

*ETSAP Regular Workshop  
Venezia, June 16, 2009*

## **Status of the Energy Technology Data Source**

*Giorgio SIMBOLOTTI, ENEA, [giorgio.simbolotti@enea.it](mailto:giorgio.simbolotti@enea.it)  
GianCarlo TOSATO, IEA/ETSAP / [gct@etsap.org](mailto:gct@etsap.org)*

### **Process (1)**

Last year a scoping study was compiled, which identified:

- a. The list of technology clusters, 80-90
- b. The format of the characterisation
- c. Institutes interested in carrying out the characterisation
- d. The cost

to carry out the first phase with the budget surplus of the previous annex. Based upon the result of the first

phase, next ExCo will decide whether to allocate the funds set aside in the 2008 budget for carrying out the

second phase and how to ask co-funding of sponsors.

## ***a - Energy Technology Data Source (1/3): end use devices in transport and industry***

<b>TRANSPORT (18)ª</b>
Adv. gasoline technologies (incl. CAI) -- automotive
Adv. diesel technologies (incl. HCCI) -- automotive
LPG/Natural gas IC engines -- automotive sectorª
Ethanol, biodiesel, & flex-fuel IC engines -- autom.ª
Hybrid electric technologies -- automotive sectorª
Plug-in and Battery electric technology automotiveª
Hydrogen technology (IC, fuel cells) -- automotiveª
weight and drag reduction -- automotive sectorª
Hybrid technology -- rail sectorª
Weight and drag reduction -- rail sectorª
Hydrogen technology -- rail sectorª
Weight reduction -- aviation sectorª
Advanced engine design -- aviation sectorª
Advanced body/wing design -- aviation sectorª
Optimised hull design -- shipping sectorª
Optimised propeller design -- shipping sectorª
Natural gas IC engines -- shipping sectorª
Auxiliary power units -- all transport modesª

<b>INDUSTRY (10)ª</b>
Iron & Steelª
Non-ferrous metals (Aluminium)ª
Non-metallic minerals (Glass)ª
Cementª
Chemicalsª
Petro-chemicalsª
Pulp & Paperª
Industrial CHPª
Electrical Motorsª
Boilersª
ª
<b>OTHERS (4)ª</b>
Superconductivityª
Electricity Storageª
Fuel Cellsª
Heat Pumpsª

3/14

## ***a - Energy Technology Data Source (2/3): end use devices in residential and commercial***

<b>RESIDENTIAL (12)ª</b>	ª	<b>COMMERCIAL (12)ª</b>
Building shell, Thermal Insulationª	ª	Building shell, Thermal Insulationª
Space Heating and Coolingª	ª	Space Heating and Coolingª
Water Heatingª	ª	Water Heatingª
Lightingsª	ª	Lightingsª
Refrigeratingª	ª	Refrigeratingª
Cookingª	ª	Cookingª
Washing Machinesª	ª	Washing Machinesª
Dish Washing Machinesª	ª	Dish Washing Machinesª
Dryersª	ª	Dryersª
Other electric appliancesª	ª	Other electric appliancesª
Electronic devicesª	ª	Electronic equipmentª
Othersª	ª	Othersª

4/14

## **a - Energy Technology Data Source (3/3): supply technologies**

<b>PRIMARY-SUPPLY (9)□</b>	□	□
Conventional Oil & Gas Production□	□	□
Non-conventional Oil Production□	□	<b>ELECTRICITY &amp; HEAT (15)□</b>
Non-conventional Gas Production□	□	Coal-Fired Power Plants□
Coal Mining□	□	Gas-Fired Power Plants□
Biomass Production□	□	CHP□
Coal Logistics□	□	CO <sub>2</sub> Capture & Storage □
Oil logistics□	□	Nuclear Power□
Gas logistics□	□	Nuclear Fusion□
Biomass logistics□	□	Geothermal□
□	□	Biomass for Heat & Power□
<b>SECONDARY-PRODUCTION (6)□</b>	□	Wind Energy □
Oil refineries and distribution□	□	Photovoltaic□
Gas distribution systems□	□	Concentrated Solar Power □
Synthetic Production of Gas from Coal□	□	Hydro□
Synthetic Prod. of Liquid from Coal/Gas□	□	Other renewable for electricity□
Bio-fuels Production, Bio-refineries□	□	Electric grids□
Hydrogen Production & Distribution □	□	District heating systems□

5/14

## **b - Format of the characterisation: general**

- Four-pager technology briefs, similar to the IEA Essentials (Energy Technology, Renewable Energy), consisting of
  - half-a-page summary for policymakers and media, with basic information,
  - 2.5 pages of text and charts for energy analysts and experts, with standard paragraphs and titles, and
  - a page containing the main quantitative information in tables and graphs;
- A worksheet with the parameters needed for energy modelling and relevant calculations from the technology briefs; and
- An extensive list of references.

6/14



## ***b – Format of the characterisation: environment***

<b>Environmental Impact</b>	
CO2 emissions	e.g., kg/MWh
CO2 capture equipment & emission reduction	kind of capture e
Other GHG emissions (e.g. CH4, add other)	e.g., kg/MWh
Other gaseous pollutants (e.g., SOx, PM, etc.)	e.g., kg/MWh
Retrofit equipment & emission reduction	kind of retrofit ec
Liquid pollutants	e.g., kg/MWh
Solid pollutants	e.g., kg/MWh
Toxic & dangerous waste/ pollutants	Type and quanti
Treatment of solid/liquid waste/pollutants	kind of treatmen
Land use	e.g., h/MW
Water use	e.g., h/MWh
Special materials use	Type and quanti

9/14

## ***b – Format of the characterisation: economics***

<b>Economics and Costs</b>	
Capital cost	e.g., \$/MW
Fixed O&M cost	e.g., \$/MW
Variable O&M cost	e.g., \$/MWh
Total O&M cost	e.g., \$/MWh
Energy/fuel cost	e.g., \$/MWh
Economic lifetime	yr, months, ...
Decommissioning cost	e.g., \$/MW
Waste treatment cost	e.g., \$/MWh
Interest rate and currency year	%, \$ or € yr
Total production cost	e.g., \$/MWh
Market share	%
Av. Employment	e.g., per MW

10/14

## **Process (2)**

The Executive Committee decided to start with a few characterizations:

<b>N. Technology Cluster</b>	<b>Institute</b>
1 Residential lighting	ADEME
2 Commercial lighting	ADEME
3 Residential refrigeration	ADEME
4 Commercial refrigeration	ADEME
5 Advanced gasoline technologies	AEAT
6 Advanced diesel technologies	AEAT
7 LPG/Natural Gas IC engines	AEAT
8 Coal fired power plants	ECN
9 Gas fired power plants	ECN
10 Synthetic production of gas from coal	IER
11 Synthetic production of liquid from coal/gas	IER
12 Conventional oil and gas production	IFE
13 Industrial boilers	VITO
14 Iron and Steel technologies	VITO

11/14

## **Process (3)**

Present status

<b>N. Technology Cluster</b>	<b>Institute</b>	<b>1st draft</b>	<b>com.</b>	<b>2nd draft</b>
1 Advanced gasoline technologies	AEAT	*	*	
2 Advanced diesel technologies	AEAT	*	*	
3 LPG/Natural Gas IC engines	AEAT	*	*	
4 Coal fired power plants	ECN	*	*	*
5 Gas fired power plants	ECN	*		
6 Synthetic production of gas from coal	IER	*		
7 Synthetic production of liquid from coal/gas	IER	*		
8 Conventional oil and gas production	IFE	*	*	*
9 Industrial boilers	VITO	*	*	*
10 Iron and Steel technologies	VITO	*		

12/14

## ***Process (4)***

The team met yesterday and evaluated the outcome of the experimental phase so far.

- a. Some data appear in 3 different places: text, doc table, excel table;
- b. The author assures the consistency; the original data with reference in the text/doc table, converted data in excel;
- c. Difficulty to find some cost data
- d. Absolute cost values will be reported

13/14

## ***Next steps (5)***

As soon as the second draft will be available, the 10 briefs will be circulated to the IEA secretariat and the CERT.

Together we will circulate the briefs to the relevant Implementing Agreements for review (and within ETSAP participants).

The 10 briefs will be posted at [www.etsap.org](http://www.etsap.org). This will give the opportunity of making ETSAP known and start cooperation for characterising additional technology clusters.

At the same time ETSAP will contact possible sponsors able to co-finance the remaining clusters.

The Executive committee will be asked to allocate additional funds for a second phase.

14/14