

JORNADA DE TREBALL PER A LA PREPARACIÓ DE PROPOSTES DE PROJECTES EUROPEUS EN L'ÀMBIT DE L'ENERGIA

Barcelona, 17 de Juliol de 2012

Lloc: ACC1Ó (Sala Interacció)
Passeig de Gràcia, 129
08008 Barcelona

AGENDA

09:00 - 09:30 Registre d'assistents

09:30 - 09:45 Benvinguda

09:45 - 10:00 Presentació dels temes

10:00 - 10:30 Pausa /cafè

10:30 - 13:00 Sessions tècniques paral·leles on es comentaran els següents temes¹:

GRUP1	1. ENERGY.2013.2.9.1: Research cooperation and knowledge creation in the area of renewable energy with Mediterranean partner countries.
	2. ENERGY.2013.4.1.1: Research and development of innovative solar thermal facades.
GRUP2	3. ENERGY .2013.7.1.1: Development of methods and tools for network integration of distributed renewable resources.
	4. ICT-2013.6.1 Smart Energy Grids.
	5. ENERGY.2013.8.8.1 Demonstration of optimized energy systems for high performance energy districts
GRUP3	6. ENERGY.2013.7.3.3: Understanding interfaces in rechargeable batteries and super-capacitors through in situ methods.
	7. ENERGY.2013.7.3.1: Planning rules for linking electric vehicles (EV) to distributed energy resources
	8. ENERGY.2013.7.3.2: Enhanced interoperability and conformance testing methods and tools for interaction between grid infrastructure and electric vehicles
	9. Objective GC-ICT-2013.6.6 Electro-mobility: Public-Private Partnership "Green Cars": Cross-Thematic cooperation between NMP, Energy, Environment, Transport and ICT Themes

13:00 - 14:00 Conclusions (Sessió Plenària)

¹ (*) vegeu textos sencers dels temes a la pàgina següent

1. Topic ENERGY.2013.2.9.1: Research cooperation and knowledge creation in the area of renewable energy with Mediterranean partner countries

Open in call: FP7-ENERGY-2013-1

Content/scope: The Mediterranean Partner Countries (MPC) possess a vast potential of renewable energy resources. However, their research and development capacities to make most of this potential for both domestic use and export need strengthening. At the same time, European research centres would benefit from the possibility to test and validate new technologies in real conditions. One way to support both aims is to promote exchange of researchers, training through research and knowledge sharing. However, for this to be fully beneficial to MPC, such action should be coupled with capacity building and research infrastructure development in the MPC. Therefore, this topic aims to support cooperation on research and innovation in the area of renewable energy between European research centres and research organisations in the MPC. Such cooperation would a priori involve a first period of joint research and development work in one or more European organisations, a second period of joint testing and validation in one or more research organisations in MPC and a third period of establishing a roadmap for further cooperation on RTD&D, technology transfer, technology deployment and research infrastructure development in the targeted areas. A balanced participation of both junior and senior researchers, the different relevant institutions and other key stakeholders from both regions will be a prerequisite for the grant. Ideally each individual project will cover at least 3 out of the following 6 renewable energy areas: photovoltaics, concentrated solar power, solarthermal, wind, bioenergy, grid integration.

Funding scheme: Collaborative Project for specific cooperation actions (SICA) dedicated to Mediterranean partner countries.

Expected impact: The resulting projects are expected to substantially and sustainably increase the research and development capacity in the participating regions, to help establish sustainable cooperation networks amongst partner countries, to foster MPC participation in EU programmes, and to pave the way for long-lasting cooperation in renewable technologies and R&D more generally between the MPC and between them and Europe and thus also contributing to achieving the aims of the European external energy policy⁷.

Additional information: Up to 2 projects may be supported for a total period of implementation per project of 4 years, each one involving necessarily a balanced effort in terms of manpower, R&D responsibilities and renewable energy deployment objectives between the EU and MPC partners. This will be considered during the evaluation under the 'Implementation' criterion.

2. Topic ENERGY.2013.4.1.1: Research and development of innovative solar thermal facades

Open in call: FP7-ENERGY-2013-1

Content/scope: The topic aims to support applied research, development and validation of new solar thermal facade systems. The project will develop new and innovative concepts of solar thermal facades which significantly improve the thermal performance of the building envelope (e.g. by means of advanced materials) and which provide a high solar fraction of the heating and cooling requirements (e.g. by means of innovative solar collectors and chillers). The proposed solutions shall offer a considerable contribution to the development of smart energy systems at the city or district level. The design and aesthetics of the proposed solutions shall also be properly evaluated.

The innovative solar thermal facades shall aim at significantly reducing the costs of components, assembly and installation and at also significantly facilitating and decreasing the costs of maintenance and repair. The proposed solutions shall be validated at pilot scale within the project duration.

Funding scheme: Collaborative Project

Expected impact: The innovative easy-deployable solar thermal facades will contribute to increase the energy efficiency of the building stock and will help achieving the ambitious goals of a high share of renewable energy in the total energy mix.

Additional information: R&D community players, industry, construction companies and architects shall be involved in the project consortium to ensure swift market implementation of the developed innovative systems. Participation of SMEs is particularly encouraged.

3. Topic ENERGY.2013.7.1.1: Development and validation of methods and tools for network integration of distributed renewable resources

Open in call: FP7-SMARTCITIES-2013

Contents/scope: The aim is to develop and validate methodologies and tools to enable Distribution System Operators (DSOs) to take on new roles and evolve existing roles required by the increased number and volume of distributed energy resources connected to distribution networks. An important new role is observing and balancing of variable renewable generation and loads with decentralized flexible generation, active demand and local storage. It may also require congestion management and the provision of ancillary services. Network operations and grid maintenance will need to be upgraded. Further roles include short- and long-term forecasting and long-term planning. The methods and tools should have a wide applicability in European contexts for both urban and rural areas. These roles and methods need to be developed in cooperation with Transmission System Operators (TSOs) where responsibilities need to be shared. New methods and tools also need to facilitate new roles of market players and to create a level playing field. For example, in the case of ancillary services, the architecture of an efficient marketplace for ancillary services at the distribution level should be developed, and DSO's should be enabled to provide ancillary services to support TSO operations. The projects should address resources from small to medium-scale residential, industrial and commercial "prosumers". To further support innovation in business models the projects should take into account contributions from new actors such as aggregators. Validation of the approaches and tools should be performed through simulation and pilot-scale trials. The validation of new methods and tools should build on existing activities in different settings in Europe and form a family of projects. The project results should contribute to the implementation of the European Electricity Grid Initiative (EEGI). The projects should contribute to the monitoring and knowledge sharing schemes of the EEGI.

Projects should include substantial participation of major players such as network operators, power or ICT technology providers, research centres or universities. Projects should include committed participation of distribution operators and also of transmission operators and market players where appropriate. The participation of market players should be consistent with unbundling principles.

Funding scheme: Collaborative Project

Expected impact: The projects should contribute to increasing the capacity of medium and low-voltage networks to host renewable and distributed energy resources with a trade-off of grid reinforcement and grid intelligence, without jeopardising quality of service. It should ensure a cost-effective long-term evolution of electricity networks, while connecting new generation to new loads.

Additional information: Each proposal does not need to cover all the aspects of the entire topic. The projects' results will contribute to the development of smart grids in both rural and urban areas. Exploration of synergies with Smart Cities and Communities will have to be ensured.

4. Objective ICT-2013.6.1 Smart Energy Grids

Call: FP7-ICT-2013-11

This objective explores the potential of bringing together stakeholders from both the energy utilities and the telecom sector to develop common approaches for future digital networks and smart energy services infrastructure for electricity distribution. The focus is on data management including the exchange of information with transmission network operators and with end users. Special attention is given to exploring new business models for DSOs (Distribution System Operators).

Targeted Outcome: Intelligent systems built over existing and future telecommunication networks and services that will assist in the management of the electricity distribution grid in an optimized, controlled and secure manner.

Key research challenges to be addressed:

- a) Sharing of backbone infrastructure and last mile connectivity, considering not only technologies (e.g. LTE, GPRS, PLC, and possibility for spectrum allocation) but also the appropriate business models to deliver significant cost and investment savings.
- b) Improving robustness and reliability of the existing telecommunication infrastructure in order to cope with mission critical services that require milliseconds response times. Explore the possibility of deploying dedicated services on shared telecoms infrastructure, rather than entirely new infrastructure.
- c) ICT technologies for active electricity network management, demand/response, load balancing and forecasting and congestion management. Developing a methodology for capacity calculation.
- d) Developing telecommunications services and platforms specific for energy distribution taking into account control of access to customer information and consumer data, in particular smart metering data; data ownership and associated level of security and use of data; business models; system reliability; long term availability; and avoidance of vendor lock-in.

Project should focus on one or a combination of the previous points. Consortia must be compact with partners each making substantial contributions and with expertise in both telecoms and energy domains. In all cases, projects shall include an appropriate validation phase to draw conclusions for future deployment.

Expected Impact:

- Reduction of the percentage of energy lost during energy distribution;
- Reduction of the gap between energy produced and energy consumed;
- Increase of renewable energy sources and Combined Heat and Power - CHP connected to the distribution grid;
- Reduction and shifting of peak loads;
- Number of publications jointly authored by researchers from ICT and energy.

Funding schemes: STREP

Indicative budget distribution

STREP: EUR 18 million

5. Topic ENERGY.2013.8.8.1: Demonstration of optimised energy systems for high performance-energy districts

Open in call: FP7-SMARTCITIES-2013

Contents/scope: The objective of this topic is to demonstrate, at the level of cities or districts, an innovative integrated energy system, optimised both in terms of increase in energy efficiency and CO2 reduction. This objective may be achieved with a balance of supply-side measures based on a high share of renewables and demand-side measures to reduce consumption. Although the balance shall be optimised for each city, it should lead to a good business case for replication. The proposals should address all of the following three aspects through a credible and coherent integrated approach.

1. **Retrofitting of a district towards zero energy buildings.** The proposed measures should aim to demonstrate innovative technical, economic and financial solutions which significantly increase overall energy efficiency. All types of buildings can be addressed, with a focus on residential buildings. All elements and systems of the buildings that could in a life-cycle perspective (thus including embedded energy) contribute to a better energy efficiency and sustainability through integrated design and planning should be envisaged, the measures shall be chosen based on a sound assessment of the social, economic and environmental performances of the different technology options. The detailed metering/monitoring

- programme should last at least for one full year, however, longer term commitment and programmes of the building operators (e.g. in continuous monitoring and/or guarantees of performance to the tenants) would give an added value to the proposal. The monitoring programme should include behavioural aspects (see additional information on the next page).
- 2. Proposing innovative solutions for the medium and low voltage electricity distribution grid**, with the objective to improve the integration of a large share of power generated from renewable energy sources (for example photovoltaic installations) with the power supplied a conventional centralised installation (for example a Combined Heat and Power plant), and to increase energy efficiency of the distribution grid by implementing smart solutions and new efficient network components. In case of photovoltaic installations, the integration in the built environment of standardised PV building components requires both electric and architectural optimization, combining electricity production with substantial ICT part. Proposals should also consider electricity storage devices and strategies to better match supply with demand, optimise district and single building storage approaches, and provide ancillary services for the grid quality. In addition, proposals can cover technological and economic assessment of the integration of electric vehicles into the local grid, with intelligent charging/discharging systems and assessment of the best balance of stationary versus mobile storage.
 - 3. Proposing innovative solutions for district heating and cooling energy supply**, with the objective of improving the overall efficiency of the system (heat generation, distribution and final use). The applicants should propose district heating and/or cooling systems based primarily on recovering waste heat and adapting the temperature levels of the grid to the applications. Additional energy sources might include a significant share of local renewable energy sources supply. In doing so, the proposals could envisage links with industrial parks. The proposals should consider innovative applications for hot water, such as white goods supply. It should also make the best use of heat or cold storage devices or systems. Both short term and long term storage systems can be envisaged.

The activities proposed by the applicants should be based on a convincing city and mobility planning exercise with special consideration of innovative energy technology integration and participation of all relevant actors, completed at an earlier stage. Costs related to this planning exercise are not in the scope of this topic. All proposals should present a sound business model of all measures envisaged to be carried out in the project. This model should pay particular attention to assess economics and benefits for industry and the customers and endusers. The proposals will be asked to report performance data into existing horizontal activities for good-practice sharing, such as CONCERTO and the Smart Cities Stakeholder Platform. Thus, they should allocate appropriate resources for comprehensive reporting and innovative dissemination measures.

Expected Impact: In addition to the impacts outlined for this Area in general, successful projects should set-up clusters of cities, and partnerships between cities and industries. Through integrated actions, projects should demonstrate their viability as new innovative market solutions and show a high replication potential for large-scale market deployment before 2020. An ambitious dissemination and market deployment plan should be included in the proposal. The credibility of this plan will form part of the evaluation.

Funding scheme: Collaborative Project with a predominant demonstration component
Additional eligibility criterion: The maximum requested EU contribution per project must not exceed EUR 30 million.

Additional information: The grant will always be composed of a combination of: the typical reimbursement of eligible costs, and flat rate financing determined on the basis of scale of unit costs only for the building-related demonstration activities part of the buildings.

This action supports the implementation of the Smart Cities and Communities Initiative of the SET-Plan. The European Commission reserves its right to ask the project during the negotiation, in case not already highlighted in the proposal, to establish strong links, where appropriate, with relevant R&D projects at EU, national or regional level.

It is envisaged that three to five projects could be funded.

6. Topic ENERGY.2013.7.3.3: Understanding interfaces in rechargeable batteries and supercapacitors through in situ methods

Open in call: FP7-ENERGY-2013-1

Content/scope: The understanding and control of interfaces in rechargeable batteries and supercapacitors is essential to ensure good electronic and ionic transport across them. The term "interface" does not only refer to solid electrode/liquid electrolyte interface but also to buried interfaces (e.g. between additives and active material, the solid electrolyte interphase, and between lithiated and delithiated phases (in lithium ion batteries), etc. The physical and chemical processes occurring at these interfaces determine performance in terms of kinetics (charge-discharge rates) as well as safety and understanding their reactivity is a key tool in understanding capacity fade and failure modes. Being able to monitor changes in real time and to follow uncontrolled reactions leading to high impedance, safety issues and reduced energy and power output is of particular importance to control interfacial processes. Research should target the investigation of interfaces over broad time and length scale through in situ methods and multi-technique probes, so as to correlate surface structure with its reactivity. The use of computational modelling tools is encouraged in order to complement molecular-level understanding of interfaces and help in designing high quality interfaces for batteries and supercapacitors with enhanced performance. The development and applications of methods to study interfacial issues of relevance to large (grid-scale) batteries or long term stability should be addressed by the project.

Funding scheme: Collaborative Project

Expected impact: The results should contribute to building the fundamental basis for the next generation of electrical energy storage devices.

Additional information: This pre-competitive topic has been developed based on the results of workshops organized by the Commission in collaboration with the US. The inclusion of top class research groups from industrialised and/or emerging countries is encouraged. In addition the proposal should allocate resources for 1-2 workshops aiming at exchange of information on the basis of mutual benefit and reciprocity with selected on-going projects in 3rd countries. Such projects may be identified by the Commission during the negotiation phase.

7. Topic ENERGY.2013.7.3.1: Planning rules for linking electric vehicles (EV) to distributed energy resources

Open in call: FP7-SMARTCITIES-2013

Contents/scope: The aim is to develop network planning rules and tools to enable electric vehicles in a large scale roll out and to maximise their potential for linking with and balancing of distributed energy resources. The project should provide methods to deal with specific infrastructure characteristics, and local load and congestion issues. Furthermore, it should propose cost effective solutions and investment strategies. The work should take due account of the particular load characteristics and the level of intelligence for a broad range of charging scenarios for electric vehicles. The project should relate to network planning activities from a representative set of distribution networks in Europe and include competence on Low Voltage / Medium Voltage grid simulation and support from automotive manufacturers.

Funding scheme: Collaborative Project

Expected Impact: The project should improve the distribution networks hosting capacity of EV and Distributed Energy Resources (DER). It should enable Distribution System Operators (DSOs) in Europe to do more efficient and more cost effective network planning. Furthermore the project should enable intelligent charging of a variety of EV and promote harmonized conditions in the roll out of charging infrastructure. The project should contribute to the monitoring and knowledge sharing schemes of the

SET Plan European Electricity Grid Initiative. Furthermore the project is expected to establish cooperation and to coordinate with relevant projects under NMP, Environment, ICT and Transport to jointly support the EGCI PPP.

Additional information: Up to one project may be funded.

8. Topic ENERGY.2013.7.3.2: Enhanced interoperability and conformance testing methods and tools for interaction between grid infrastructure and electric vehicles

Open in call: FP7-SMARTCITIES-2013

Contents/scope: The aim is to develop enhanced conformance testing methods and tools for the interaction between grid infrastructure and EVs. It includes development of a proposal for a European smart grid reference system to enable the verification of interoperability through efficient tests. Interoperability requirements should include a broad range of charging modalities, grid stability constraints and consumer needs including high energy supplier flexibility and a pan European market for both new and used EV. The work should be based on draft standards developed under M/453, M/468 and M/490. Developed testing methods should have a high degree of reproducibility and they should be validated through round robin tests and at relevant demonstration sites in the framework of the Smart Cities initiative and/or the European Electricity Grid Initiative. The project is expected to give strong contributions to standardisation working groups. It should furthermore ensure a strong link to international standardization and be open to cooperation with US stakeholders to promote cross certification wherever relevant.

Funding scheme: Collaborative Project

Expected Impact: The project should provide manufacturers of EV and EV infrastructure with cost effective conformance testing methods and tools for their products interaction with the European electricity network. Furthermore it should enable consumers to verify their expectations to pan-European interoperability of charging services. The project should contribute to the monitoring and knowledge sharing schemes of the SET Plan European Electricity Grid Initiative. Furthermore the project is expected to establish cooperation and to coordinate with relevant projects under NMP, Environment, ICT and Transport to jointly support the EGCI PPP.

Additional information: Up to one project may be funded.

9. Objective GC-ICT-2013.6.6 Electro-mobility

The European Green Car Initiative (EGCI) is part of the European Economic Recovery Plan launched in November 2008 to respond to the global economic crisis. This Public-Private-Partnership (PPP) aims at demand-side measures to support the development of new and sustainable forms of road transport. The ICT contribution to this initiative aims at improving the cost- and energy-efficiency of the fully electric vehicle and its value chain through the application of advanced ICT. Objective 6.6 under ICT and relevant objectives under NMP, Environment, Energy and Transport are co-ordinated and jointly support the EGCI PPP.

This objective addresses fully electric vehicles (FEV), meaning electrically-propelled vehicles that provide significant driving range on purely battery-based power. It includes vehicles having an on-board electrical generator as range extenders. The objective also covers small light-weight passenger and duty vehicles. Projects supported under this objective should advance the research, development and integration of major building blocks for the FEV, and for its infrastructure integration.

Target outcomes:

a) Advanced System Architecture for FEV

New or expanded functionality of existing hard and software architectures for electronics leading to radical cost reduction, reduced complexity, increased reliability and flexibility and higher energy efficiency.

Advanced concepts for the integration of multiple functionalities into smart subsystems for energy storage, traction, and power control including e.g. bi-directional energy transfer (managed/controlled charging), energy recovery and improved road handling. Work shall address the re-design of the electric and electronic architecture; assessment of the implication for safety, security, reliability and robustness of the electric power train operation including EMC and the development of related international standards; the usage of low power consuming cooperative systems for cost efficient, real-time and safe operation of the vehicle. Also included are technical solutions facilitating recycling and reuse of components; standardised, cost-efficient and reproducible testing concepts for vehicles and subsystems; ICT solutions for cost efficient, flexible production of small volume, customised (sub-) systems and vehicles driven by the different requirements of different customers.

b) Comprehensive Energy Management

ICT for optimising the energy system inside the FEV and the connectivity of the FEV using Comprehensive Energy Management Systems including efficient vehicle-based solutions for grid and road integration taking into account aspects of autonomous driving and integration in cooperative systems as appropriate.

Increased synergies of electric traction, autonomous driving and cooperative road-vehicle systems for energy-, cost- and time-efficiency as well as safe operation of the vehicle including autonomous positioning or guiding are targeted. Work shall address alternative, innovative ICT-based solutions for optimised recharging interfaces and methods (inductive; continuous; fast; en route) and include vehicle-based energy harvesting and the management of combinations of different energy sources and storage as well as the management and optimisation of energy storage ageing, charge monitoring and certification of energy content. Projects in this field are expected to establish cooperation and to coordinate with relevant projects under NMP, Environment, Energy and Transport to jointly support the EGCI PPP.

Also included are the assessment of related safety and health concerns regarding the use of electric vehicles; work towards common user interfaces including privacy and data security standards for flexible subsystems and mobile devices (smart phones, tablets etc.) and the contribution to standards e.g. for dynamic and bi-directional energy exchange between the vehicles and the smart grid.

c) Coordination and support actions

Business models for the deployment of FEV in public, personal, and freight transport; pilot educational and training programmes and curricula; stimulation of the international dimension for European FEV and the global presence of SMEs; and contribution to the setting of standards are envisaged. Proposals should predominantly address SME activities.

Expected impacts:

- Improved energy efficiency and extended driving range of the FEV
- Increased performance and reduced costs of the electronic components and the overall FEV produced in Europe.
- Better integration of the FEV in the smart grids and cooperative infrastructure
- Significant improvement of FEVs' safety and comfort
- Strengthened global competitiveness of the European automobile, ICT and battery sectors; significant market penetration of key components of FEVs.

Funding schemes

a), b) IP, STREP: It is expected that at least one IP is selected per target outcome. Individual proposals may address both target outcomes.

c) CSA

Indicative budget distribution

IP, STREP: EUR 39 million

CSA: EUR 1 million

Call:

FP7-ICT-2013-GC