Monitoring and Evaluation of the RES directives implementation in EU27 and policy recommendations for 2020

RES2020

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Intelligent Energy Europe

M. Gargiulo, G. Giannakidis, H. Rösler and M. Londo

Partners

Participant name	*Participant short name*	*Country*
CENTER FOR RENEWABLE ENERGY SOURCES	CRES	GREECE
NATIONAL TECHNICAL UNIVERSITY OF ATHENS	NTUA	GREECE
EUROPEAN RENEWABLE ENERGY COUNCIL	EREC	BELGIUM
POLITECNICO DI TORINO	POLITO	ITALY
RISOE NATIONAL LABORATORY	RISOE	DENMARK
CHALMERS TEKNISKA HOEGSKOLA AKTIEBOLAG	CHALMERS	SWEDEN
ENERGY RESEARCH CENTRE OF THE NETHERLANDS	ECN	NETHERLANDS
CENTRO DE INVESTIGACIONES ENERGETICAS, MEDIOAMBIENTALES Y TECNOLOGICAS	CIEMAT	SPAIN
CENTRUL PENTRU PROMOVAREA ENERGIEI CURATE SI EFICIENTE IN ROMANIA (CENTER FOR PROMOTION OF CLEAN AND EFFICIENT ENERGY IN ROMANIA)	ENERO	ROMANIA
CONSIGLIO NAZIONALE DELLE RICERCHE – INSTITUTODI METODOLOGIE PER L'ANALISI AMBIENTALE	CNR-IMAA	ITALY
UNIVERSITAET STUTTGART	USTUTT	GERMANY
VTT TECHNICAL RESEARCH CENTER OF FINLAND	VTT	FINLAND
ASSOCIATION POUR LA RECHERCHE ET LE DEVELOPPEMENT DES METHODES ET PROCESSUS INDUSTRIELS	ARMINES	FRANCE
TALLINN UNIVERSITY OF TECHNOLOGY	TUT	ESTONIA

Objectives

- RES2020 aims at analysing the present situation in the RES implementation, defining future options for policies and measures, calculating concrete targets for the RES contribution that can be achieved by the implementation of these options and finally examining the implications of the achievement of these targets to the European Economy.

Objectives

- A number of future options for policies and measures will be defined and they will be studied with the use of the TIMES energy systems analysis model, in order to analyze the quantitative effects on the RES development.

Project Activities

WP 2. Detailed description of RES framework for EU25 (and EU27).

WP 3. Expansion of existing tools.

WP 4. Scenario Analysis.

WP 5. Future policy recommendations.

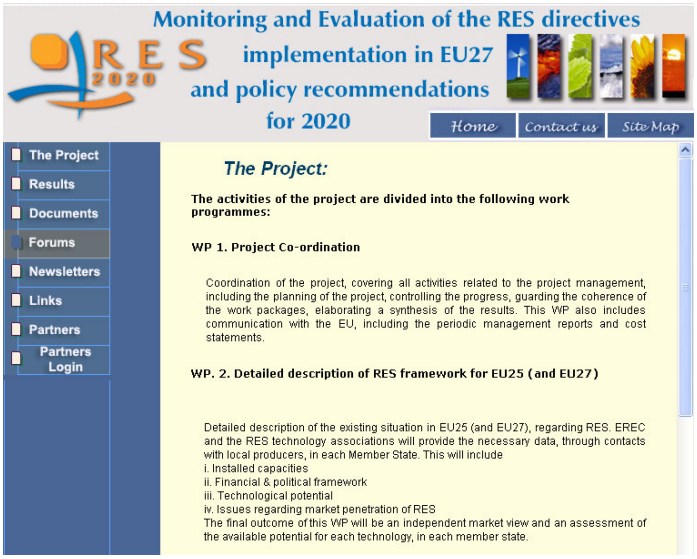
WP 6. Dissemination – Regional workshops & Policy conference.

Project Activities

ETSAP members are invited to join the forums of the project at www.res2020.eu, in order to discuss with the project partners on the use of the TIMES model, the data on potentials, the scenario definitions and the results of the model runs.

www.res2020.eu

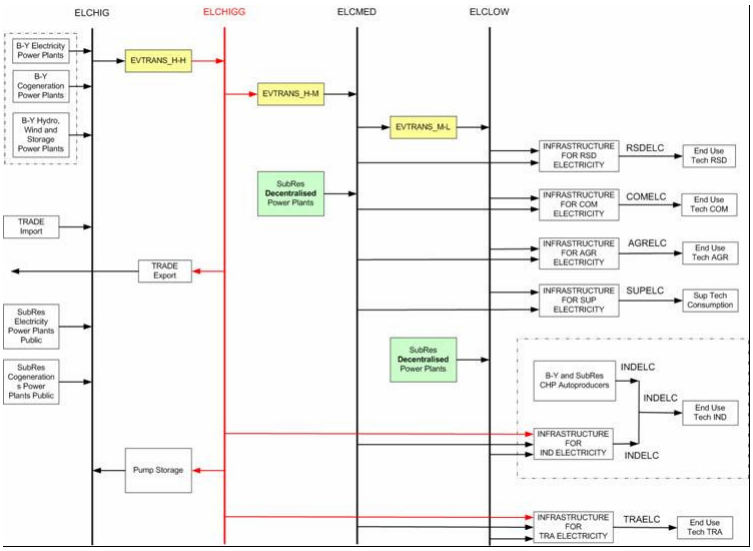
Thank you..



Expansion of existing tools

Electricity from RES

Distributed Generation – Grid structure



Distributed Generation – New technologies

New decentralised electricity technologies

- Conventional electricity power plants
  - Biomass and biogas power plants
  - Geothermal Conventional Power Plant
- Cogeneration power plants industry sector
  - CHP and IGCC with Black Liquor Pulp&Paper Heat
- New renewable electricity power plants
  - Wave and Tidal power plant
- Micro/Small Cogeneration Power Plant Public
  - Medium-Low voltage with Biomass fuel
  - Medium voltage with Biogas fuel
- Wind turbine technologies (extended from NEEDS model)

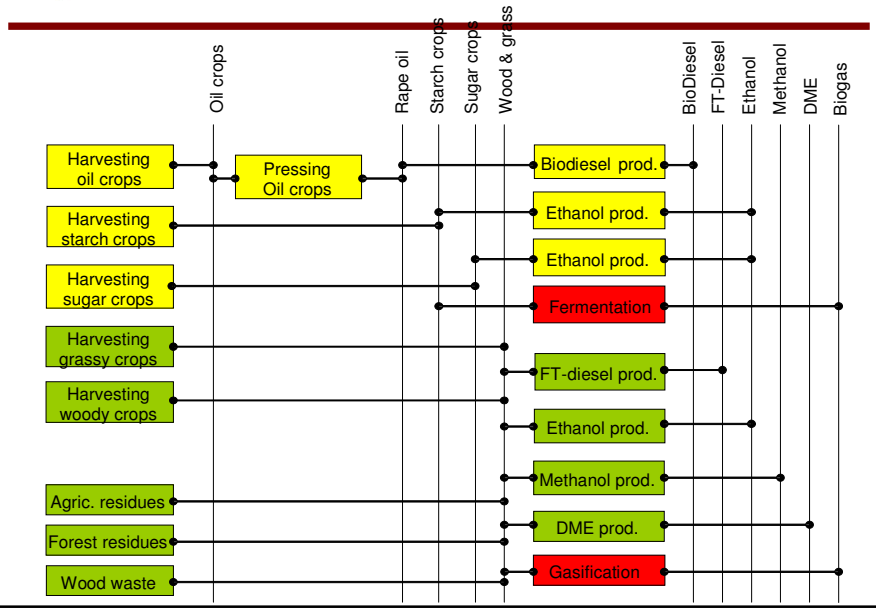
Expansion of existing tools

Modelling Biomass in the TIMES model

Use of Biomass

Type	Biofuels	Electricity	Heat	Biogas
Energy crops				
Oil crops	X			
Starch crops	X			X
Sugar crops	X			X
Grassy crops	X	X	X	X
Woody crops	X	X	X	X
Waste and residues				
Forestry residues	X	X	X	X
Agricultural residues	X	X	X	X
Wood process. residues	X	X	X	X
Municipal waste		X	X	
Wet manures				X
Sludge		X	X	X
Black Liquor	X		X	X

Representation biofuels in model



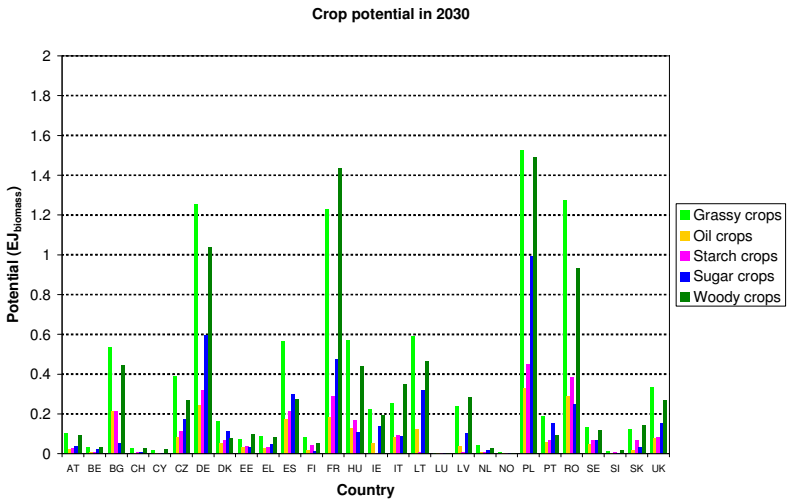
Potentials energy crops

- Based on EU-IEE project REFUEL project
- REFUEL: Planning the road ahead for biofuels

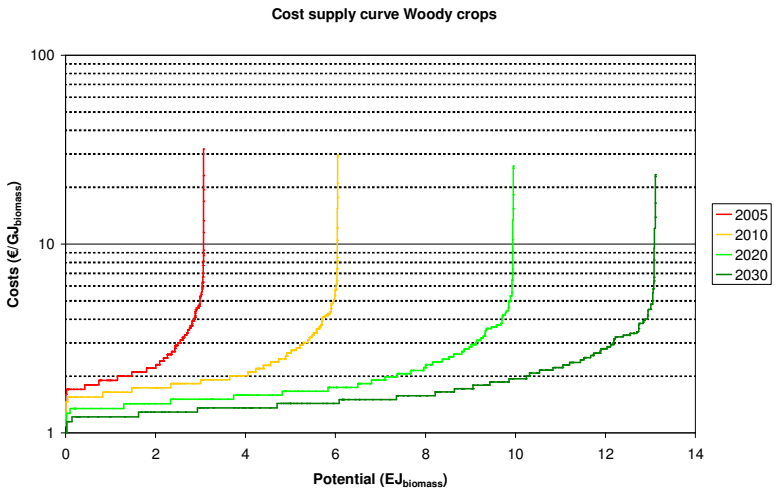
Developed a biofuels road map, consistent with EU biofuel policies and supported by stakeholders involved in the biofuels field.

- Assumptions potentials:
  - Natura 2000
  - First food than energy
  - Intensifying agriculture sector

Potentials bio-energy crops EU



Cost supply curve woody crops EU

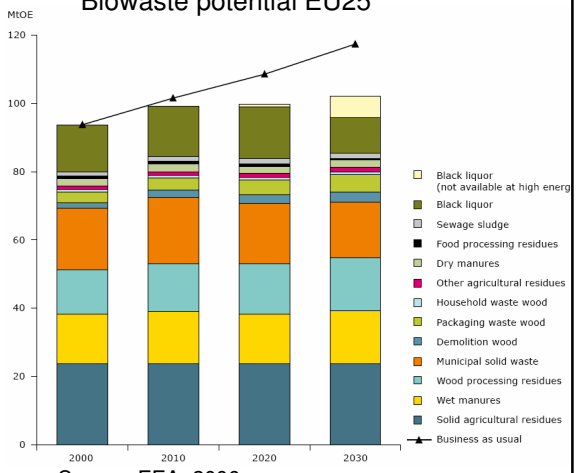


Waste and residues

- Types waste and residues
  - Forestry residues
  - Agricultural residues
  - Wood process. residues
  - Municipal waste
  - Wet manures
  - Sludge
  - Black Liquor
- Cover >80% potential
- Other sources only when possible niche market (low costs)

Environmentally-compatible

Biowaste potential EU25



Source: EEA, 2006

Potentials and costs waste and residues

- Work in progress
- Possible source potentials: EEA study “How much bioenergy can Europe produce without harming the environment?”
- Use EEA study also for cost assumptions?
- Use of Refuel data, limited waste and residue sources

Scenarios and policy options

Scenarios setup

The proposal is to focus on the 'Kyoto' and 'Rome' scenarios, in which future developments in energy security are the key differentiating factor between the two.

The proposal is then to have the following four analyses:

- The evaluation of RES development in Kyoto under current policies
- The evaluation of RES development in Rome under current policies
- The evaluation of RES development in Kyoto under a newly developed set of policy measures consistent with this scenario
- The evaluation of RES development in Rome under another, also newly developed set of policy measures consistent with this scenario

Scenarios setup

- The key difference between the two scenarios is in terms of the availability of raw materials for energy.
- In the Kyoto scenario:

  - oil and gas supply are relatively high and stable, at moderate prices.

  - The same applies to the availability of biomass

  - Furthermore, the absence of a global energy security issue allows for relatively open international trade.
- In the Rome scenario:

  - there is a crisis in raw material supply → oil and gas have strongly increased prices.

  - Furthermore, biomass is available in less high amounts and against higher prices.

  - The high fossil prices have also lead to a reduction of international trade, by the formation of trading blocks and a more assertive attitude of major energy export countries such as Russia.

Scenarios setup

Parameters	**Kyoto**	**Rome**
Oil/gas supply	Sufficient supply Modest price	Scarcity High price
Biomass (imports)	Sufficient available Moderate prices High trading volumes	Less available High prices Moderate trading volumes: domestic use and protectionism