



ENDORSE IN BRIEF

ENergy DOWnstReam Services
Grant Agreement n° 262892



www.endorse-fp7.eu

7th Framework Programme (FP7) of the EU
Jan. 2011 to Dec. 2013 - 2 409 500 €

The European Union has committed to providing 20% of Europe's energy from renewable

sources by 2020. The three-year ENDORSE project (ENergy DOWnstReam SErvices), co-funded by the European Commission from 2011 to 2013, addressed this objective. From this, ten services have been developed that exploit Earth observation data and models in five domains (**wind**, **sun**, **electricity load balancing**, **biomass**, and **daylighting**) with the aim to provide solutions at a regional scale.



The consortium is composed of ten partners, experts in energy or market analysis, which are research institutes or companies (SMEs):

- Transvalor (France)
- Flyby (Italy)
- ENTPE (France)
- DLR (Germany)
- University of Genova (Italy)
- iCons (Italy)
- 3E (Belgium)
- Hochschule Ulm (Germany)
- Armines (France, coordinator)
- JRC (Italy)

The accurate assessment of the annual energy output of a planned onshore wind farm is integral to decision making, investment assessments, and the correct sizing of the plant. By combining the various data required in the decision making process in an automated manner, the Belgian company 3E provides qualified estimates of wind resources with an important gain in productivity.

SERVICE
Wind Annual
Energy Output

Initial project development and site searches for photovoltaic (PV) and concentrated solar power plant development are a high risk phase which receives a low level of funding. Tools are therefore needed to support a quick assessment of the available resources, the location of potential sites and the assessment of electrical yield. The French company Transvalor is thus producing maps of the solar resources at a spatial resolution of 200 m. The German aerospace agency DLR has also created a geographical information system hosted on the internet to identify possible sites, while the Italian company Flyby is making web-based tools available for designing concentrated solar power plants and monitoring their yield. Transvalor is providing synthesised meteorological data sets that capture the main climatic features as a function of the selected technology and are inputs to commercial software simulating electrical yield.

SERVICE
Solar Atlas
Generation

SERVICE
Web GIS

SERVICE
Design CSPS

SERVICE
TMY Generation

Once a power plant is operational, plant managers are required to forecast solar resource one day ahead in order to know how much electricity they can sell on the market. DLR has therefore set up an efficient forecasting system in southern Spain. In this region, PVs are flourishing on the roofs of many houses, just as they are in the region of Ulm in Germany.

SERVICE
Irradiance
Forecast

The electricity produced from these cells is integrated in the electricity distribution grid, and its amount depends very much on the weather. Grid managers therefore need forecasts at the regional level in order to know how much electricity will be gained from PV (and where this will come from) in order to ensure grid stability and the quality of the voltage available in households and companies. The University of Applied Science in Ulm, together with DLR, is providing tools to help grids managers make these decisions.

By computing the annual energy consumption used for lighting a room defined by the user, the French engineering school ENTPE provides architects with estimates of energy savings that can be gained from using sunlight to power the operation of blinds and artificial light, as well as with other information used in building design and retrofit, energy regulation policy planning and private investment.

Biomass is currently used for energetic and material purposes with an expected increase in the use of short rotation forests as a biofuel resource. DLR has created a service for estimating biomass potential and providing maps of the net primary productivity and total stem of forested areas in order to support the sustainable, economic and ecological development of a region with respect to timber and energy production.

Several countries outside Europe are also exploiting biomass to produce products for energy use. Before importing them, Europe must assess the sustainability of the crops, and DLR has developed a cost effective tool for use in identifying direct land use/cover change based on publicly available satellite data, therefore helping certification institutes in taking the relevant decisions.

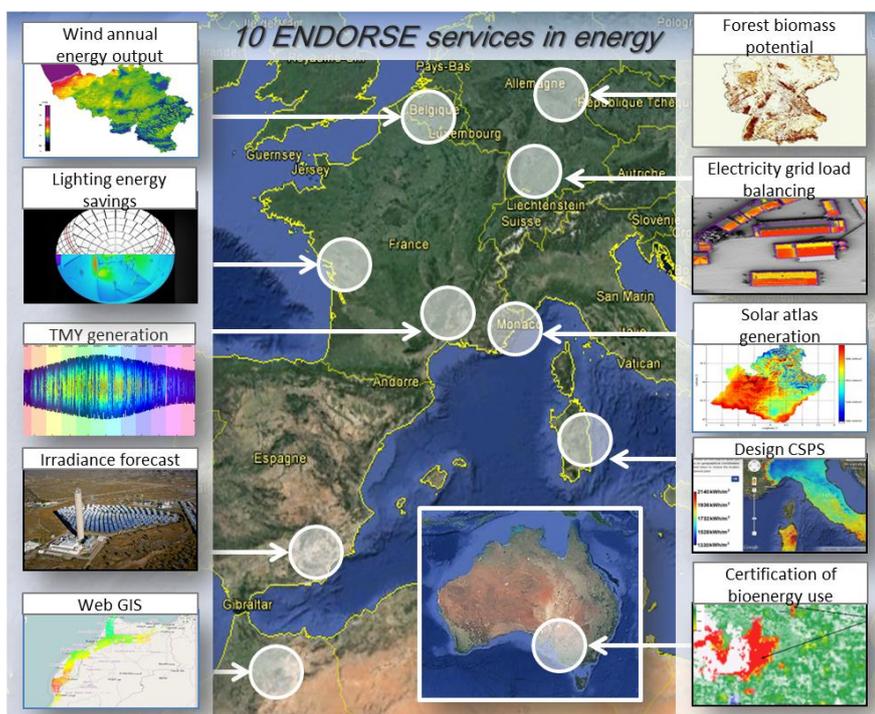
SERVICE
Electricity Grid
Load Balancing

SERVICE
Lighting Energy
Savings

SERVICE
Forest Biomass
Potential

SERVICE
Certification of
Bioenergy Use

**TOWARDS THE
MARKET**



All services developed within ENDORSE are operational. Many of them are already on the market or are ready to become so. Many services are very innovative, and the attention they received from possible users reveals their potential.

By bringing advanced methods into operational services, ENDORSE has demonstrated that the exploitation of Copernicus services and Earth observation data and models is an efficient means of providing solutions at the regional scale with regard to renewable energies. The availability of these new services will further stimulate the development of similar services in other regions.