The Energy Community of Practice

Objectives:

The objective of the Energy Community of practice (ECP) is to support GEOSS outcomes related to the application of Earth Observation data for energies.
Relevant areas are:

- Siting of power plants and facilities including environmental and sociological issues
- Optimized design of power systems and facilities
- Yield estimation and resource monitoring based on historic information
- Yield forecast based on near real time weather and forecasting
- Integration into existing energy supply, e.g. grid & utility system integration
- Operation and management of power plants incl. automatic failure detection
- Trading and monitoring of power and environmental credits
- Environmental monitoring of impacts
- Life cycle considerations
- Economic analyses

How ECP have been successful in actually linking to users?

ECP is involved in all the Energy tasks of the GEOSS work plan. The tasks are all linked with projects funded through the European Commission. All these projects are strongly linked with users needs and are going to deliver some services dedicated to and validated by users. Here are some examples of projects and results achieved or planned:

MESOR EU coordination action Management and Exploitation of Solar Resource Knowledge. This project is led by DLR and partners from EC-JRC, Germany, France, Italy, Slovakian Republik, Spain, Switzerland, and Russia are contributing. The project has been finalised in July 2009. The consortium delivered the following documents: i) Handbook of Quality Control Procedures for solar energy data sets; ii) Handbook of Benchmarking (Procedures, results on time series and maps); iii) Procedures for standardizing, and validating worldwide solar resource data sets; iv) Roadmap document: Future research objectives and priorities in the field of solar resources; v) Roadmap for new solar radiation services to faster deploy the market for solar energy applications; iv) Roadmap document: Recommendations of an Improved Earth Observation System to better support solar energy

EnerGEO project is developing a strategy for a global assessment of the current and future impact of the exploitation of energy resources on the environment and ecosystems and to demonstrate this strategy for a variety of energy resources worldwide. The global observation strategy will be developed to appropriately assess the impacts of the current and future transitions in energy -use on the environment by a combination of models(already available for the different sources of energy: TASES, REMIX and MESSAGE), existing global datasets from which environmental indicators will be derived and existing and currently developed models capable of assessing and forecasting environmental impacts and costs of energy exploitation. By developing a distributed system based on the recommendations of the GEO -Architecture and Data Committee, global collection and dissemination of data relating to the effect of energy use will be supported. By including members of the Energy -Community of Practice of GEO, sustained contribution of the GEO -tasks EN -07-02 and EN-07-03 will be realized. The project takes the testing and demonstration of the observing system

and developed scenarios through the execution of dedicated pilots at heart. The pilots are focused on the most important issues relating to atmospheric composition and food security, sustainable integration of solar energy in current grids as well as its visual impact and relating to the impact of wind energy on marine ecosystems. The result of the pilots feed into an integrated platform that will run for known scenarios in order to assess energy strategies.

The **ENDORSE** project aims at a user-driven development of downstream services in renewable energies by exploiting the GMES Core Services (MACC, SAFER and Geoland 2) together with other EO/in-situ data and modelling. It addresses regional services promoting the energy use from sun, wind, and biomass, electricity grid management and building engineering through daylighting in buildings. The consortium has teamed with relevant users to stimulate the development of sustainable and transferable downstream services. ENDORSE will develop and validate pre-market downstream services in collaboration with well-defined end-users by performing R&D activities; assess the conditions for self-sustainability of these services through surveys and workshops with end-users; disseminate the achievements of the project to foster the use of Core Services data and other EO data by the renewable energies community; stimulate the market of downstream services in renewable energies towards the end-users community, and the development of such services by SMEs and other service-oriented companies by demonstrating precursors with documented conditions of sustainability.

The expected major outcomes of ENDORSE are scientific advances in assessment of surface air temperature and solar radiation, and data fusion; a set of validated and documented innovative methods exploiting GMES Core Services data and other EO data; a portfolio of pre-market services, serving as precursors and examples of best practices for similar downstream services (other regions, other providers), with documented conditions of sustainability; a stimulation of the renewable energies community towards exploitation of Core Services data and other EO data; a stimulation of the service industry towards development of downstream services; feedbacks to GMES Core Services on their data, and as a whole to GMES and GEOSS on the exploitation of EO data in renewable energies area.

The coordination actions of ECP need to be strengthened and re-activate. In the past, the activities of ECP allows to produce documents describing the users' needs for two specific renewable energy wind and solar (see http://www.geoss-ecp.org). It also allows the development of a work plan, that needs to be refreshed and enhanced to take into account the latest developments of GEOSS.

ECP is also involved as a representative of the users from the Energy domain for the different ADC-AIP-2 and AIP-3 activities. Members of the Energy CoP have release several key components in order to provide user’s community with access to energy and environmental related data and products compliant with GEOSS recommendation for interoperability.

An Energy Community Portal (http://www.webservice-energy.org) is operational for several years and hosts OGC Web Services (WMS and WPS) given an open and free access to solar radiation datasets, environmental impact assessment methods, terrain based and geophysical parameters.

A Community Catalogue based on OGC CSW (Catalogue Service for the Web) standard has been released this year in the framework of the EnerGEO Project and the AIP-3. Resources from several Energy CoP participants are hosted into this catalogue (http://energeo.researchstudio.at/). This Community Catalogue has been successfully registered in the GEOSS CSR (Component and Service Registry), and is now harvested on a weekly basis by GEOSS crawler's ensuring a continuous dissemination of Energy and Environmental resources offered by the Energy CoP members via the GEO Portal (http://www.geoportal.org/).

In The framework of AIP-2 and AIP-3 Energy CoP members have lead and participate to the AIP-2 and AIP-3 Energy pilot developments phases.

AIP-2 Scenario illustrates how a data provider on the one hand and a consulting company looking for information in order to select the best place to sit a solar power plant on the other hand both benefit from as a centralized point of access implementing GEOSS recommendations for interoperability.

- Access to the mashup client (http://project.mesor.net/web/guest/geoss_re_scenario)
- Full report and a demonstration video (http://www.ogcnetwork.net/AIP2ERs#energy)

AIP-3 Scenario intends to provide spatial information on the life cycle environmental impacts of the production of photovoltaic electricity. An extended set of web services related to Energy and Environment Impact Assessment has been made available as OGC Web Services and integrated with the www.webservice-energy Community Portal. Rich Web Clients for geodata visualization and data retrieval allowing end-users to visualize environmental impacts parameters have also been implemented based on the FP7 GENESIS project solution.

- Access to clients on the GENESIS Portal (login:demo passwd: demo): (http://gppf.genesis-fp7.eu/)
- Full report and demonstration video (http://www.ogcnetwork.net/AIP3ERs)