction of biodiesel production from oil crops, animal tallow and used cooking oils

Renewable fuel production

Technology development

Second generation fuel from biomass

- Pre-treatment/Hydrolysis/Fermentation of lignocellulosic biomass for ethanol production
- High purity syngas cleaning technologies for biofuels
- Biological conversion of syngas into liquid biofuels
- Synthetic biofuels via gasification. Production and testing
- Hydrogenation of oils and fats

Biofuels use in transport

- Large scale demonstration of liquid and gaseous biofuels' use in transport/ vehicles

Staying informed

Calls for proposals

<http://cordis.europa.eu/en/home.html>



Research web site

http://ec.europa.eu/research/future/index_en.cfm

http://ec.europa.eu/research/energy/index_en.htm

http://ec.europa.eu/research/agriculture/index_en.html



Energy Policy

http://ec.europa.eu/energy/index_en.html



Conferences, proceedings, Newsletter

http://ec.europa.eu/research/energy/gp/gp_events/article_1567_en.htm

http://ec.europa.eu/research/energy/nn/nn_pu/renews/article_1402_en.htm

http://www.europa.eu.int/comm/research/conferences/2005/kbb/index_en.html

<http://biomatnet.org/home.html>

<http://www.epobio.net/workshops.htm>



Biomass Action Plan

http://ec.europa.eu/energy/res/biomass_action_plan/green_electricity_en.htm

EU Strategy for Biofuels

http://ec.europa.eu/agriculture/biomass/biofuel/index_en.htm

