



**Good Practices on Regional Research and
Innovation Strategies for Smart Specialisation**
EnergiBasque Strategy

Basque Country (ES)
February 2013

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1 Basic Data of the Practice

1.1 Title of the practice

EnergiBasque

EnergiBasque is a comprehensive strategy designed to position the Basque Country as a benchmark of knowledge and a leader in industrial development in the field of Energy.

1.2 Precise theme/issue/policy tackled by the practice

X Clusters

X Innovation friendly business environments for SMEs

X Research infrastructures, centers of competence and science parks

X Universities

Digital Agenda for Europe

X Key enabling technologies

Cultural and creative industries

X Internationalisation

Financial engineering instruments

X Innovative public procurement

X Green growth

Social innovation

In particular:

X Open innovation

User driven innovation

Process of regional change initiated:

Transition

X Modernisation

X Diversification

X Radical foundation of a new domain

1.3 Geographical range of the practice

Basque Country (ES) NUTS 2

Population: 2,162,944, extension 7,234 km²



1.4 Contact details

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1.5 Sources of information

<http://www.eve.es/>

http://www.slideshare.net/TR3S_PROJECT/a-basque-specialisation-experience-energi-basque-and-the-bidelek-sareak-project

<http://www.cicenergigune.com/en/>

<http://www.clusterenergia.com/>

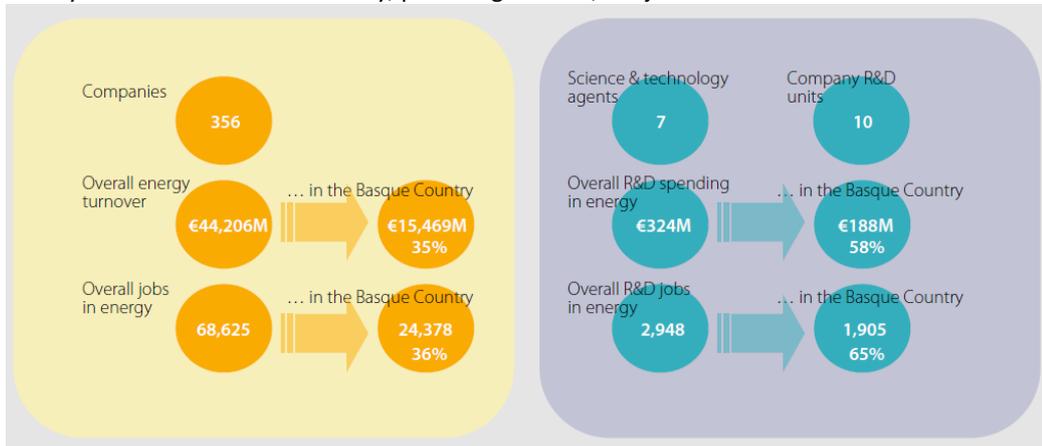
<http://www.theclimategroup.org/assets/files/Basque-energy-policy-2020.pdf>

<http://www.euskadinnova.net/documentos/1818.aspx>

<http://regions202020.eu/cms/home/pioneers/euskadi/>

2 Introduction: Regional Background

The Basque Country has a solid initial base in the energy industry. There is a relevant cluster of around 350 companies with a high degree of specialization in energy. Their overall turnover comes to over €44 billion (2008 figures), with nearly €15.5 billion sourced locally, providing over 24,000 jobs.



Companies in the Basque energy industry spend more than €300m per year on R&D, of which 58% is spent in the Basque Country. This is much higher than the 35% of their turnover which comes from the Basque Country and reflects the concentration in the region of activities of greatest added value. Indeed, R&D in energy directly employs nearly 2,000 people in the Basque Country. By energy areas, renewable energy sources are gaining ground and now represent 35% of total employment in the industry, close to the figure for power transmission and distribution companies. The remainder is made up of oil (15%), natural gas (10%) and other Energies (5%).

The energy cluster companies are backed by an experienced and skilled scientific and technological network in the field of energy, with R&D spending of over €20 million, employing 330 people. The network comprises the technology corporations Tecnalia and IK4, the CIC energiGune (focusing on basic research into energy storage), the BIMEP Center for demonstration of marine energy, the universities of the Basque Country (UPV-EHU), Deusto, Mondragon and Tecnum, as well as ten R&D units in the leading business groups. The Energy Cluster Association is one of the main players of reference in the Competitiveness Policy of the Basque Government and plays a very important role in promoting co-operation among the companies and all the agents of the industry.

The last years have been particularly intense in terms of energy and environmental policy. Concern with economic growth, stability in energy markets and, above all, global warming has formed the keystone of policymaking at all levels: international, European, national and regional. Among the most relevant are to be highlighted:

- UN Framework Convention on Climate Change entered into force on 2005 to tackle the problem of global warming.
- In 2009, the World Forum on Energy Regulation (WFER) has contributed to establishing the principal strategic priorities for governments.
- In 2008, the European Parliament approved the European energy policy for the next decade, dubbed the “20-20-20 plan”, because of its three basic targets: a 20% reduction in greenhouse gas emissions, a 20% reduction in primary energy consumption and 20% share of renewable energy in final consumption.
- In 2007 The European Strategic Energy Technology plan (SET-Plan), published by the European Commission, which is intended to achieve better use and to multiply by three the R&D investment in low carbon technologies.
- Spain has set out the Energy Saving and Efficiency Plan 2011-2020 and the new Renewable Energy plan (REP 2011- 2020). To achieve the goal of 20% of renewable by 2020 it requires that Spain should increase renewable power generation by 25000 MW.

3 Description of the practice

3.1 Executive Summary

EnergiBasque is part of the whole Energy Strategy of the Basque Country “*Estrategia Energética de Euskadi (3E 2020)*”. The 3E2020 strategy was produced after a deep analysis and a reflection process in which more than 200 organizations and stakeholders took part.

Taking into account the reference of global, European and Spanish directives and initiatives, the strategy 3E2020 establishes a commitment to improve and progress towards sustainability of the Basque Energy System.

A set of initiatives and actions have been put in place through the three pillars or areas of the strategy regarding; energy consuming sectors, energy markets and supply and technological and industrial development.

EnergiBasque is the third pillar of 3E2020, the one that focuses on the **technological and industrial development**. Market potential and initial strength of the industry have been some of the criteria applied to define the niches of specialization. These selected niches are; wind offshore, solar thermoelectric, waves, smart grids, transport electrification, energy management services, un-conventional gas and storage of energy.

The initiatives proposed under the EnergiBasque strategy are:

- **To consolidate business generating firms** in smart grids, wind offshore, solar thermoelectric, where there are a set of Basque firms, competing globally that are leaders or major references for certain products and markets.
- **To develop business in emerging areas**. There are enough bases at regional level and certain local advantages to enter into wave energy and storage.
- **Generate new business opportunities**. Through other pillars of the 3E2020 strategy like, efficiency, electric mobility or un-conventional gas.

A set of indicators deployed at initiative level will be monitoring the socioeconomic impact of EnergiBasque. It is expected to increase Energy companies R+D expenditure in the Basque Country up to 300 M€ by 2015, which is a 50% more than in 2010. This will represent the 60% of the worldwide R+D investment of the companies. In the same period, total jobs in EnergiBasque companies within the Basque Country, are expected to rise more than 20% from 12.800 up to 15.000 jobs.

3.2 Key features of the practice

- EnergiBasque is a comprehensive strategy to position the Basque Country as a benchmark of knowledge and a leader in industrial development.
- EnergiBasque will focus on consolidating driver companies in the Basque Country as leaders in the field of technology.
- EnergiBasque will focus on developing business activities in emerging fields of energy.
- EnergiBasque will focus on generating new energy markets and opportunities through the 3E2020 Strategy.
- EnergiBasque will focus on a reduced number of selected areas: Power generation, Transport & Distribution, Consumption, Primary Energy and Storage.
- The Basque Energy sector is supported by a solid infrastructure of scientific and technological agents.

3.3 Detailed content

Energy Strategy of the Basque Country 2020 (3E- 2020)

EnergiBasque is part of the whole Energy Strategy of the Basque Country “*Estrategia Energética de Euskadi (3E 2020)*” so a brief introduction to the whole picture will be given in the following paragraphs to get a better understanding.

In order to have a solid strategy that meets our economic, energy and technology reality, the Basque Government has undertaken a process of reflection in which, based on a preliminary analysis work has channeled the participation of the relevant stakeholders.

Indeed, more than 200 organizations representing virtually all of the major economic and social actors in the country took part in the workshops organized. In these workshops and debates, were discussed the outlines of the strategy. The participants discussed the assessments and proposals for action developed initially. The facilitators collected the views, comments and suggestions from participants.

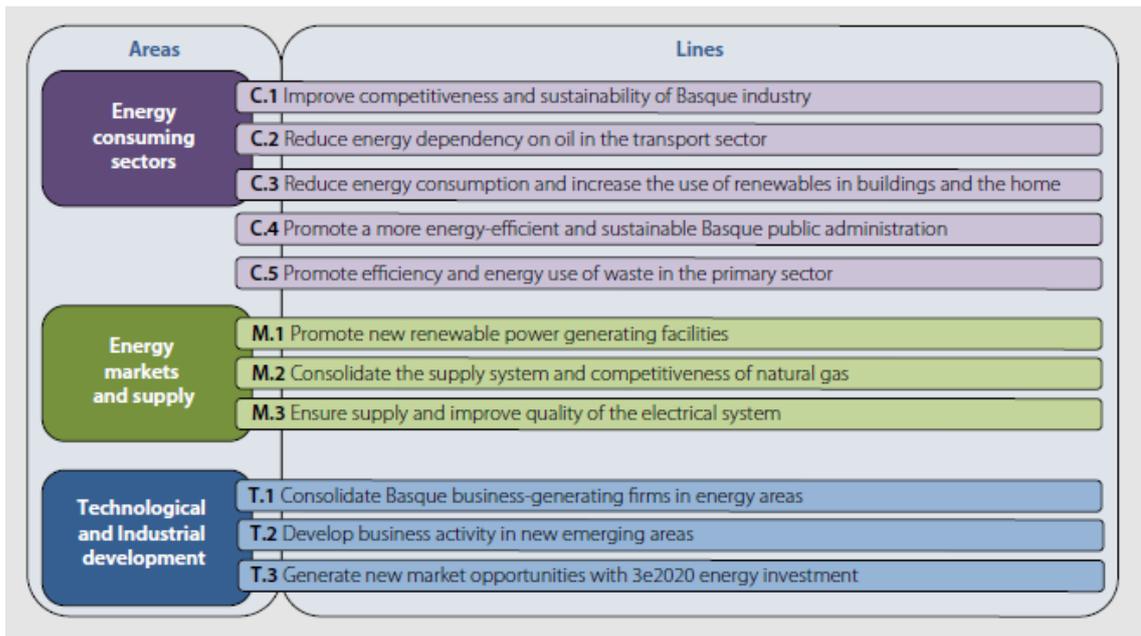
The result is the Basque Energy Strategy (3E-2020), a commitment to improve and progress towards sustainability of the Basque Energy System. And the technological and economic development of Energy sector intended as a source of value creation in the long term for the Basque Society.

The **strategic objectives** of the 3E-2020 Strategy are the following ones:

- By 2020 levels of primary energy consumption should be no higher than in 2008, the historical maximum to date. This is to be achieved through intensified energy efficiency actions in all energy-consuming sectors.
- Final oil consumption in 2020 to be 9% lower than 2010, by encouraging a dissociation from oil in the transport sector, use of electric vehicles, with 37,100 units on the market and 15% consumption of alternative energy sources in road transport.
- Increase the use of renewable energy sources by 87% to 905,000 toe in 2020, to give renewables a 14% share of final consumption.
- Increase the participation of Cogeneration and renewables in power generation from 18% in 2010 to 38% in 2020.
- Promote priority areas of research, technological and industrial development in the energy field and increase the turnover of companies in the energy industry by 25%.
- Contribute to limiting climate change through a 2.5 Mt reduction in CO2 emissions by way of the measures contained in the energy policy.
- Mobilise investments of €10.71 billion over 10 years.

According to this framework of policies and directives, a comprehensive assessment of energy situation and a strategic analysis of the energy system were carried out in the Basque Country. The assessment covered energy consumption and generation, use of renewables and gas, efficiency, environmental contribution, infrastructures, demographic and social perspectives, economic and sectorial trends, etc. As a result of the strategic analysis risks and strengths were identified, as well as the challenges for the energy system in the Basque Country. Actions and initiatives were discussed and finally were selected to be part of the 3E-2020.

The 3E-2020 strategy is deployed by some 100 actions grouped in 11 main lines of action according to the three following pillars or strategy areas:



EnergiBasque is the name for the strategic pillar focused on the technological and industrial development. It seeks to make use of the major energy and environmental challenges as an opportunity for growth in Basque business sectors, through technological development, inter-business co-operation and identification of new business opportunities.

Energy in the competitiveness and R&D plans of the Basque Government

Energy has a significant presence in other relevant instruments of the Basque Government, such as Science and Technology Policy and the Business Competitiveness Policy. Indeed, the Energy is one of the five "focus markets" defined as priorities in the PCTI 2015, the Science, Technology and Innovation Plan, which includes the programs and investments in R & D. These programs help traction of the business related to the different links in the value chain of the energy sector (generation, distribution, control, renewables, efficiency, etc.). To do this, the PCTI 2015 supports the business cooperation in technology development projects that help to exploit new business opportunities.

3.4 Technological & Business aspects of EnergiBasque

EnergiBasque is the name for the strategic pillar focused on the **technological and industrial development**.



The importance and extent of the Energy challenge calls for a change that goes beyond business-as-usual solutions. A technological revolution is needed that will provide a sustainable solution for the planet's growing energy requirements and enable it to develop towards a low-carbon energy system. To achieve this, a variety of alternatives are being developed, which are at different degrees of maturity. These range from generation using renewables and energy efficiency to more long-term technologies such as carbon capture, transport and storage and nuclear fusion.

EnergiBasque seeks to consolidate a competitive network of science-technology companies and agents within the energy industry in order to turn the Basque Country into an international knowledge pole and a reference for industrial development in a set of specialties within the energy industry.

A limited number of technology/market domains have been identified as promising for the Basque industry. Further analysis of the market attractiveness, the initial strengths of Basque industry and their contribution to the strategic targets facilitates the selection of priority domains in which concentrates the technological and industrial efforts. The common framework of these energy areas is principally electricity and industrial equipment, with storage as a facilitator (key enabler technology).

- Wind offshore
- Solar thermoelectric
- Waves
- Smart grids
- Transport Electrification
- Energy Management Services
- Non-conventional gas
- Storage of energy

Three initiatives have been proposed according to the selected domains:

T.1 CONSOLIDATE BASQUE BUSINESS-GENERATING FIRMS IN ENERGY AREAS

T.2 DEVELOP BUSINESS IN NEW EMERGING AREAS

T.3 GENERATE NEW MARKET OPPORTUNITIES WITH 3E2020 ENERGY INVESTMENT

T.1 CONSOLIDATE BASQUE BUSINESS-GENERATING FIRMS IN ENERGY AREAS

Business-generating firms are driving companies, they are competing globally in their respective fields and even some of them are world leaders or major references for certain products and markets. This is the case in smart grids, wind offshore, solar thermoelectric.

T1. Stakeholders:

Smart grids. Iberdrola (5th ranking energy utility company worldwide) and various medium-size niche market leaders are driver companies in this field.

Wind. Gamesa (6th ranking worldwide) and Iberdrola Renovables (3rd ranking worldwide) are the driver companies here.

Solar thermoelectric. Sener, a world leader in central receiver technology competing throughout the world, together with Mondragon and Torresol are the driver companies in this field.

T1. Targets:

INDICATORS	TARGETS	
	2010	2015
Percentage of R&D performed by companies in the Basque Country/Total	58	60
Turnover in the Basque Country, companies in T.1 areas	3050	4000
Jobs in the Basque Country, companies in T.1 areas	12800	15000

T.2 DEVELOP BUSINESS IN NEW EMERGING AREAS

Emerging areas with big market potential and in which we have initially, sufficient technological and industrial base in the cluster. This is the case for Power storage and wave energy.

T2. Stakeholders:

Storage. CIC Energigune is the cooperative research center focused on energy storage. This body gathers the main stakeholders in this field of energy storage. CIC Energigune pursues to become a worldwide reference within this scientific-technological niche.

The CIC is articulated as a private foundation, it has a budget of 30 million euros over the next three years. The foundation incorporates industrial companies related to the sector such as Iberdrola, Gamesa, Guascor, Sener, IDOM, Cegasa, Naturgas and Mondragón group. Also participating are the technological corporations IK 4, Tecnalía and the Basque Energy Cluster Association. The University of the Basque Country and Mondragon are expected to join in the next future. The public part of the project corresponds to the Basque Government (through the departments of Industry and Education), the Provincial Council of Alava and Technology Park of Miñano, where the center is located.

Wave Energy. Here the aim is to consolidate a scientific and technological offering and the value chain with a supply of equipment, components and specific services for marine energy that can benefit from the magnet effect of a one-off experimentation infrastructure currently underway in the Basque Country. BIMEP is the ocean infrastructure to research, testing, demonstration and operation of wave energy devices. It will attract promoters and technologists around the marine energy sector.

BIMEP Company has been established by two shareholders, the Basque Agency for Energy (EVE) (80%) and the Spanish Institute for Diversification and Saving of Energy (IDEA) with 20%.

T2. Targets:

INDICATORS	TARGETS	
	2010	2015
Turnover in the Basque Country in T.2 areas (€m)	60	200
Employment in the Basque Country in T.2 areas (jobs)	200	500
Nr of new companies in T.2 areas		5
Foreign investment in T.2 areas (€m)		25
PCT patents registered in T.2 areas – 3		3
No. of researchers in T.2 areas (persons) – 100		100

T.3 GENERATE NEW MARKET OPPORTUNITIES WITH 3E2020 ENERGY INVESTMENT

This line includes technological areas directly related to initiatives and actions raised in the previous areas of the 3E2020 for energy purposes, but whose development can generate technological and/or market opportunities for Basque companies, producing synergies of interest. Examples of this line are the following

- Infrastructure and support services for electric vehicles, can take advantage of synergies with smart grids and storage technologies.
- Energy Efficiency Buildings in synergy with ICTs to provide Energy management services
- Un-conventional gas exploration to develop the local supply chain

T3. Stakeholders:

Electromobility. IBIL is a new venture created between REPSOL, a mayor leading company in the fuel and gas exploration and distribution sector, operating worldwide, and the Basque Agency for Energy (EVE). IBIL will develop and operate charging infrastructure for electric vehicles in private and at public locations.

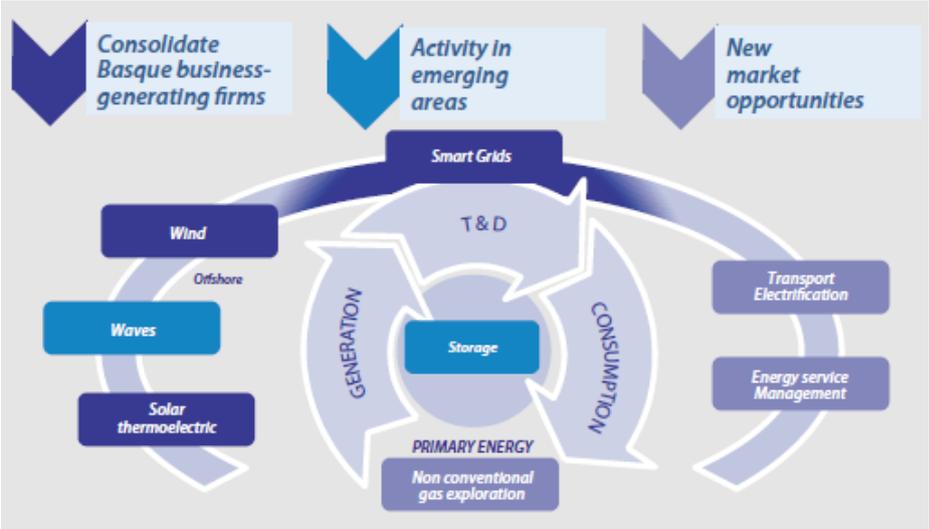
Management of energy services. Pilot projects are underway for contracting energy services linked to efficiency, in central and regional administration public buildings.

Un-conventional gas. Should any resource be discovered, development of a domestic supply of products and services could take advantage.

T3. Targets:

INDICATORS	TARGETS	
	2010	2015
Nr of new companies in T.3 areas		10
Foreign investment in T.3 areas (€m)		30
No. of EV charging stations in the Basque Country		8000
No. of public buildings with efficient energy management (by means of ESCOs)		30
No. of non-conventional gas exploration wells drilled in the Basque Country		5

EnergiBasque in a nutshell. The following picture represents the specialisation areas and the lines of action discussed in the previous paragraphs.



3.5 RTD infrastructure and main players

The following charts shows the main bodies and stakeholders involved, from which to highlight the followings:

- The CIC Energigune as coordinator.
- Main RTD related to energy is done mainly by University of Basque Country, University of Mondragon, Tecnalia, IK4 and the CIC Energigune. This research infrastructure employs 98% of total employees in R&D related to energy.
- RTD business units from companies such as: IBERDROLA; GAMESA; SENER, GUASCOR, ORMAZABAL, ARTECHE, ZIV, INGETEAM; FAGOR, ORMAZABAL.



3.6 Legal framework

The Principal directives and policies regarding Energy have been discussed before in the background chapter.

3.7 Financial framework and impacts

Annual figures for mobilisation of R&D resources and public contributions are as follows:

	2008	2009	2010	2011	2012	2013	2014	Objectiv 2015	TOTAL (2011-2015)
Energy-related R&D expenditure	188	204	203	221	244	264	285	300	1,316
Funds provided by companies	138	150	149	165	180	194	208	217	964
Funds provided by the Basque Public Administration	35	38	38	40	43	46	48	52	229
Funds provided by the Spanish Public Administration	10	11	11	12	14	16	18	21	81
Funds provided by the EU	5	6	6	6	7	8	9	11	42
Overall outlay on R&D / GDP (Gross Expenditure on R&D, GERDJ)	1.85%	2.01%	2.00%	2.20%	2.35%	2.55%	2.75%	3.00%	

EnergiBasque's targets are in line with those set out in the STIP 2015 (3% of GDP spent on R&D), in pursuit of a similar growth in spending on R&D in energy. This represents average annual growth in R&D expenditure of 10% to 2015, which is in line with the targets for technological leadership set and the need to generate and consolidate a critical mass in all strategic areas.

The Basque Energy Strategy 2011-2020 is an ambitious proposal which, as well as consolidating the energy industry's lead position, will make a decisive contribution to the social, economic and technological development of the Basque Country. Based on its three strategic areas, it will have a major multiplying effect on the economy in general, generating business, fostering technological progress and contributing to an improvement in the living standards of Basque society as a whole through the forecast investment for the period 2011-2020.

Given the capacity of Basque industry to respond to the demand generated by this volume of investment, 61% of it will translate into domestic investment, i.e. sourced in the Basque Country, with a local impact, benefitting manufacturers and service companies operating as direct or indirect suppliers. This increase in demand will help Basque companies increase their output and their capacity to generate employment, leading to a series of related effects in the form of business, tax revenue, etc.

This volume of activity will translate into tangible impacts in the period 2011-2020 by generating 1.6% of Basque GDP, output to a value of €27.41 bn, net revenue of €2.82 bn for the territorial revenue offices and a level of business capable of providing the equivalent of 14,150 jobs per year.

4 Monitoring and evaluation

Detailed goal indicators have been provided for each initiative before. In the following table the global performance indicators are presented:

Performance indicators (millions of euros)	2010	2015
Total expenditure on energy-related R&D	350	500
Expenditure on energy-related R&D in the Basque Country	203	300
% of R&D activity in the Basque Country	58%	60%
Number of people working in energy-related R&D	2000	2800
Private funds	149	217
Basque public funding of energy-related R&D	38	52
Spanish and EU funding of energy-related R&D programmes	17	32
Investment in demonstration projects	218 (2011-15)	
Investment in scientific / technological infrastructure	14 (2011-15)	

5 Lessons learnt

- **Being the Energy sector is a cornerstone of the Basque regional industry; it is now also a cornerstone of the regional Smart Specialization Strategy.** Based on regional assets the region has managed to develop an innovative sector worldwide connected that has reached excellence in several fields of research. Nowadays the sector accounts with a well-developed RTD and scientific infrastructure, a long trajectory in RTD demonstrated also by the number of employees in the field high private investment in RTD as well as worldwide leader companies such as IBERDROLA, the first in the world promoting and operating electricity from renewables; GAMESA, the third biggest producer of wind mills; among others. The Basque regional energy industry is competing globally in their respective fields, in areas such as smart grids, wind energy and solar thermoelectric.
- **EnergiBasque is a comprehensive strategy to position the Basque Country as a benchmark of knowledge and a leader in industrial development.** The strategy is framed within the European, National and Regional strategies. As regards the regional Strategy; energibasque is and has been linked to the different regional Plans. EnergiBasque forms part of the regional energy strategy called 3E2020 and provides input to the regional Science, Technology & Innovation Plan (PCTI 2015) by delivering the key development areas of the energy sector. The 3E2020 has the objectives of increasing energy efficiency in all sectors. Energy is thus a strategic sector of the Basque Country, and will therefore play a key role in delivering the objectives of the PCTI 2015.
- The success so far of the strategy lies down also **on the strategy definition process**, coordinated by the Basque Regional Government (Department of Industry) with the Basque Energy Board (EVE; Ente Vasco de la Energía); the strategy is the result of a collective effort of the Basque Country agents with a number of stakeholder meetings. It is also a strategy embedded in the regional strategy.
- **EU projects such as the RESGen project**, under the (FP7- Regions of Knowledge Programme) **contributed to the definition** of the regional technological and industrial strategy called EnergiBasque, which was approved by the Basque Government in December 2011. The RESGen project has also given the opportunity to give a collaborative European dimension to the plan having available the reference of the other regions participating in the project.

- The sector is also supported by a **strong and well established Basque Energy Cluster** (*Cluster de Energía de País Vasco*) since 1996. The Cluster gathers most of the companies of the sector; 95% being associated to the Cluster. The Cluster has the vision of contributing to place the region as European leader in the field of Energy. The Cluster gives strong support to industry strengthening the value chain in future fields where the Basque industrial fabric has knowledge and technological basis; develops strong industrial groups' leaders of the value chain with strong emphasis in the generation of high added value products and services as well as contributing to develop a new energy model.