Innovation – Financial Network (EIFN) and Transnational Technology Transfer in Renevable Energy sector

Enrique Doheijo, Maria Garcia Estevez, Deloitte, Spain, www.deloitte.es
Gabriel Vladut, Virginia Matei, Camelia Cojocaru – IPA Craiova, Romanian IRC4D, office@ipacv.ro
Laura Nunez, Instituto de Empresa (IE), Spain, www.ie.edu
José Ramón López, EVE - Ente Vasco de la Energía, Spain, www.eve.es
Francesco Cappelo, Consorzio Catania Ricerche (CCI), Italy, www.unict.it/ccr/

Abstract:
e-Networks represent now an important and modern educational tools and solutions that bring together geographically distant research groups, allowing them to share data, documents, video and audio presentations, while integrating their computational and laboratory resources. Among the many benefits of e-Networks, the following are particularly very important:

- Resource sharing becomes a reality, improving the utilization of costly equipment
- Easier access to educational and research material is provided to students and professional training courses
- Scientific investigation standard can be established in areas where practical experimentation is a required part of research
- Reduction in travel time leads to productivity enhancement.

The recent created EIFN Network, are implemented as a new generation communication service, not as a simply Worldwide Web application. So, they employ a sophisticated access framework, a communication infrastructure able to support multimedia flows and a component-based software construction. As the Internet is turning into a truly multi-service network with a steady increase in bandwidth and decrease in response time, the environment becomes more suitable for implementations such as e-Network.
According to the EU innovation and energy policies a comprehensive network for a better understanding between innovation energy enterprises and institutions and financial agents will be designed and developed based on the following criteria:

- Collaboration to update the financial services to the energy sector innovation needs.
- Provide practical and efficient solution to facilitate innovation agents in the energy sector the access to financial services.
- European scope.

This paper presents this e-activities and the presence in europeans networks

Introduction

The project "Energy sector Innovation – Financial Network (EIFN)" is supported by the European Commission under FP6 program
In March 2000, European leaders committed the EU to become by 2010 'the most dynamic and competitive knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion, and respect for the environment': The Lisbon strategy.
The Lisbon European Council established that Europe's future economic development would depend on its ability to create and grow high value, innovative and research-based sectors capable of competing with the best in the world; energy sector is key in this policy development and environmental sustainability is one of the most priority areas.
The EU Commission has established very ambitious objectives in its energy policy that will require a strong effort in energy innovation in the next years:

- Limits to greenhouse gases emissions

The EU has ratified the Kyoto Protocol; it supposes that the European Union has the commitment to deliver the collective 8% (with the reference to 1990 level) cut in emissions by 2008-2012.
Beside, the EU has also taken serious steps to address its own greenhouse gas emissions: the Directive 2003/87/CE establishes the EU Emissions Trading Scheme, which has started its operation on 1 January 2005.
Due to this Directive limitation to the CO2 emission has been established since this date for different economic industries (one of them is the Energy Sector).

- Promotion of renewable energies

The European Commission's White Paper for a Community Strategy sets out a strategy to double the share of renewable energies in gross

domestic energy consumption in the European Union by 2010, including a timetable of actions to achieve this objective in the form of an Action Plan. This objective supposes 12% market share of renewable energy in 2010 total primary energy consumption.

- Reduce energy dependency

Our enormous dependence on fossil fuels (oil, gas and coal) is becoming ever more marked. This gives rise to a number of problems, among which we may list the prices of oil and gas with their impact on the EU economy, the power attributed to the few external suppliers and the risk of social upheaval when the markets spin out of control.

If no action is taken in the next 20 to 30 years, the environmental impact of energy will be untenable and our external energy dependence will rise to a level of 70 % on average, going up to 90 % in the case of oil products.

In order to reduce this dependence some measures have been recommended by the Commission like:

  - Reducing energy insensitive.
  - Sector measures: Industry, construction, lighting, electrical appliances, transport and new technologies.

- EU cogeneration guidelines

The Communities Cogeneration Strategy of 1997 sets an overall indicative target of doubling the share of electricity production from cogeneration to 18% by 2010 (Council Resolution in December 1997).

The electricity produced by cogeneration processes has risen to 10% in the EU in 2001.

- Improvements in transmission & distribution grid

The EU electricity and natural gas internal market, the access of renewable energies and distributed generation to the grids, and improvements in the quality of the service require better technology and management.

The European innovation in the energy sector has found relevant barriers to access to finance services:

- Some project promoters needs more knowledge about:
  - Innovation financing alternatives.
  - Access to financial resources procedures.
  - Structured finance.
  - Project evaluation methodologies.
  - Economic valuation of the project environmental impact.
  - Business plan development.
  - Risk management.
- Financial suppliers' knowledge about the specific characteristics of the energy sector innovation projects.
- Projects with long maturation periods that needs to adapt project financial structure to this characteristic.
- Usually these projects require high volume of financial resources, in some cases the promoters has problems to get guaranties to obtain the finance support.
- Projects with high volatility cash flows due to:
  - Technology risk
  - Regulatory risk
  - Commodity price risk.

All the problems above mentioned had an impact in the Small and Medium Enterprises (SMEs) and affected to innovation processes throughout Europe.

SMEs could play a very relevant role in EU energy technology innovation.

There are many engineering and equipment providers (small side) throughout Europe with enough technical capacity that could play a relevant role (e.g. renewable energies, cogeneration, new fuels, …), however they have problems to access to financial support.

On the financial institutions side, there are some finance agents interested in investing in new energy technologies.

Nowadays many of them have created funds to invest in innovation in the energy sector and/or have relevant participation in companies that develop this kind of activities.

Objective

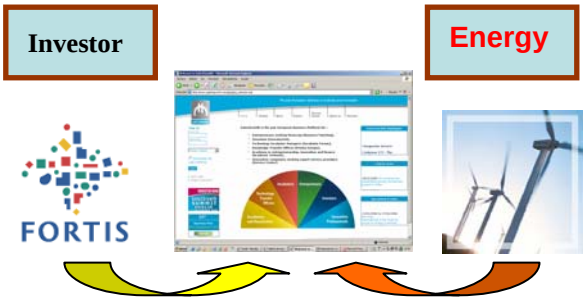
The objective of the EIFN project is to develop a Web platform for European entrepreneurs in the renewable energy sector and financiers, to match their interests.

The project aims to facilitate the access of the innovative energy SMEs to financing and the access of the investors (banks, venture capital funds, business angels, etc.) to innovative energy projects (renewable energy, biodiesel, etc.)

Innovation in the energy sector is a key goal for the EU Energy Policy that aims to improve energy efficiency, reduce energy dependence and achieve sustainable environmental development. Nevertheless, it has been

recognized the difficulties of the innovation energy sector (mainly based on SMEs) to access financing.

- On one hand, some project promoters needs more knowledge about: Innovation financing alternatives, access to financial resources procedures, structured finance, project evaluation methodologies, economic valuation of the project environmental impact, business plan elaboration, risk management,…
- On the other hand, the investors (banks, venture capital funds, private equity, business angels, etc.) need a deeper knowledge of the features of these projects and innovations in the energy sector.



The main objectives of this project are:

- Improving the access of entrepreneurs (energy technologies) to financial services.
- Promoting the collaboration between innovation agents and the financial service providers.

Strategic objectives addressed:

- Comprehensive network to facilitate the access of the enterprises and/or institutions to the financial services to develop innovation projects in the energy sector
- Promote the collaboration between agents that develop innovation activities in the energy sector and financial investors
- Adjust the innovation financing to the special characteristics of R&D in the energy sector
- Provide world class methodologies and tools to the agents to manage efficiency their financial services process

The project scope includes:

- Establishment of a stable collaboration EU innovation financing network for energy projects. The members of this Group would be enterprises, scientific institutions, universities, energy agencies, private and public financial institutions.
- Identification and analysis sector characteristics in relation to innovation financing and establish
- European map linking needs of sectors and funding sources.
- Develop methodologies, tools, guidance materials and procedures to improve the access of energy research players to innovation financing.
- Workshops and roundtables organisation to identify relevant issues and receive feedback from the market agents.
- IT infrastructure development to support the designed methodologies, tools and procedures.
- Coordination with other relevant EU initiatives: Gate2growth and PAXIS.
- Energy Sector Innovation-Financial Network validation according to its operative results.
- Elaborate policy and operative recommendations to the EU innovation community.

The EU innovation policy and the full implementation of EU energy and sustainable development policies in the future - energy market liberalization, security of supply, achieving Kyoto objectives - requires a coordinated effort by all stakeholders to facilitate the efficient access to financial services of the innovation agents.

EIFN project address (from a practical standpoint) the following questions:

- What will the network management strategies and network tools need for any effective access to financial support?
- How can innovation energy enterprises and financial agents collaborate to improve the access of the entrepreneurs to the financial sources and services?
- Which are the best practices in innovation financing?
- What financial services are more adjusted to the different innovation needs of the energy sector?

- What methodologies and tools should EIFN design and develop in order to facilitate innovation agents to access to these services?
- What procedures should EIFN carry out to improve the access of innovation agents to the financial services?
- What police recommendations (based on experience) could be carried out to the regulatory bodies to improve the access to the financial services?

REAL OPTIONS: Innovation projects evaluation methodology

Innovation projects within the energy industry are characterized by the high volatility in its future cash flows.

The entrepreneur is forced to face certain risks that the innovation agents in other sectors do not have to assume in their activities, and besides technical and technological risks linked to all innovation processes, there are other relevant topics that should be considered:

- Volatility of energy prices (electricity, natural gas and petrol are some of the commodities with greatest volatility). Innovation processes are profitable when the promoter decides to develop the project; however changes in the energy market prices could have an impact in return rate.
- Regulatory risk. Most of the innovation projects in the energy sector are affected by revenues, incentives and rules integrated within the regulatory framework (e.g. renewable energies, improvements on environmental issues, transmission and distribution activities...). Continuous changes in the regulatory scheme create high uncertainty to develop these projects.
  For instance, nowadays the rules that will be adopted for the implementation of the Kyoto Protocol in the countries that have ratified the agreement are not clearly defined yet.
- Acceptance of new solutions by the market. In some cases new energy technologies suppose changes in the consumption behavior and require the development of ancillary services' infrastructures (e.g. facilities linked to the promotion of biofuels), these requirements could be a brake for the innovation processes.

Traditional financial methodologies analyse the investment projects from a static point of view; however, innovation projects in the energy sector require:

- To include in their assessment the volatility impact for an efficient decisionmaking process
- To design the innovation processes taking into account the uncertainty for the future.

Partners: The Project's shareholders are 12 institutions from 7 European Countries: (Spain, Germany, Italy, Lithuania, Slovenia, Romania and Poland): Ente Vasco de la Energía, Deloitte, Instituto de Empresa, Instituto Tecnológico de Canarias, Korona Power Engineering d.d., Institut für Solare Energieversorgungstechnik, IPA CIFATT Craiova, Lietuvos energetikos instituttas, Innovation NCP, ZAB Zukunfts Agentur Brandenburg, Consorzio Catania Ricerche, and Institute of Power Engineering.

Trans-national Technology Transfer and Innovation

The Network provide cost-effective services that promote trans-national cooperation, respecting the real regional needs and are in synergy with national and regional support scheme.

The main objective of the Network is to develop and maintain a high level of services capability in delivering successful transnational technology transfer (TTT) to the local clients whilst addressing capacity deficits and encouraging the attainment of economic benefits for clients through successful agreements.

The Network act in four main domains such as **information** (including awareness campaign), direct **contacts** with clients for partner and technologies offers/requests, **assistance** for projects preparation and development and **monitoring**.

The goal is to promote the transnational technology co-operation based on the flow of information and services provided by the main contractors and also by the regional partners. The strategy is based on the following key actions:

- to create an "optimum" framework for stimulating the partnership between government, intermediary organisations and private business sector aiming to develop an innovation strategy in energy field
- to stimulate the local communities to identify their specific problems and find out

ways to involve key actors to elaborate solutions to those problems
- to support and convince SMEs to couple the efforts of the local governments, research organisations, universities and civil society for local initiative development through innovation
- to collect information and to spread out opportunities for partnership and business development

Conclusions:

It is the first time in European history that such a group, representing different stakeholders from the energy sector, have joined force in a project like Energy Sector Innovation-Financial Network, while at the same time acting as drivers for other companies in the industry in the EU.

The final derivable of the project is an online platform (WEB) with contents and tools to which the promoters of innovative energy projects and investors or other organizations interested in the promotion of energy SME, have access.

The Web are equipped with the necessary documents, procedures and tools to guide the entrepreneurs to fill in their business plans, to carry out the valuation of their projects and to advice them in the search of funds.

In the same way, investors will have access to all these tools, allowing them to choose among a broad range of projects in the energy sector (wind power, biomass, ..).

The Web include a knowledge repository about innovations in the energy sector and innovations in the financial sector. We foresee to reach about 300-400 participants in the WEB.

Based on the financial evaluation method (DCF, EVA methods, etc.), the Real Options methodology introduces a useful approach that help in the decision-making process from a perspective which, taking into account all the financial knowledge, will allow to manage the margin of doubt in the evaluations.

References

[1] EIFN Disemination web site: http://www.europe-innova.org/EIFN
[2] RoDI web site: http://www.rodi.ro RoDI – IST – Net, Web site: http://www.ipacv.ro/proiecte/rodi/index.php
[3] Romanian IRC 4D web site: http://www.irc4d.ipacv.ro
[4] European Union Sustainable Energy Week 2007, www.eusew.eu
[5] The 6th ManagEnergy Annual Conference, Brussels, 30.01 – 1.02 2007, part of the 1st EU Sustainable Energy Week (EUSEW); Results, http://www.managenergy.net/conference/2007.html
[6] Renewable energy, energy efficiency and renewable bioproducts http://www.cplpress.com/sps/ec_projects.htm
[7]The Renewable Energy Policy Network for the 21st Century: http://www.japanfs.org/db/1600-e
[8] Valencia Declaration on Innovation: European stakeholders support action on innovation policy
[9] Energy sector innovation-financial support schemes: Community Support Schemes for Financing Innovation