INTERREG IVC
INNOVATION & ENVIRONMENT
REGIONS OF EUROPE SHARING SOLUTIONS

THEMATIC PROGRAMME CAPITALISATION OF INTERREG IVC PROJECTS

RENEWABLE ENERGY

April 2013

INTERREG IVC
INNOVATION & ENVIRONMENT
REGIONS OF EUROPE SHARING SOLUTIONS

THEMATIC PROGRAMME CAPITALISATION OF INTERREG IVC PROJECTS

RENEWABLE ENERGY

Thematic experts:

Katharina Krell
Astrid Severin

Contributors:

Simon Hunkin
Sarine Barsoumian

Brussels, 30 April 2013

This study was performed by the experts of Greenovate! Europe EEIG for GEIE GECOTTI (Groupement Européen pour la cooperation Transfrontalière Transnationale et Interrégionale)

Greenovate! EUROPE

Contents

Executive Summary

Europe has been paving the way for an increased use of renewables in the energy mix through high-level political decisions and ambitious targets. National governments have been implementing incentive schemes and policy measure such as feed-in tariffs for renewables that have become the most copied policy schemes for countries worldwide. However, to be successful, the necessary energy revolution has to be enacted at regional and local level. As one project co-ordinator put it, "Without regional involvement, the EU 20/20/20 targets will fail. Results are essentially developed at a local level, where people live."[1]

First and foremost, renewables are an opportunity for value creation at regional and local level. It is here that energy sources are available, directly or indirectly from the sun, such as thermal, photochemical, photoelectric and photosynthetic energy, wind, hydropower and energy from natural movements (i.e. geothermal and tidal energy). It is thus at regional and local level that jobs and growth can be created through harvesting, transforming, transporting and storing renewables, provided that the right political framework conditions have been created.

Several European regions and municipalities have been frontrunners in renewable energy development and often set themselves ambitious targets. Yet, information about renewable energy regions is only collected sporadically (for example, through case studies) and coherent regional statistics are not available. The intensive exchange in INTERREG IVC projects offers access to regional experience and the opportunity for spreading and taking-up policy instruments in a large number of European regions.

The aim of the present thematic capitalisation study on renewable energy was to undertake a programme level analysis of the thematic knowledge gained from seven INTERREG IVC projects collaborating in the renewable energy sector. Of these seven projects, three projects had a strong technology focus (geo-thermal, biomass and offshore-wind) and four projects took a more general approach encompassing all renewable energy sources (RES). A total of 69 regions participated in these projects, each recognising the large potential of renewables for regional development in this area.

As a basis for analysis, a RES policy grid has been developed and completed.[2] It features policy practices for four levels of market maturity:

- Commitment and Planning (i.e. regional SWOT analysis, stakeholder involvement, developing action plans and setting, etc.)
- Emerging Markets (i.e. initial demonstration projects, communication campaigns, regional financing instruments, encouragement of R&D co-operation, etc.)
- Mature markets (i.e. strong commitment to R&D, dedicated training at university level, support to business start-ups, etc.)
- Saturated markets (i.e. export orientation, business leadership, world-class R&D, etc.).

This is a continuous cycle where, depending on the stage of renewables development, different policy tools are more appropriate than others. A new cycle can be started by a region to review targets, to start developing a new renewable energy source, or start completely from scratch with the introduction of renewables. Completing a cycle by reaching the stage of a saturated regional market takes around 30 years.

Using the RES policy analysis grid, the 212 policy practices collected by the projects (at the time of writing) have been analysed and recorded in a database. In addition, the present report provides many examples of best practices for all four market maturity stages.

[1] Thomas Engelke, RENREN Co-ordinator
[2] Based on EurObserv'ER 2011 regional case studies

The study has shown that the projects are beneficial for both experienced renewable energy regions that seek inspiration for new and efficient policy schemes and learning regions that can get a head start by adapting policy schemes and approaches that have already been tried and tested. The majority of practices concern the 'Commitment & Planning' (12%) and 'Emerging Markets' (73%) stages which appears to be the right concentration since most regions are at these development stages. These practices help regions meet the key pre-requisites for success in renewables: commitment, collaboration and communication.

For regions with more experience in one or more renewables, more advanced policy practices have been collected ('Mature Markets' 12% and 'Saturated Markets' 3%). Within the 'Emerging Markets' segment, a high concentration of technology demonstration practices can be observed, mainly originating in the sector-specific projects. The focus on demonstrating and show-casing technologies underlines a strong need for information and awareness-raising on the technological and economic possibilities that renewables offer.

Of the 212 practices, the majority focused on bioenergy, geothermal energy, solar power and wind energy, though there were also a few practices that noted the potential of small hydropower and developments in ocean energy. Other practices did not focus on a particular renewable, instead covering multiple technologies, often with energy efficiency concerns.

With regard to the difficulties that regions encounter in achieving the desired impact, the project partners were mainly concerned by the complexity of transferring best practices into a different regional policy context and by the fact that projects stop when they are finally starting to create real thematic impact.

Whilst the desired impact on policy learning and governance processes can be achieved relatively quickly following the set-up of the consortium, the thematic impact comes towards the end of the project when best practices have been analysed and chosen for transfer. The projects have therefore suggested extending the project duration by one or two years to finalise the transfer processes and achieve greater thematic impact.

How should INTERREG IVC go from here to increase and accelerate the thematic impact of the projects?

- **Manage and promote the body of renewable energy thematic knowledge:** A lot of relevant thematic knowledge has been accumulated in an impressive body of over 200 policy initiatives for renewables. This knowledge can now be developed into a thematic policy toolbox to be promoted towards regional policy makers, programme owners and stakeholders for use and implementation in their regions.

- **Complete and enrich renewable energy thematic knowledge:** Relevant policy initiatives for the theme of renewable energy are also developed or described by other European programmes such as Intelligent Energy Europe. To enlarge the renewable energy thematic knowledge, particularly in categories that are less well covered by the INTERREG IVC projects analysed for this report, it is proposed to also draw from the experience of projects carried out under other European Programmes This would allow to search and include additional practices covering all four stages of market development, thus enriching and completing a renewables policy tool box.

- **Accelerate the implementation of available ready-to-adapt best practices in the thematic area:** The study team proposes the introduction of a new family of 'accelerator' projects that would complement the current INTERREG IVC project types. The accelerator projects would not start from scratch, but would directly make use of the knowledge already gathered. Single regions could apply and directly select a limited number of best policy practices that they aim to transfer. Into their own region. Following regional stakeholder discussions and compatibility assessments, a feasible practice would be selected for pilot implementation in the applicant region. Accelerator projects would run for 18 months and should not exceed 75,000 Euro. The accelerator projects would be supported by a thematic support structure that manages the body of knowledge and accompanies the projects with advice and guidance.

1. Introduction and methodology

Renewable energy sources (RES) can provide solutions to all of the energy challenges that we face as a society, meeting our needs in electricity, heating and cooling and, increasingly, in transportation. Renewable technologies require support to become competitive, but as RES is decentralised, regional investment can bring long term economic advantages and guarantee security of energy supply. It is for this reason, that the INTERREG IVC programme has supported regional development of RES systems.

INTERREG IVC is a European Union programme that fosters interregional co-operation to improve the effectiveness of regional development policies and contribute to the economic modernisation and competitiveness of Europe. INTERREG IVC forms part of the European Territorial Co-operation objective of the European Regional Development Fund (ERDF). It has two priority areas: 'innovation and the knowledge economy', and, 'environment and risk prevention'.

This Thematic Programme Capitalisation's topic focuses on collecting, analysing and disseminating the knowledge gained from seven projects under the 'energy and sustainable transport' subtheme of the 'environment and risk prevention' priority. Capitalisation makes links between project results and provides an analysis of collective experience and practices. The report is aimed at policy-makers, programme bodies, regional authorities and journalists, who should use this collected knowledge to assist in elaborating future policy.

Table 1 gives a brief statistical overview of the seven projects. More information on each project can be found in the chapter on project-level analysis.

Table 1 – INTERREG IVC projects in the field of Renewable Energy

Project	Start date	End date	ERDF funding (€)	Total eligible cost (€)	Partners	Country of lead partner
MORE4NRG	1/9/2008	30/9/2011	1,030,689	1,326,559	12	NL
RENREN	1/1/2010	31/12/2012	1,646,507	2,095,360	14	DE
RETS	1/1/2010	31/6/2012	1,484,054	1,908,715	12	FR
BIO.EN.AREA	1/1/2010	30/6/2013	2,444,370	3,125,000	6	ES
GEO.POWER	1/1/2010	31/12/2012	1,612,258	2,031,530	12	IT
Regions4Green Growth	1/1/2012	31/12/2014	1,707,203	2,200,607	14	NL
4POWER	1/1/2012	30/9/2014	1,294,152	1,653,559	11	NL

Information for the production of this capitalisation has been collected from the projects through desk research, interviews (face-to-face and telephone) and attendance at project events. The authors also held a thematic workshop in Brussels, attended by representatives from all projects.

The report proceeds as follows: in the next section, the analytical tool developed by the authors for this capitalisation is presented. The report will proceed by providing an overview of the state-of-the art in Renewable Energy technologies, as well as outlining current support policy frameworks at the European, national and regional level. This is followed by a two level analysis; one of each of the seven projects under the renewable energy subtheme (allowing for tailored analysis and recommendations) and a second of the projects taken together to allow for the identification of broader trends and themes. The final section provides policy recommendations and conclusions.

1.1. Analytical tool

As outlined above, the purpose of this Thematic Capitalisation is to collect, analyse and disseminate the knowledge gained by INTERREG IVC renewable energy projects, with a focus on good practices that encourage development and uptake of renewable energy technologies.

For the purposes of this study, a 'good practice' has been defined as a policy initiative (methodology, instrument, programme, or pilot/demonstration project, etc.) in the thematic area of renewable energy that has proven successful and that has the potential to be transferred to a different geographic area. A 'Renewable Energy Technology' has been defined as a technical solution using energy resources that are naturally generated over a short timescale (see also Chapter 2, below, for more detail).

Studies, policy reports and statistics on the development of renewable energy sources (RES) and related policies are commonly available at the European and global level. For the regional level, however, there is no systematic collection and analysis of such information even though an increasing number of regional case studies and best practices - mainly stemming from European projects - can be found.

A first attempt to shed some light on regional RES policy was launched by EurObserv'ER.[3] In their 2011 report, EurObserv'ER introduced a regional analysis of RES support policies, investigating seven regions that demonstrated best practice in increasing use of renewables[4]. The aim was to identify the motivation for regional policy initiatives, the prevalence and effectiveness of tools used, and the underlying requirements for RES adoption. As a result, they observed that there was a 'regional policy value chain' in which regions become more mature over time, allowing for the elaboration of more advanced policy tools. This chain was expressed as phases showing policy tools found in beginner regions (e.g. less than ten years of RES experience) and tools used in advanced regions (e.g. more than thirty years). As regions develop through these phases, renewables go from being subsidised and heavily supported by regional authorities, to being market-driven, competitive technologies.

Developing an analytical framework for thematic capitalisation in renewable energy

Based on these observations and the information gathered during the capitalisation exercise, Greenovate! Europe elaborated on and adapted this policy value chain to become the analytical framework for the evaluation of 212 good practices put forward by the seven renewable energy projects of INTERREG IVC. The analytical framework is presented in Table 2 (below), outlining 'Regional RES policy initiatives in a continuous development cycle'. The 'Development Cycle' contains four stages, starting with 'Commitment and Planning' before reaching the stages of 'Emerging Markets', 'Mature Markets' and finally 'Saturated Markets' with a near to 100% RES deployment rate. It is estimated that a region needs approximately 10 years to run through each of these development stages.

For each development stage, a set of relevant RES policy initiatives has been listed as a 'tool box' for regional policy makers that aspire to become renewables regions.

[3] http://www.eurobserv-er.org/ - Analyses the state of renewable energy in Europe since 1998

[4] EurObserv'ER – The State of Renewable Energies in Europe 2011, Lyon, 2012

The ‘Development Cycle’ applies to one type of Renewable Energy Technology at a time. However, the stages of the Development Cycle are not exclusive, meaning regions can have policies in place from several stages of development cycles in parallel. *For example, a region could have a saturated wind market, a mature market for geo-thermal energy and also aim to initiate bio-energy introducing policies found in the first stage of ‘Commitment and Planning’.*

When a region first attempts RES development, it should focus on the type that has greatest growth potential. Ambitious regions can attempt to develop another technology in parallel, but each RES must be included in general policy tools, or have individual dedicated tools. For example, a region may adopt an RES Action Plan outlining a roadmap for several RES types, whilst others may adopt separate action plans for biomass and wind energy.

Application in the report

The establishment of the ‘Regional RES policy initiatives in a continuous development cycle’ framework is a first, very useful result of the Thematic Capitalisation exercise. It not only provides an analytical framework to analyse good practices, but is also a result in itself, providing a relatively complete ‘shopping list’ for policy makers that want to advance in renewable energy deployment. Based on their position in the Development Cycle, they can choose the best policy initiatives to be used at their specific stage of development. Moreover, it allows regional policy makers to obtain a fast overview and better understanding of policy initiatives that regions can use on their way to 100% renewable energy use.

Throughout the report, the ‘Development Cycle’ was used in a variety of ways:

1. To establish the key development stages on the way from a 0% to a 100% renewables region;
2. To specify relevant policy initiatives for each development stage;
3. To classify and analyse the 212 good practices identified by the INTERREG IVC RES projects according to:
    a. Development stage;
    b. Policy initiatives.

This allowed the authors to identify that most regions taking part in the projects were developing policy initiatives in the Emerging Market stage (155 practices), but that fewer policy initiatives were developed for the Commitment and Planning (26) Mature Market (25) or Saturated Market (6) stages. This information allowed for suitable recommendations to be made for each project, but also allowed for detailed thematic conclusions to be drawn in the final chapter.

Table 2- Regional RES policy initiatives in a continuous development cycle [5]
For one technology or parallel development of several technologies

Commitment and Planning

First time focus on one RES with highest growth potential

- Analysis of regional market and SWOT follow-up;
- Organisation of debates with regional stakeholders;
- Development of regional RES strategy and policy;
- Setting of clear quantitative targets (if possible branding as "xx% RES region");
- Peer reviews and study visits;
- On-going communication and co-operation with regional stakeholders;
- Public information campaign.

Emerging Markets

- Awareness raising through on-going information campaigns and educational programmes;
- Demo investments in proven RES solutions also through green public procurement;
- Capacity building through training programmes i.e. for farmers and installers, quality certification and support to leading actors;
- Public acceptance and local ownership i.e. through co-operative schemes;
- Technology networking and cluster development;
- Institutional support for investors (e.g. agency, business accelerators);
- Regional financing instruments (e.g. subsidies, innovation vouchers, loans, bank guarantees, investment funds, etc.);
- Facilitation of permitting processes and spatial planning.

Mature Markets

- Continued development of RES targets and strategy, to ensure long-term goals
- Communication to reinforce positive image and gain public acceptance;
- Strong commitment to R&D;
- Close co-operation in dedicated triple helix cluster;
- University programmes (technical, socio-economic, project management…);
- Support to innovation and start-ups;
- Simplification of investment procedures and availability of seed and risk capital;
- Regional business leadership ambition;
- Community ownership of RES enabling infrastructure i.e. grids, district heating and storage capacity.

Saturated Markets

- Well developed infrastructure for transport and logistics;
- Export initiatives and incentive schemes i.e. encouragement of internationalisation strategies and business plans;
- EU/Global technology leadership ambition;
- Demo investments in innovative RES solutions also through pre-commercial procurement;
- Dedicated international fairs and events;
- Involvement of world leading companies;
- EU leading R&D centres;
- Cluster of international scope.

[5] Greenovate! Europe Analytical Framework based on "EurObserv'ER – The State of Renewable Energies in Europe 2011" and the analysis and results of the INTERREG IVC Thematic Capitalisation Exercise

2. Policy context: Renewable Energy in Europe

Renewable Energy (RE) refers to "any energy resource naturally generated over a short timescale that is derived directly from the sun (such as thermal, photochemical and photoelectric), indirectly from the Sun (such as wind, hydropower and photosynthetic energy stored in biomass) or from other natural movements and mechanisms of the environment (such as geothermal and tidal energy)."[6]

Today, different forms of renewable energies offer solutions to all of society's energy needs: electricity, thermal energy for heating and cooling, and fuels for transportation.

The benefits of renewables are manifold. Renewable energy sources (RES) are not threatened by depletion and will contribute to ensure our energy future beyond the availability of fossil fuels as the resources they draw from are infinite and usually for free (the wind, the sun, the flow of water). Therefore, most forms of renewable energy systems have very low operational costs.

Renewable energy production is CO_2 neutral and does not destroy the atmosphere with harmful emissions, making it the energy form of choice for climate-conscious policy makers, and a means to prevent climate change induced by our heavily fossil-fuel-based energy system.

Finally, renewables are an indigenous source of energy that adds to Europe's security of supply and helps drive down energy import dependency from its currently high levels (around 70%). RES do not need to be imported from potentially unstable areas outside of Europe, nor result in a cash-outflow. In fact, the development of renewables results in local value-creation in the form of local investments and jobs. The decentralised nature of RES has potential for the creation of permanent jobs that are not threatened by globalisation, even (and especially) in structurally weak areas.

A region that has heavily invested in renewables will be able to enjoy the consequences of this political choice for decades through economic activity, local employment and a cleaner environment. These obvious benefits make renewables a prime sector for regional development policies.

2.1. Renewable Energy Technologies (RETs)

A wide variety of renewable technologies have been developed to suit our energy needs. Most of them have reached technological maturity, but continuous market deployment and R&D efforts are likely to result in further efficiency improvements and cost reductions. Since different RETs use different natural resources, there is almost always at least one RET that can be used in any given geography or climate zone.

Hydropower is responsible for the largest share of total installed Renewable Energy capacity in the world and is also one of the oldest, with hydroelectric dams used for electricity generation since the late 1800s. Large hydropower installations (defined as installed capacity of over 10MW) can have significant environmental impacts, and are not covered by EU RE support schemes. The benefits of pump storage are, however, undeniable: they provide on-demand additional generation capacity in peak electricity use periods, and can also store over-capacity at night when there is low energy demand. Hydropower installations are found around the world, with China becoming the world leader, holding 22% of world capacity. Most new large hydropower installations are in the developing world, with Europe instead refurbishing and modernising existing small hydropower (SHP) plants.[7]

SHP plants (installed capacity of under 10MW) usually consist of run-of-river schemes without dams, resulting in low environmental impact. Potential could be easily tapped in refurbishment and upgrading existing small plants, as new plants often suffer from lengthy permitting procedures and

[6] European Renewable Energy Council – Renewable Energy in Europe – Building Markets and Capacity (2004), pp. xxxvi.
[7] REN21 – Renewables 2012 Global Status Report (2012), p. 42.

pressure from environmental groups that misperceive SHP as being environmentally invasive, despite state-of-the-art impact mitigation measures. SHP can be one of the most cost effective methods of generating electricity as plants have a long life-span and although start-up costs are high, they have very low maintenance costs. SHP is slowly growing in Europe, with around 17,800 installations at present (40,517GWh)[8]. In 2010, 45.7% of all RE generated in the EU27 was from large hydropwoer, and 7.8% from SHP.[9]

Wind power is the fastest growing electricity generation technology and in locations with good conditions, it is already cost-competitive. Since 2000, wind power has gained a growing share of the global market, with almost a quarter of all new power plants built being powered by wind. However, it is Europe that is the front-runner, with growth that has largely been driven by Feed-In-Tariffs. The current technological trend is to develop ever larger turbines, which produce greater amounts of energy. In offshore wind (OSW), turbines are installed near to the coast, but the technology is developing for deep offshore floating turbines, to be built further out to sea where winds are stronger and visual impact is lessened. Challenges for wind energy include intermittency of wind and grid connection. There are plenty of opportunities for job creation in the manufacturing sector, as well as in installation and service provision along the entire supply chain. By 2025, wind energy is expected to overtake hydropower as Europe's dominant RES.[10]

Biomass is a very flexible energy source that can be transformed into heat, electricity, liquid fuels (such as biodiesel) and biogas, depending on how it is converted, and what form of biomass is used. Raw materials come, broadly, from three strands: forestry, agriculture and waste (forestry, agricultural and biodegradable municipal solid waste). Conversion methods are combustion, thermo-chemical conversion, biochemical processes and physico-chemical.[11] The most widely used conversion method is simple combustion to produce heat, and this is biomass's main use, with around 95% of renewable heat coming from biomass combustion. Wooden logs and pellets are viable for small scale heating systems, but larger systems are able to use wastes and refuses from the wood industry. Emerging technologies include the production of lignocellulosic ethanol, which uses only the wood of plants – rather than the edible parts, or energy crops – to produce ethanol that can be mixed with fuel or used in industrial processes, with other current efforts aiming at integrating so far unused biomass into the formal energy supply chain.

Solar energy can be used in a variety of applications. The production of electricity from solar power can be achieved through both concentrated solar power (CSP) and the use of photovoltaics (PV), whilst solar thermal collectors produce heat for both water and spatial heating. The PV sector has grown substantially since the 1990s, though Europe's level of PV manufacturing has declined, with only one of the top 15 manufacturers now found in Europe. However, in 2011, the top five countries for solar PV per inhabitant were in Europe[12] and of the 38.3GW of new energy capacity added in the EU27 that year, 21.5GW was solar PV.[13] Trends include the emergence of concentrated PV cells to increase the yield of receptors, without increasing their size and surface area, and the integration of PV into roof tiles and other construction elements. CSP is mainly used in hot, dry areas with direct sunlight (i.e. deserts) that are unsuitable for agriculture, giving a boost to local economies. CSP plants are usually multi-MW installations, initially creating construction jobs, followed by service and maintenance jobs. The European CSP sector is the world leader, with Spain at the fore. Current trends aim to produce plants that can use thermal storage with phase-changing materials (PCM) to store heat and release it at night, to be able to produce electricity 24 hours a day, to act as a true base load. Solar thermal is a technology that can be implemented throughout the continent, being both inexpensive and easy to install, mostly onto individual houses. Emerging developments include the use of medium temperature solar thermal systems to produce process heat for use in industry.

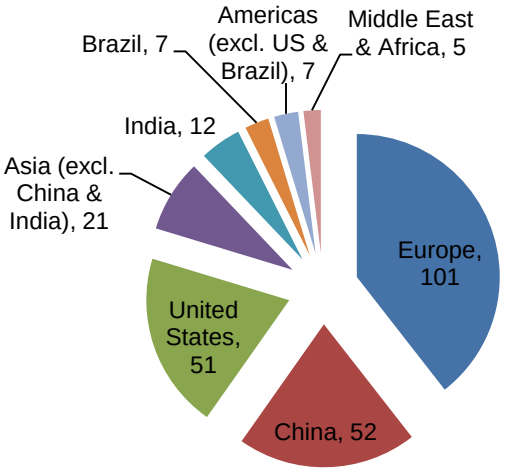
[8] EREC – Renewable Energy in Europe, 2nd Ed., p. 170-172.
[9] European Small Hydropower Association – Small Hydropower Roadmap: Condensed Research Data for EU-27 (2012), p. 12.
[10] European Renewable Energy Council – 45% by 2030: Towards a truly sustainable energy system in the EU (2011), p. 37.
[11] EREC - Renewable Energy in Europe, p. 41.
[12] REN21, pp. 47-48 (Germany, Italy, Czech Republic, Belgium and Spain)
[13] European Commission, JRC Scientific and Policy Reports: PV Status Report 2012, p. 18.

Geothermal energy can be used as an energy source for both heating and cooling (its main use) as well as for electricity production (dependent on geological conditions). Geothermal heating and cooling technology has developed in such a way as to be useable almost anywhere; geothermal heat is an indigenous source that is available everywhere. Systems either operate in low temperature soils at a shallow level using a heat pump, or by exploiting hot groundwater from deep in the soil. Either source can be used for individual heating systems, or in district heating. There are currently 216 such district heating systems in Europe, with 4,000 MWth capacity. Geothermal electricity production has been used since the early 1900s and Europe has a combined installed capacity of 1.7 GWe, from 62 plants. Geothermal electricity systems are much deeper in the soil, and use heat and groundwater to produce steam that will drive a turbine. Geothermal energy has huge potential to supply a stable base load, which makes it an interesting option to explore, but high drilling costs keep holding back large scale deployment.

Tidal, wave and ocean energy is a developing form of RE electricity production, which, after years of research and small pilot projects, is now becoming a realistic source of energy. The UK is the leading nation for development and commercialisation of the technology (particularly in Scotland), although France and Germany are also investing in demonstrations. South Korea is leading in installation.

2.2. RES deployment

According to estimates, RES already provide around 17% of final energy consumption in the world. However, only 8% of this is from 'modern renewables', with the remaining from large hydropower and traditional biomass sources, such as wood. The European Union has already made good progress in the transition to RES and in the global context, it leads the way, with nearly 44% of global non-hydro renewable capacity.



New investment in RES ($ billion, 2011)

New global investment in renewables rose 17% to $257 billion (€190 billion) in 2011, representing a two-fold increase since 2007.[14] Europe (not only the EU27) attracted around $101 billion (€75 billion) of this investment; almost double that of the next largest recipient; China (See left)

This investment has had a positive impact on job creation, with RES industry in Europe already provides a sizeable number of jobs; around 1.1 million in 2011 (see Table 3). RE jobs are mostly for skilled workers and technicians; they are created where RE projects or technologies are developed – including structurally weak areas – and they are rarely threatened by globalisation. It has been estimated that investing in RES could create an additional 300,000 European jobs by 2020.[15]

[14] REN21 – Renewables 2012: Global status report (2012), p. 15.
[15] Greenpeace and EREC, p.69

Table 3 - Socio-Economic Indicators in RES (2011) [16]

Renewable Energy Source	EU27	Global	Turnover (EU27)
	Thousand jobs		*€ billion*
Biomass	273	750	24.6
Biofuels	151	1,500	13.3
Biogas	53	230	4
Geothermal	53	90	3.9
Hydropower (Small)	16	40	2.6
Solar PV	268	820	45
Concentrated Solar Power	0	40	-
Solar Heating/Cooling	50	900	2.6
Wind Power	253	670	29
Total	**1,117**	**5,000**	**125**

2.2.1 Renewable Electricity

In 2011, 71% of all new electricity capacity in the EU was renewable, with support policies and long-term targets acting as the driving force for uptake.[17] Almost half of this newly installed capacity in the EU was from Solar PV, with Wind also proving a strong market presence.[18] RES already provides around 20.9% (699.3TWh) of generated electricity in the EU27 (broken down in Table 4).

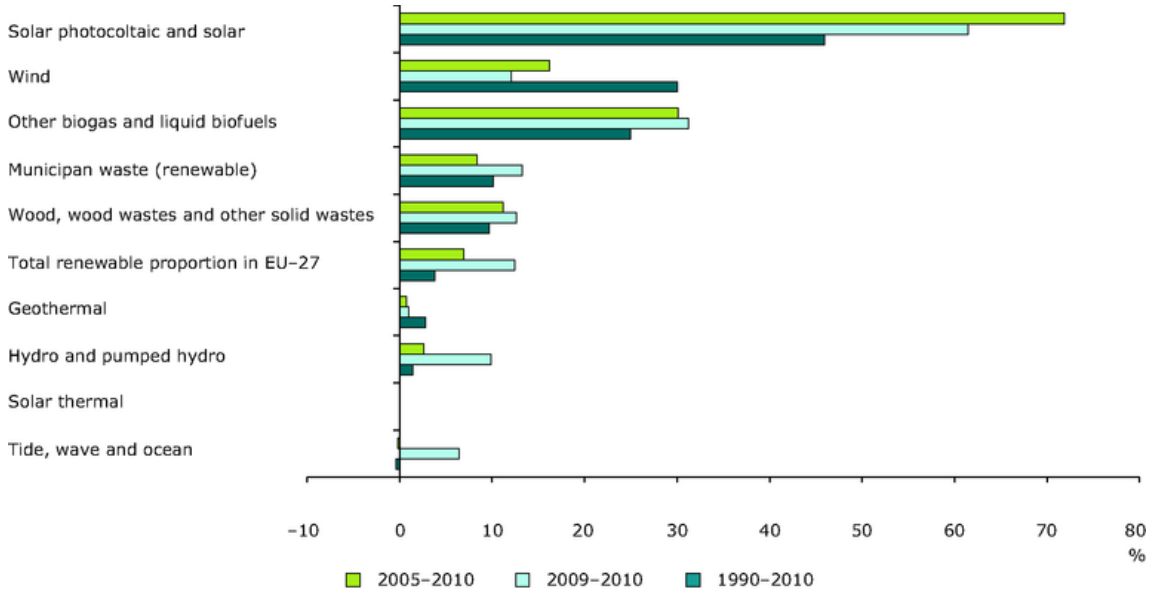
Table 4 - RES-Electricity in the EU27 (2011)[19]

RES Type	Electricity generated (TWh)	Electricity generated (%)
Hydropower	397.7	57
Wind	149.1	21
Biomass and renewable waste	123.3	18
Solar	23.1	3
Geothermal	5.6	1
Tidal, wave and ocean	0.5	0
All	**699.3**	**100**

RES has had a strong rate of growth in Europe over the past two decades, but has a way to go to become a competitive, self supporting market, especially as fossil and nuclear energy is still heavily subsidised. As the chart below shows, the highest growth rate for total renewable electricity generation occurred in the period 2009-2010, reflecting the outcome of focused policy initiatives.

[16] REN21 – Renewables 2012: Global status report (2012), p. 27 & Observ'ER – *State of Renewable Energies in Europe* (2011)
[17] REN21 – Renewables 2012: Global status report (2012), p. 7.
[18] REN21 – Renewables 2012: Global status report (2012), p. 13.
[19] European Commission - EU energy in figures: Statistical pocketbook 2012, pp. 83-84.

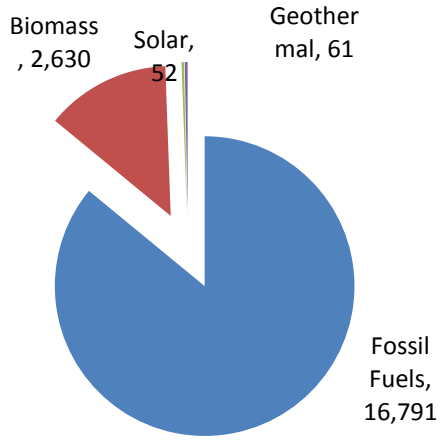
Average Annual RES-Electricity growth rate (%)[20]



2.2.2 Renewable Heating and Cooling

Heating and Cooling forms 48% of the EU's energy consumption, making it an area that should be of high concern for policy makers.[21] A key challenge in renewable heating is that thermal energy is difficult to measure by meter, but at present it is estimated that RES only fuel 13-14% of EU heating requirements, mostly from Biomass, a traditional heat fuel. The potential of solar and geothermal heat are hugely under-used (see pie chart). Therefore, RE heating and cooling is often referred to as the 'sleeping giant'.

The building sector has a particularly large potential for cutting emissions through solar thermal, geothermal and biomass heating, especially when coupled with energy efficiency measures such as insulation and double- or triple-glazing. With such measures it is possible to produce nearly-zero, zero, or even positive energy houses. Trends for heating in new constructions include district heating and cooling, powered by RES and industrial waste heat. Also emerging as a strong business area is refurbishing and retrofitting buildings with energy efficiency and RE solutions combined.



Current heat source (PJ/a)

[20] http://www.eea.europa.eu/data-and-maps/figures/average-annual-growth-rates-of-5

[21] European Technology Platform on Renewable Heating and Cooling – *Common Vision for the Renewable Heating & Cooling Sector in Europe* (2011), p. 1.

2.3. Renewable Energy Policy

Although the figures are already impressive, if the EU wishes to achieve its long term goals, then RE must continue to be supported with ambitious targets, support schemes and involvement at all levels of governance. The International Energy Agency (IEA) has argued that energy prices need to change in order to reflect the true cost of energy including their external costs, such as environmental impacts through emissions or radioactive waste. As fossil fuels and nuclear currently enjoy this competitive advantage (and government subsidies), RE remains dependent on predictable political and financial supports for deployment. Policy therefore plays a vital role in the expansion of renewables and levelling the playing field with fossil fuels remains the most important task to be achieved.[22] This includes a shift from subsidising fossil fuels, to renewables.

Whilst the EU has strong RES framework conditions, implementation takes place at the national and regional levels, resulting in a patchwork of methods that, on the one hand, reflect regional priorities and geographic differences, but on the other, also reflect shorter term political decisions. There is difficulty in ensuring long-term security for investors, as needed to drive RES uptake.

2.3.1. European Union Framework

Since the Treaty of Amsterdam declared EU members to be, "determined to promote economic and social progress for their peoples, taking into account the principle of sustainable development," the promotion of RES has become a priority not just for environmental protection and social and economic cohesion, but also to tackle energy security issues, with concerns initially reflected in the 1997 White Paper 'Energy for the Future: Renewable Sources of Energy'.[23] From this beginning, long-term strategies began to form, giving the RES market the stability needed to develop and grow.

The 2001 Directive on the promotion of electricity produced from renewable energy sources in the internal energy market (RES-E Directive) was the first step, setting a non-binding target of 12% of gross domestic energy consumption from renewables by 2010, with 22.1% of electricity produced by RES.[24] Although the RES-E Directive targets were non-binding, it had positive effects, with national targets being set for the first time, triggering action by the Member States. The Directive was amended to add targets for the ten new states that joined in 2004 and two in 2007.

In March 2007, the Heads of State and Governments of the EU27 set a binding target of 20% of final energy consumption from RES by 2020, as well as the related goals of increasing energy efficiency and reducing greenhouse gas emissions by 20%. These combined and interlinked 20/20/20 targets (the 'EU climate and energy package') also include initiatives such as the Energy Efficiency Directive (2012) and a strengthened Emissions Trading Scheme (launched in 2005). Together, these 20/20/20 goals will contribute significantly to the aims of energy security, competitiveness and climate change mitigation, as well as to the integrated goals of the whole of the 'Europe 2020' Strategy for Smart, Sustainable and Inclusive Growth. The Europe 2020 strategy suggests that in the right conditions, a 30% reduction of emissions should be targeted.[25] As we approach 2020, it will become crucial to set further RES-specific targets beyond this date to keep up momentum and provide investment security.[26]

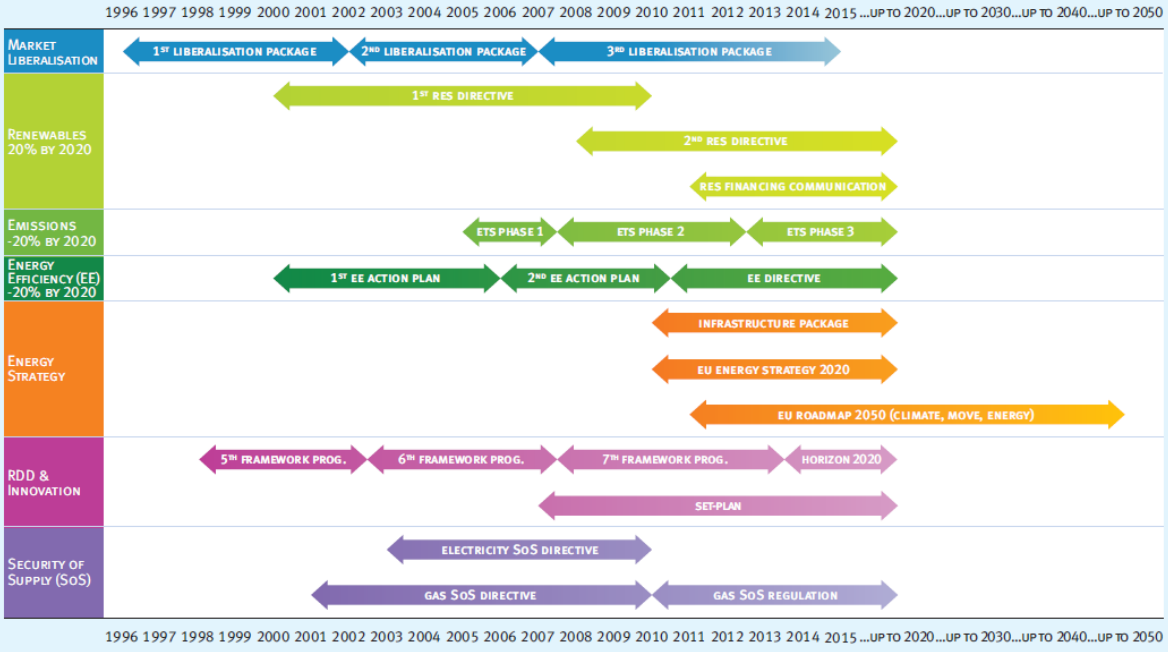
As a follow-up to the 2020 targets, the Commission published its Energy Roadmap 2050, which explored several different scenarios, including high energy efficiency (aiming for a reduction in energy use of 41%); diversified supply technologies (energy sources competing on a market basis, with

[22] International Energy Agency – Tracking clean energy progress: Energy technology perspectives 2012. Excerpt as IEA input to the Clean Energy Ministerial (2012), p. 8.
[23] Communication from the Commission – Energy for the Future: Renewable Sources of Energy. White Paper for a Community Strategy and Action Plan (COM(97)599final)
[24] Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market
[25] COM(2010)2020 – Communication form the Commission – Europe 2020: A strategy for smart, sustainable and inclusive growth
[26] European Renewable Energy Council – 45% by 2030: Towards a truly sustainable energy system in the EU

decarbonisation led by carbon pricing principles) and a high renewable energy sources mix (strong, direct support for renewables, aiming for 75% uptake by 2050). Whichever scenario is chosen, RES will continue to play a role.

Clearly, RE is affected by RE-specific measures only. The Commission places RE legislation within a much broader context of its energy policy, which also involves market liberalisation and infrastructure. The overview below shows the sequencing and duration of different EU legislative acts relevant for RE development.[27]

FIGURE 2: EU LEGISLATIVE FRAMEWORK



2.3.2 National Policy

Member States of the EU each have very different RES policies and current shares of use. The differences between national positions are rooted in a variety of issues, such as geographical, economic, climatic, political and cultural conditions. In order to set achievable targets, the RES Directive established reference levels of RES use in 2005 for the EU27, ranging from 39.8% of final energy consumption coming from RES in Sweden, to 0% in Malta. RES targets were set as a percentage increase on 2005 reference levels and take account of national conditions, resulting in widely different targets for each country.

To meet these targets, the Directive required National Renewable Energy Action Plans (NREAPs) to be written, allowing Member States to decide what measures to implement to meet their targets.[28] The 2005 RES reference levels, Directive targets and NREAP forecasts are presented in the table below (Table 5).

[27] Table reproduced with the kind permission of Eurelectric. Taken from *Power Statistics and Trends Synopsis* (2011), p. 7.
[28] Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable energy sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC

Table 5 - RES Directive targets and forecasts for 2020 RES deployment [29]

Member State	Share of energy from RES in final consumption of energy, 2005 (%)	RES Directive target for share of energy from renewable sources in final energy consumption, 2020 (%)	NREAP forecast – RES share in final energy consumption, 2020 (%)	RES Industry forecast – RES share in final energy consumption, 2020 (based on NREAPs) (%)
Austria	23.3	34.0	34.2	46.4
Belgium	2.2	13.0	13.0	14.5
Bulgaria	9.4	16.0	18.8	20.8
Cyprus	2.9	13.0	13.0	14.5
Czech Republic	6.1	13.0	13.5	13.7
Denmark	17.0	30.0	30.5	30.5
Estonia	18.0	25.0	25.0	25.0
Finland	28.5	38.0	38.0	42.3
France	10.3	23.0	23.3	23.6
Germany	5.8	18.0	19.6	26.7
Greece	6.9	18.0	20.2	25.2
Hungary	4.3	13.0	14.7	18.3
Ireland	3.1	16.0	16.0	16.0
Italy	5.2	17.0	16.2	19.1
Latvia	34.9	40.0	40.0	46.4
Lithuania	15.0	23.0	24.2	31.7
Luxembourg	0.9	11.0	8.9	10.4
Malta	0.0	10.0	10.2	16.6
Netherlands	2.4	14.0	14.5	16.8
Poland	7.2	15.0	15.5	18.4
Portugal	20.5	31.0	31.0	35.3
Romania	17.8	24.0	24.0	24.0
Slovak Republic	6.7	14.0	15.3	26.0
Slovenia	16.0	25.0	25.3	34.1
Spain	8.7	20.0	22.7	28.3
Sweden	39.8	49.0	50.2	57.1
United Kingdom	1.3	15.0	15.0	17.0
EU27	**8.5**	**20.0**	**20.7**	**24.4**

According to the NREAPs, 20.7% of final energy consumption and 34.3% of electricity will come from renewable sources by 2020. This comes from various levels of ambition shown by member states, with some having aimed to outdo their binding targets. Bulgaria, for example, has written an NREAP that aims for 18.8% of final energy consumption to come from RES, whilst its target is 16%

Whilst some states aim high, others have instead focused on gradually adjusting existing initiatives or have not produced comprehensive support packages. Government changes have also led to inconsistent policies. For example, the United Kingdom divided its 15% target into 31% RES-Electricity, 12% renewable heating and cooling, and 10.3% renewable transport, but then cut its feed-in tariffs, despite choosing renewable electricity as the main way of reaching its target. Such discrepancies can account for differences in the forecasts made by the RES industry based on the NREAPs; whilst the UK is expected to exceed its target by only 2%, Sweden is expected to be over 8% above its target. Overall, the RES industry believe the NREAPs lay out the possibility of 24.4% RES in total energy consumption and 42% RES in electricity. With this said, recent cut backs in RE support schemes have been triggered by the financial crisis, which seriously threatens RE targets by

[29] Directive 2009/28/EC & European Renewable Energy Council – Mapping renewable energy pathways towards 2020 (2011), pp. 13-15.

undermining investor confidence. The EU 20/20/20 goals will succeed or fail based on whether implementation is fast and efficient at both national and lower levels of governance.

2.3.3. Regional Renewable Energy Policy

The importance of the regional governance level can often be overlooked and many tend to forget that around three quarters of EU policy is enacted at the regional level.[30] Every region is different, with varied political, social and economic structures, strengths and RE sources (wind, sun, etc.), and it is essential that policies be created that can be adapted and enacted at the regional level.

Regional RES can play a large role in the energy future of the EU. Unlike fossil fuel and nuclear energy which require centralised plants for energy generation and need to be transported, often over large distances , renewable energy can be generated in decentralised, smaller units, providing local energy to local users. This is much more efficient than the current distribution system. For example, Greenpeace estimate that for 100 units of energy produced from fossil fuels at a centralised plant, only 22 units are used, with 62.5 units lost at generation, 3.5 in transmission and 13 through inefficient end use.[31] Instead, decentralised renewable energy systems achieve higher efficiency and reduce transmission losses.

Further, local energy systems can be of greater economic and social advantage, stimulating regional development that fits the strengths and infrastructure of the area, thus providing jobs and secure, cheap energy. Biomass energy, for example, requires local fuel supplies, thus promoting agricultural jobs and creating rural employment through co-ordination between farmers and the RES sector. One of the key trends for RES support policy development is the integration of measures into other policy areas and existing competencies, such as urban and rural (re)development.[32]

Often though, RES support schemes require finance and implementation at the national scale, depending on domestic political structures and level of autonomy at regional level. When budgetary control is situated at the national, not regional, level, the central government can control support policies, or allocate only small amounts to RES for regions to spend. For example, a region may adopt a target for RES deployment but be unable to make it legally binding without national support. In other cases, such as paying subsidies or rebates to adopters of RES, regions may be entirely incapable of implementing such policies, being completely reliant on the national level for funding.

To overcome this, regional agencies can implement and manage programmes and initiatives, and public and private partners can be established. If financing does not come from the national level, and if regional taxation is not possible, then a region can attempt to secure financial support from private or European level sources.

As Table 6 (below) shows, there are a variety of traditional policy tools available to regions wishing to increase their share of renewable energy use. Regulatory policies, fiscal incentives and public financing have all been successfully used at national level, and could be scaled down for regional use, depending on regional political structures. However, it should be noted that there may be a narrower scope for implementation, and economies of scale (or lack of) may have an impact on effectiveness.

The type of policy instruments used in a region depends not only on political independence and structure though. Regions must also take account of their own development and how much experience they have in RES use. A region starting out in RES will need to implement very different policies to those being implemented by regions with thirty years of experience. Policies will also reflect differences in regional resources and know-how.

[30] Committee of the Regions – Special Eurobarometer 307 on the role and impact of local and regional authorities within the European Union: Opinions on the different levels of public authorities and awareness of the Committee of the Regions (2009), p. 3.
[31] Greenpeace and EREC – Energy [R]evolution: A sustainable EU27 Energy Outlook (2012), p. 19.
[32] REN21, p. 64

Table 6 – Categories of RES support policy [33]

Regulatory policies	*Feed-in tariff (including premium payment)*
	Electricity utility quota obligation / Renewable Portfolio Standard (RPS)
	Net metering
	RES obligation/mandate
	Tradable Renewable Energy Certificate/Credit (REC)
Fiscal incentives	*Capital subsidy, grant or rebate*
	Investment or production tax credit
	Reductions in sales, energy, CO_2, VAT, or other taxes
	Energy production payment
Public financing	*Public investment, loans, or grants*
	Public competitive bidding

Throughout the following analysis, case studies will be presented showing regional policy initiatives and practices. Blue bordered boxes represent descriptions of regions with successful RES policies, whilst green bordered boxes represent good practices from INTERREG IVC projects that have shown particular success in promoting RES. The top line of each of these green boxes shows the regional development stage and indicator.

Case Study – Bornholm, Denmark

The island of Bornholm is developing the world's largest intelligent energy grid as part of the EcoGrid EU project. The development of 'Smart Grids' is an essential to the development of a decentralised energy scenario, with integration of a variety of RES types. By leading in grid development, the Bornholm region has become a very attractive location of investment and for R&D projects. The region's achievements have been enabled by a supportive population and business community, who have been actively involved in the development of the regional vision and PR strategy; 'Bright Green Island'. As an island, Bornholm has proved to be a perfect testing site for an energy-independent society, and the project shows the importance of demonstration projects to stimulate market development and create public acceptance.

Greenovate! Europe elaboration of EU'Oberserv'ER 2011 good practice

Mature Markets
Strong commitment to R&D

Research into energy crops has been ongoing at Teagasc's Oak Park (Carlow, IE) since the 1970s. Teagasc is the Irish national authority that provides research, training and advisory services to agriculture and food industries, as well as to rural communities. Oak Park research focuses on growing bioenergy crops, harvesting and logistics. Energy crops are grown on site allowing for testing on all phases of crop growth, as well as on agronomical issues such as weed control, bioremediation and crop nutrition. Research also looks into conversion into biofuels and pellets, observing quality and combustion. Teagasc Forestry Development Unit provides advice for land owners and forestry industries. Researchers have developed a variety of tools and information services to spread good practice and communicate research results.

Greenovate! Europe elaboration of BIO.EN.AREA good practice

[33] Adapted from REN21 – p. 70

2.4. Added value of interregional co-operation

A variety of European programmes tackle the topic of renewable energy, though from different perspectives. The 7th Framework Programme for Research and Innovation focuses on the development and demonstration of state-of-the-art research in the area of renewables; the Europe INNOVA initiative (financed through CIP) has tested service innovation vouchers for renewables, and; Intelligent Energy Europe is supporting public, private and non-governmental organisation capacity building, demo projects and promotion campaigns. Often these programmes and initiatives focus on developing and testing new and innovative concepts and technologies involving a high risk rather than spreading proven tools and methodologies.

With regard to renewables, INTERREG IVC is therefore unique in its focus, target groups and outreach:

- It focuses on **tried and tested initiatives** that can be transferred into a different regional context;
- It targets **regional and local policy makers** and involves them pro-actively in a process of policy development and implementation;
- It reaches out to **large number of regions** that would otherwise be uninvolved in RES projects and policy initiatives.

Since it is at local and regional level where a comprehensive roll-out of sustainable energy policies needs to take place, this targeted outreach of INTERREG IVC towards a large number of European regions, is of paramount importance for the success of Europe's 2020 strategy.

Co-operation between regions allows for the exchange of good practices, meaning that regions do not have to start from scratch in building a critical mass of successful policy initiatives, but can build on what has been successful before.

This is especially important in the complex field of renewables. RES can boost competitiveness and create jobs, but only if fitted to the regional context, taking account of available resources and market development.

3. Analysis

3.1. Project-level analysis

This section provides an overview of the seven INTERREG IVC funded projects in the field of renewable energy. It explores the aims and findings of each project and discusses the good practices they have identified. The first part covers three technology-specific projects and the second part covers the remaining projects without a specific technology focus. Table 7 summarises the key aims of each project.

Table 7 – Overview of the seven Renewable Energy projects

Projects with focus on specific RES type	
GEO.POWER	Focused on low enthalpy geothermal energy, particularly through ground-coupled heat pump technology. Aim to transfer good practices into structural funds mainstream by producing regional strategies.
BIO.EN.AREA	Focused on bioenergy (both biomass and biofuels). Aim to exchange and transfer experiences amongst partners to increase regional capacity and develop regional Biomass Action Plans.
4Power	Focused on Offshore Wind energy. Aim to exchange knowledge between experienced and learning regions to create a common understanding of challenges for implementation.
Projects without focus on specific RES type	
MORE4NRG	Aim to exchanging best practices on sustainable energy policy and jointly developing an integrated monitoring tool for measuring the effect of regional sustainable energy strategies.
Regions4GreenGrowth	Aim to equip regions with policy instruments, mechanisms and approaches to improve access to finance for RES, and speed up investments in sustainable energy projects in their territories.
Renewable Energy Regions Network (RENREN)	Aim to improve regional policies in RES to optimise existing frameworks, as well as to establish strategic co-operation between regions for new approaches, projects and solutions.
Renewable Energies Transfer System (RETS)	Aim to increase knowledge and competencies of local and regional policy makers (especially in small, rural regions) in renewable energy systems to facilitate a greater deployment of renewable energy policies.

In order to be confident of the applicability of results from the capitalisation of these projects, a thorough analysis of regional co-operation and regional performance has been undertaken (See Annex for Tables). 69 different regions from 21 Member States were involved in the seven projects. One member of the European Economic Area also took part.

The projects included a good mixture of newer (2005/2007 enlargement) and older (EU15) members. The new states had 21 regions in the projects, with 48 from older members. Of the EU states from the last two enlargements, only Slovakia does not have participant regions. The regions in the projects represent 57 NUTS2 statistical regions (21% of the total 271 NUTS2 regions in the EU). 26 of these are Convergence areas, whilst 31 fall under the Regional Competitiveness objective. All of the project leaders came from areas under the Regional Competitiveness and Employment objective.

This variety of regional involvement found suggests broad applicability of this capitalisation, as results will not be dominated by particular regional geographic or political trends.

3.1.1 GEO.POWER

Capitalisation Project

ERDF funding: €1,612,258
Budget: €2,031,530
Start date: 1st January 2010
End date: 31st December 2012
Partners: 12
Countries: 9
Good practices: 28

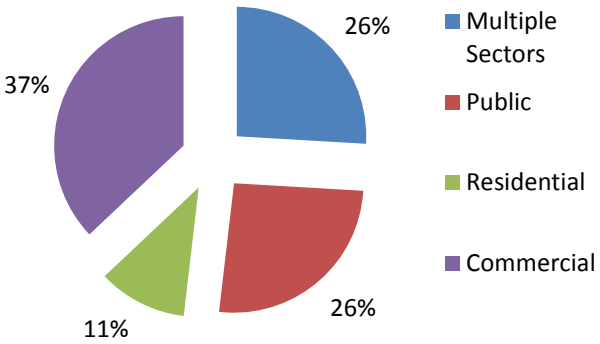
www.geopower-i4c.eu

Geothermal energy is the energy extracted from heat stored in the earth in the form of high-enthalpy resources (such as magma conduits and geysers), or low-enthalpy resources that can be found abundantly at a relatively shallow soil depth. In countries with high-enthalpy resources, geothermal energy has been used for many years. Whilst the market for low-enthalpy is still underdeveloped, the technology to exploit lower thermo-dynamic potential does exist, for example in the form of ground coupled heat pumps (GCHPs). In order to deal with this market failure and to allow geo-thermal energy to tap into the vast potential of the renewable energy heating and cooling market, GEO.POWER aimed to develop local policy strategies and instruments to boost the low enthalpy geothermal energy market, especially ground coupled heat pumps, by profiling an integrated package of incentives and technical measures in the frame of Regional Operation Programmes (post-2013).

Good practices on GCHP application were pooled and evaluated for reproducibility in each region to help produce regional action plans. These regional action plans contained technical guidelines, potential legislation and financing schemes with which to lobby national Managing Authorities of Structural Funds.

Analysis of good practices

GEO.POWER collected 28 best practices from the partner regions. All but one of these practices are demonstration projects showing-casing technology applications rather than policy measures. The highest number of good practices (37%) collected concern geo-thermal applications in commercial buildings (offices, shops, hotels, etc.) followed by public buildings such as schools and hospitals (26%) and multiple sectors which is mainly comprised of district heating solutions and businesses installing heat pumps (26%). Therefore, although the good practices collected are demonstrative, they also illustrate the importance of cross-sectoral co-operation and support policies.



The final practice, not falling under the scope of demonstration project, was a Swedish R&D project exploring the design of borehole heat exchangers. With the focus of the project on GCHPs, geothermal electricity production has been left out of the good practice collection, with preference being for spatial heating & cooling and water heating.

Outstanding good practices

1. The Swedish case study on **Arlanda airport**, the world's largest aquifer thermal energy storage unit, strongly demonstrates the potential of geothermal energy. This practice was on an enormous scale, and took advantage of Sweden's highly developed geothermal experiences.

However, due to the scale of the project and the sheer variety of success factors, the project partners considered it too difficult to be transferred.

2. It was felt to be more realistic to focus on smaller practices that could collectively build to a critical mass for a learning region. The most transferable practice selected by eight GEO.POWER partners was the **TELENOR headquarters** in Hungary. As a new construction, it was designed from the outset to include renewables and energy efficiency measures.
3. Although not selected for the GEO.POWER brochure, the capitalisation experts identified the **market success of GCHPs in Sweden** as being of interest for other regions. Here, development of the geo-energy market was driven through public procurement by the Swedish National Board for Technological Development (NUTEK). Improved technology and better awareness amongst the population led to an increase in GCHP sales of 400% between 2002 and 1995. Green Public Procurement plays a key role in breaking market monopolies and encourages industries to invest in green technologies, thus increasing supply and driving down costs.

Transfer has not yet occurred between regions at the time of writing, but partners have the intention of performing 20-24 transfers in the regional action plans that have been drawn up.

RES success prerequisites

Strong and dedicated management was identified by the project leader as a key factor for RES success. Whilst this is certainly true, it can be extended to human resources as a whole, such as having a wide variety of expertise, stakeholders, managers and even leading companies involved. In terms of domestic heating and cooling, several practices showed overlap between public and private sectors, with few instigated by individual home owners. The lack of individually initiated projects highlights the immaturity of the geothermal market and strongly suggests the importance of support schemes. Firstly, support is needed to encourage individual investment (return time is mid- to long-term), but it also suggests that flats, districts and publicly owned buildings are more easily targeted by policy-makers than individual homes.

The project partners carried out SWOT analyses to evaluate the potential of the regions, and transferability assessments were performed to understand the appropriateness and transfer potential for each region. This methodology is valuable, and should be considered by other projects wanting to speed–up the transfer of good practices.

Difficulties identified

The main barrier to the uptake of geothermal energy was identified as a lack of appropriate legislation - particularly in relation to new builds and financial incentives. Retrofitting of properties is a costly process and, with financing difficult to access, individuals are often unwilling to invest and pursue complex planning permissions. Placing geothermal energy requirements in the planning phase of a new build prevents these problems from emerging. The cause of this policy inefficiency comes from low awareness amongst policy-makers and a status-quo that favours fossil fuels.

The segmented nature of the European housing market residential market makes it difficult to tackle. Residencies fall into social/publicly owned housing, rented housing, and owned housing. The 'owner-tenant' dilemma is present in the rented market, where neither the owner nor tenant of a house will invest in a GCHP, as the benefit of such a system is split between them. To overcome these challenges, financial incentives should be provided and community-schemes should be explored.

Other outcomes

As a Capitalisation project, the project's aim was to transfer good practices of low-enthalpy geothermal energy to the Strucutural Funds mainstream by defining potential actions in regional strategies. The following recommendations were produced for policy-makers:

- Financial incentives are important to encourage the uptake of GCHPs in the property market and need to be substantial enough to stimulate investment;
- Regulations for the new build market which require a set level of energy efficiency and RES use should be implemented;

- Quality schemes should be put in place for the construction industry to bring together diverse qualification requirements and build customer confidence in registered installers;
- Training is needed to enable installers to switch from oil and gas boilers to geothermal systems;
- Efforts need to be made to increase public awareness and engage consumers to make the choice to use RES, in particular by awareness raising campaigns and demonstration projects; A current lack of knowledge leads to market distortion, leaving low-enthalpy geothermal markets underdeveloped, which in turn leads to slow technology development.

The regional action plans that were produced included measures such as the adoption (or increase) of financial incentives; introduction of supports (e.g. tax rebates) for large and innovative systems; showing economic feasibility and technical performance with demonstration projects; improving system efficiency and life-cycle of installations; creating clear regulatory frameworks for installation, and; accelerating administrative processes.

One area not covered in the project recommendations, but included in the regional action plans of Västra Götalandsregionen and of Slovenia, was that of cleantech innovation and technology development, though, such policy practices may have been outside the scope of a capitalisation project.

Commitment and planning
Regional RES strategy and policy

Flevoland (NL) adopted a climate and energy strategy in 2007. The initial step was to define a target to produce 60% of energy from renewable sources by 2013. Then, a detailed strategy was developed to identify the RES types that could contribute to this aim, taking account of cost-effectiveness, available resources and potential bottlenecks. Finally, an action plan was created outlining concrete actions to be taken to achieve the goal. The action plan was elaborated on by interviewing staff of the local province on their thoughts for RES expansion and by consulting external partners. The province does not invest in RES itself, but has focused on facilitating entry of private partners. By 2013, the province had achieved its target.

Greenovate! Europe elaboration of More4NRG good practice

Recommendations

- Conceive and implement tailor made communication campaigns on low-enthalpy geothermal energy towards key stakeholders and multipliers: media, city and regional planners, house owners and policy makers at regional and EU level;
- Communicate recommendations and best practices to European and regional stakeholders involved in designing the Structural Funds
- Develop a special media education programme on low-enthalpy geothermal energy including journalist visits and seminars to raise level of awareness and understanding of the subject;
- Provide all communication material in a clear, non-technical language avoiding technical terminology and abbreviations;
- Use best practices to showcase the potential of low-enthalpy geothermal energy (also those that are difficult to transfer such Arlanda Airport);
- Promote awareness of community schemes (such as district heating) to overcome the owner-tenant dilemma by lowering prices through economies of scale, and offering incentives to owners;
- Geo.Power concerns over the ‘owner-tenant’ dilemma in retrofitting housing were also identified by the RETS project. The project partners should discuss their practices and findings on the issue.

3.1.2. BIO.EN.AREA

bioenarea
Improve regional policies for bio-energy and territorial development
www.bioenarea.eu

Regional Initiative Project

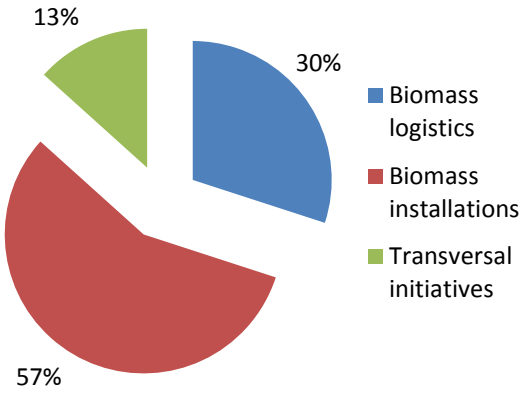
ERDF funding: €2,444,370
Budget: €3,125,000
Start date: 1st January 2010
End date: 30th June 2013
Partners: 6
Countries: 6
Good practices: 30

Biomass has been identified as a key renewable resource by the European Commission with a variety of uses, from heating and cooling to transport. However, regional policy and planning need to ensure sustainable production of biomass avoiding negative impacts such as monoculture crops and land-use change from food production to fuel crop production.

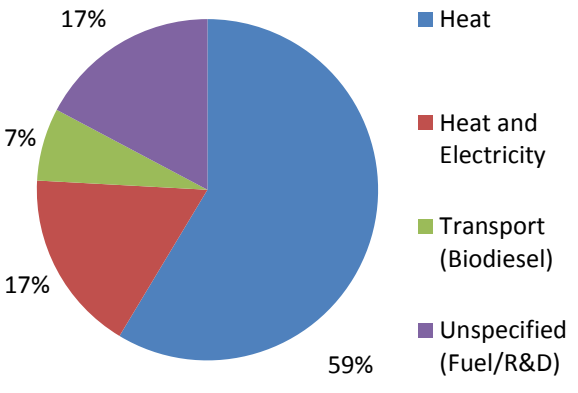
The BIO.EN.AREA aimed to produce four regional Biomass Action Plans (BAPs) to encourage uptake of sustainable bioenergy use by the learning regions that did not already have them and a set of regional BAP guidelines, written up by the remaining two experienced partners. This was assisted by exchanging experiences and good practices on the use and development of different types of bioenergy. In order to tackle all sources of bioenergy, BIO-EN-AREA defined three areas of focus: forest & wood biomass; energy crops, agricultural by-products & livestock wastes biomass, and; urban waste biomass. BIO-EN-AREA also organised an open-tender competition for sub-projects aiming to produce transferable results for regional BAPs. Seven subprojects were approved covering biogas, energy crops, biomass sustainability and certification, regional economic and social infrastructure, organic waste potential, local policy support and, biomass enterprises and value chains.

Analysis of good practices

A total of 30 good practices have been collected and disseminated between the project partners (See chart right, top). Seventeen of these were demonstration practices (called 'biomass installations' by the project) and 13 practices were more policy or R&D oriented, classified into nine biomass logistics (access to fuel or value-chain monitoring) and four transversal (cross-cutting) initiatives, without specific focus on a fuel type or use.



Regarding breakdown by sector (right, bottom), seventeen good practices were related to bioenergy as a heat source, five explored combined generation of heat and electricity, two explored biofuels (both looking at biodiesel production) and the remaining six did not specify an area of use.



In terms of practice transfer, most will be visible through the regional BAPs once they are complete. Regions with particular strengths have been working closely with others to pass on experiences though. For example, there has been close co-operation between Sweden and Estonia on forest biomass exploitation, and Spanish and Italian regions have followed Irish examples of biogas use.

Outstanding good practices

1. Biomass logistics: **Sandviksverket biomass combined heat and power plant (Växjö, Sweden)**, is particularly impressive for its fuel logistics, using 90% fuel wood, all of which is found within 70-100km from the city. The **Greek pilot cardoon plantation for co-firing with lignite** was intended to test conditions for co-firing, finding that up to 10% cardoon could be mixed into the fuel supply for lignite fuelled power plants, leading to reductions in CO_2 emissions.
2. Biomass installations: The **power station in Tartu, Estonia** co-produces heat and power using local biomass instead of natural gas imported from Russia. Initially, the station had to overcome strong opposition but now runs automatically and can switch to heat production only at peak times in the winter. The use of **anaerobic digestion for biogas production at Camphill Community** in Ireland is an example of RES self-sufficiency as the independent system provides the community of ninety people with all of their required heat and power. The biogas used is produced on-site from local agricultural waste.
3. Transversal initiatives: The **R&D activities on bioenergy at the Italian Edmund Mach Foundation** produces studies on local agriculture and land use and takes part in international co-operative research projects. Having a pool of experts gives the province a strong basis for the use of bioenergy, supported by links with the local population and territories.

RES success prerequisites

The BIO.EN.AREA partners underlined that the main prerequisites for bioenergy are adequate **local fuel supplies (preferably waste); adaptation to the region; trained installers and managers; awareness raising activities and investment in R&D**. Low awareness and limited investment have thus far meant that the bioenergy market is not developing optimally. However, with fuel supplies available in most local environments, it appears most important that regions understand that bioenergy creates strong opportunities for regional growth and potentially leads to regional energy independence. As a pre-requisite, regions should identify current strength and weaknesses of the regional biomass value chain and seek synergies for the local economy.

Difficulties identified

- Large biomass plants need to ensure connection to the grid and long-term access to an adequate quantity of biomass based on lasting, local biomass value chains.
- Smaller biomass plants are still expensive and somewhat uncompetitive compared to other renewables. Greater investment in R&D will be required to change this.
- Biomass boilers, suitable for individual homes and premises, are still relatively poorly known of. In general, it has been businesses that have headed their uptake.
- Local biomass supply chains need to be established, providing biomass as a feed to customers, but there is also a need for local service companies;
- Provision of energy crops needs to be very carefully monitored and though there is currently no adequate European framework for taking account of indirect land-use change.

Other outcomes

One of the key outcomes from BIO.EN.AREA are the **Guidelines for drafting regional Bio-energy Action Plans** that provide a hands-on template for regional authorities that want to boost their bio-energy sector. The guidelines cover the different concepts related to bio-energy: a) resources (forestry, agricultural and related industries, urban biomass and energy crops), b) biofuel production (solids, liquids and gas) and c) energy applications (heat, electricity and transport) as well as regional aspects to be analysed, covering technical, environmental, social, business, financial and economic aspects as well as legal and regulatory frameworks, the current energy mix, technology and R&D. The guidelines also make suggestions for target setting, qualitative and quantitative objectives and lay out the measures to be enacted for reaching these targets.

Based on these Guidelines, the Spanish region Castilla y León has drafted a regional BAP covering policy measures for under the following 8 programmes:

1. Regulatory framework;
2. Planning;
3. Support to business and industrial initiatives;
4. Traceability and standardisation (of fuel);
5. Sector development;
6. Training and employment;
7. Research, development, innovation and demonstration;
8. Communication and awareness.

Recommendations

- The majority of European regions have access to biomass thus bio-energy represents an excellent opportunity for many of them to introduce and develop renewables. In this light, it would be recommendable that the BIO.EN.AREA partners share their experiences with other regions as widely as possible.
- BIO.EN.AREA should use the information that has been collected and produced in the course of the project and make it available in the form of guidelines and documents that are written in layman's language. Amongst them should be at least:

  - An updated version of the guidelines / template for drafting regional bio-energy action plans
  - Summaries of the BAPs that have been produced during the project if possible with commentaries or short interviews with the responsible officials from the regions
  - Best practice collected by BIO.EN.AREA

- BIO.EN.AREA can benefit from the experiences of already established bio-energy regions such as the German region Lower Saxony, perhaps Europe's leading biogas region (see box) and can create synergies with existing European projects and initiatives:

  - To access state-of-the art R&D results in the area of bioenergy;[34]
  - To develop innovation voucher schemes supporting service providers for example in biomass logistics (a complete guide is available from the KIS-PIMS projects);[35]
  - To collaborate with regional eco-innovation cluster organisations have co-operated in the EcoCluP project.[36] The cluster ESV from Upper Austria, for example, is specialised amongst others in biomass, training programmes and boilers.

Case Study – Niedersachsen, Germany

Niedersachsen (Lower Saxony) is Germany's leading RES region, having committed itself to RES development in 1985. Its large agricultural sector makes it an ideal region for the production and use of biogas, and the region currently accounts for a quarter of Germany's biogas production. This growth was spurred by nationally guaranteed feed-in tariffs, but also regionally available investment subsidies and a biogas training programme for farmers. Proximity to R&D clusters and universities gave an added boost to RES development and regional targets – including the 100% RES towns of Jühnde and Beuchte – have lead to strong biogas markets. The population of the region have played a key role in Lower Saxony's achievements, showing an entrepreneurial spirit and a willingness to develop co-operative structures. Lower Saxony demonstrates that regional targets and adaptation to local conditions can lead to strong RES development. Alongside biogas development, the region has also developed a strong wind energy base.

Greenovate! Europe elaboration of EU'Oberserv'ER 2011 good practice

[34] www.eranetbioenergy.net
[35] See 'Publications' at www.greenovate-europe.eu
[36] www.europe-innova.eu/web/guest/cluster-cooperation/cluster-innovation-platform/ecoclup/about

3.1.3. 4POWER

www.4-power.eu

Regional Initiative Project

ERDF funding: €1,228,472
Budget: €1,570,879
Start date: 1st January 2012
End date: 31st December 2014
Partners: 11
Countries: 9
Good practices: TBC

The Offshore Wind (OSW) market is still developing, but it has been recognised that Europe's has enough to potential in OSW that energy degenerated could exceed energy consumed. At present, offshore wind faces a variety of barriers, particularly in finance and a lack of political commitment or policy instruments. 4Power looks to collect successful approaches to development and regulation of OSW amongst coastal regional governments and create action plans through dialogue with the wind-energy industry, knowledge institutes and other actors deemed essential for the development of successful policy frameworks. Expected 4Power outputs include an interactive online community of good practices; thematic action plans, regional implementation plans and guidelines on effective policy frameworks for OSW development and on establishing effective implementation through regional OSW triple helixes.

Good practices

To date, the project has not begun collecting good practices, something it envisions doing in its second year of operation. It is intended that a mixture of policy practices, transversal initiatives (cross-cutting issues such as technology and R&D), and demonstration projects will be collected. Further, as the project involves learning and experienced regions, practices should be of varying complexity.

The project is operating in three phases: divergence (regional consultation, comparative analysis); convergence (good practice collection, thematic guidelines), and; translation into strategy (regional strategies, implementation plans, OSW charter). At the time of writing, the project had just completed the divergence stage, having performed regional consultations and PESTEL (Political, Economic, Social, Technical, Environmental, Legal) and SWOT (Strengths, Weaknesses, Opportunities, Threats) analyses to find which topics to tackle, and identify some prerequisites. Good practices will be found to explore each of these issues.

RES success prerequisites

The above mentioned analyses have resulted in the identification of ten key issues (divided into Frameworks and Implementation), which can also be used to understand prerequisites and barriers for offshore wind:

Frameworks (legal issues and permits)

1. **Transmission systems operators (TSO), electricity grid and market** – the role of TSO in the construction of OSW grids and energy markets are very different in each state and practices must be adapted to each;
2. **Incentive or subsidy system** – not all states provide subsidies, limiting equal OSW engagement and preventing transnational development of energy markets;
3. **Permits** – applying for a permit can be a long and costly process which needs to be simplified and sped up;
4. **Environmental Impact** – regulations require analysis of OSW impacts to coastal regions, but this can be a complex process, which is variably handled by the state or the developer;
5. **Politicians and governance** – politicians need to be influenced to change regulations and challenge opponents of offshore wind.

Implementation (developing companies)

6. **Costs** – OSW is expensive in comparison to other types of RES and both technologies and markets need to develop to bring costs down;
7. **Education** – a lack of skilled personnel in OSW means that there are not enough technicians to facilitate sector growth;
8. **Infrastructure** – coastal regions need good infrastructure, such as roads, ports, test facilities (etc.), to implement OSW, taking account of regional geography;
9. **Raising awareness** –NIMBY (Not In My Back Yard) opposition from local populations can be overcome by communicating costs and benefits to show advantage. Young people should be engaged in the process;
10. **Supply chain and resources** – wind turbine production has a large value chain and in some countries key players or resources are not present. Policy changes can help to attract the required actors.

Difficulties identified

As the project is in such an early stage, barriers have yet to be identified, outside of the above ten topics, but one particular challenge for OSW is the NIMBY (Not-in-my-back-yard) syndrome. The NIMBY syndrome is more of a problem for on-shore wind than OSW, but is still a problem around inhabited coastal areas, beaches and areas of natural beauty, where some people may consider the view to be spoilt by wind turbines. Placing turbines further from the shore is one answer to this problem, but this requires greater investment and will need continued R&D to develop.

Permitting is especially complex for OSW, taking into account wildlife, naval transportation and other human uses. These permits are different in each Member State, making it difficult for companies to work internationally. It will take substantial work to develop international markets, which will help in technology development; another weakness at present.

Other outcomes

4Power has two themes which are mutually reinforcing – creating an efficient policy framework, and, promoting a favourable business and innovation environment. The former is the main aim of the project, whilst the latter is a positive by-product of the process. By including experienced and learning regions, there are advantageous business opportunities and an increased chance of practice and technology transfer and improvement. Although too early to make firm policy recommendations, the most important challenge in transferring offshore wind is to bring down the cost by finding answers to the ten issues identified and by engaging the main stakeholders (policy-makers, business, NGOs, R&D institutes).

Planning and zoning

The Schleswig-Holstein (DE) land development plan designates 'wind energy areas' for wind farm development. The local government identified 1.5% of its total area that could be used, with the aim of concentrating wind farm development into certain areas only. This approach is designed to allay public concerns that wind turbines may be installed all over the countryside, disturbing communities and the environment. Local stakeholders were heavily involved in the drafting of the plan. A similar approach was taken in Wales, where the Welsh government identified seven 'Strategic Search Areas' (SSAs) based on techno-economic, environmental and social factors (including intrusive aspects such as visibility and noise). Stakeholders were consulted and a ranking system was used to identify the most acceptable areas for development.

Greenovate! Europe elaboration of RENREN good practice

Recommendations

- Be sure to collect policy practices, not just demonstration projects;
- Take policy recommendation from RENREN and More4Energy into account;
- Benefit from and create synergies with existing European projects and initiatives on offshore wind, for example to collaborate with wind clusters (i.e. ECOWINDS) or to access state-of-the-art research in offshore winds with projects such as FLOATGEN (demonstrating floating turbines) and SUPRAPOWER.

3.1.4. MORE4NRG

Regional Initiative Project

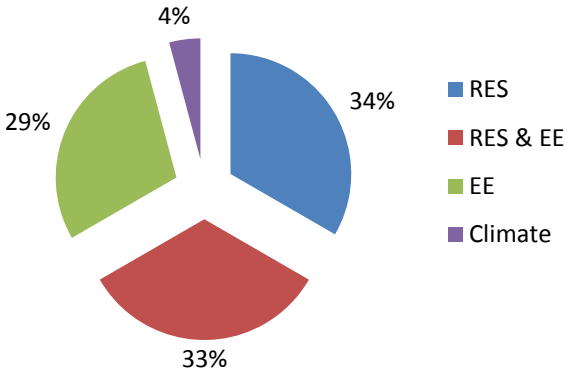
ERDF funding: €1,030,689
Budget: €1,324,559
Start date: 1st September 2008
End date: 30th September 2011
Partners: 12
Countries: 7
Good practices: 24

www.more4nrg.eu

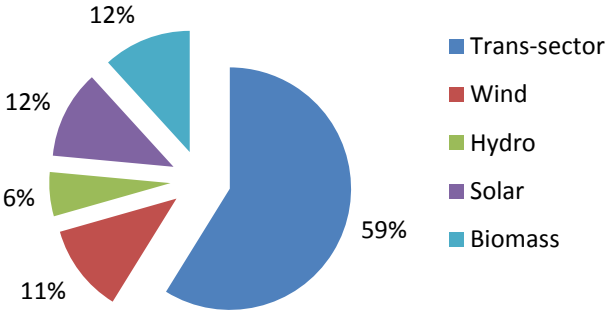
More4NRG did not limit the RES types that could be explored by its partners, but instead focused on monitoring and improving regional strategies for all RES. The project also aimed to improve energy use through a variety of energy efficiency measures. The key tools for the project were the exchange of good practices and the use of peer reviews, whereby more experienced partners visited less experienced regions to analyse energy strategies and suggest solutions to identified problems.

Analysis of good practices

Twenty-four good practices were identified by the project partners. The project collected practices that were specifically focused on RES implementation, but also a variety of practices that were focused on energy efficiency (EE) only, and RES and EE combined (See chart right, top). One practice identified was on international involvement in assisting with adaptation to climate change in developing countries.



Of the good practices with an RES aspect, a breakdown of their categories shows that most of them were trans-sectoral, that is, not focused on any one particular technology type (See right, bottom).



Outstanding good practices

1. **Energiochi** is a contest financed by the Abruzzo region with the aim of teaching school children about the importance of energy efficiency and RETs. Many habits and ways of thinking are formed in childhood, so this project is a strong communication and education tool for preventing later development of 'NIMBYism', and promoting future ethical, sustainable consumers. The project was transferred from the Abruzzo region to Maramures.
2. The **Ecological construction of small hydroelectric power plants** in Maramures, Romania, demonstrates how to integrate hydropower in an ecologically sustainable manner. The small hydroelectric dams built in Maramures do not use reservoirs, thus preventing negative impacts in water flow. They also use fish ladders for the safe passage of fish through the installations. The practice highlights the importance of balancing human needs with protection of the environment, and can help overcome opposition to small hydro dams. The practice was transferred to Norrbotten, Sweden, in a rare case of a learning region transferring to an advanced region.

3. Flevoland is a leading region in the use of wind energy, and its process of **transferring from first to second generation wind energy** is a good practice for updating technology. The second generation wind turbines produce more energy than the first generation, meaning that fewer of them are needed. This is a positive for the region, which is known for its flat, open landscapes. The process of upgrade, through legislation and spatial planning involved local stakeholders and created opportunities for agricultural entrepreneurs to invest in wind energy. The practice highlights that public opinion must be kept in mind, not just at planning stage, but throughout the operation of RES plants, as well as showing that continued technological upgrading is important.

RES success prerequisites

The key prerequisite identified by the More4NRG project was that of having a regional energy strategy outlining goals and measures to be taken. Such a strategy creates investor confidence and links initiatives together for holistic energy management. A More4NRG study on the necessary framework for generating development of, and investment in, regional renewable energy infrastructures identified the following guidelines for producing a regional energy strategy:

1. Ensure that various regional activities related to the fight against climate change and development of clean energy are consistent and well co-ordinated; policy instruments should supplement each other in the effort to enhance existing synergies;
2. Increase predictability of the energy market by providing long-term policy guarantees and by making information on existing investment opportunities more available and transparent;
3. Help maximise uptake of business opportunities;
4. Guarantee that key policy measures are fully supported by proportionate budgetary means.

Political commitment was regarded as essential for the success of RES projects, with regions urged to sign up a political 'concordat' as part of strategy production. By reaching a political agreement involving as many key stakeholders as possible (through peer reviews, for example), energy strategies are more likely to survive changes of government.

Although regions should have a RES mix that will be able to provide energy in all conditions, it is vital to take account of the local environment and respond to it correctly. As seen with wind energy in Flevoland, specialisation means that communications, investments and efforts can be focused onto the resource that will provide optimal energy production, thus developing the local market quickly.

Difficulties identified

The main barrier for RES uptake identified by the project partners was the lack of an energy strategy. Legal limitations and inefficient administrative issues were also blockages. Peer reviews were a good tool for the process of identifying initial weaknesses and suggesting quick responses.

It was also noted that regional authorities have conflicting roles in spatial planning and RES promotion. Planning permission application procedures and consultation must be carried through fully, and fairly, before the implementation of RES projects. If the process is not seen to be transparent and if communication is poor, then it can lead to resistance in the region.

As an aside, the More4NRG co-ordinator noted that the process of transferring and implementing renewable energy projects can be a very long one, and transfer is not a direct on-to-one process. Practices can be used as inspiration, but there is not a sufficient framework established for the quick transfer of good practices.

Other outcomes

Perhaps the best practice from the project was the process of peer review. An energy peer review is a mentoring visit, undertaken by a group of experts to a region that is interested in RES. The visitors review the generation and use of energy in the region, focusing on areas defined by the hosts, to help local authorities to make improvements to their regional energy system. The reviewers make site visits, and meet with important stakeholders in the region such as legislators, market operators, local development agencies, business leaders and consumer associations. The peer review has a pre-

Emerging Markets
Institutional support

The Maramures (RO) Energy Management Agency was created to contribute to the county's sustainable development by promoting energy efficiency, energy management and the use of RES. It helps local authorities to formulate strategies and policies for development of RES, as well as focusing on environmental education. The Agency was created with the assistance of the Intelligent Energy Europe (IEE) programme, using finance from the European Commission and the Maramures County Council. The Agency will initiate five RES projects, certify 15 public buildings for energy efficiency, sign six co-operative agreements with external partners and create an inventory of energy consumption and production to assist in developing future projects and an energy master plan.

Greenovate! Europe elaboration of More4NRG good practice

defined methodology, based on a checklist which describes what an 'ideal' regional authority would do, derived from global best practice. Including politicians in the process was found to be a good strategy as politicians are often happier to take recommendations from outside experts than from local civil servants. The comprehensive peer review methodology should be made available to, and used by, other projects.

The energy strategy of Gabrovo (Bulgaria) region is a strong outcome of the project. The region previously did not have a comprehensive energy strategy, but following a peer review process, a strategy was drawn up with long-term priorities and in line with national priorities and law. The peer review process allowed for the creation of the strategy, with a clear focus on specific regional challenges and context. The input of external experts in the peer review was hugely beneficial to the creation of the strategy.

In order to implement energy strategies, a study by the project recommends the creation of triple-helix Regional Energy Research and Innovation Clusters (RERICs) to bring together government, industry and regional transmission organisations (RTOs), and gain the necessary critical mass of trained and educated people needed to manage and consolidate regional knowledge and expertise.[37] The RERIC could develop regional energy action plans and assign funds from operating programmes, create a one-stop shop for investors, monitor supply, demand and cost of energy, act as an expert think-tank and conduct research.

Recommendations

- Continue to develop and promote the peer review methodology through Regions4GreenGrowth, and if possible, through other projects; it is a very strong methodology for the sharing of experience and good practices.

- The partners should continue to promote the triple-helix RERIC concept. The idea of regional one-stop-shops for energy matters would help to stimulate investments in regional RES and encourage coherent planning and commitments in terms of regional strategies and spending. Triple-helix's represent a best practice in cluster formation.

[37] Patras Science and Business Park & Euro Perspectives Foundation – MORE4NRG Study on framework conditions necessary for generating development of, and investment in, regional renewable energy infrastructures

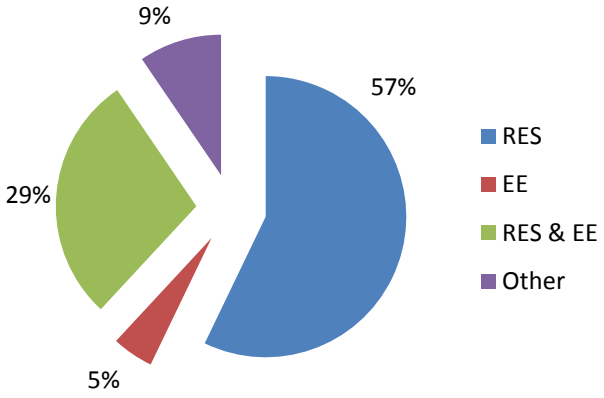
3.1.5. Regions4GreenGrowth

www.regions4greengrowth.eu	**Regional Initiative Project** ERDF funding: €1,707,203 Budget: €2,200,607 Start date: 1st January 2012 End date: 31st December 2014 Partners: 15 Countries: 10 Good practices: 21

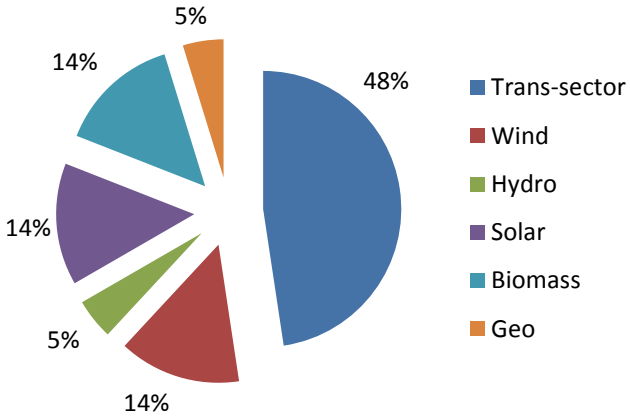
Regions4GreenGrowth did not target a specific technology type in its exploration of good practices, but focused on the issues of access to finance and how to speed up investment. At time of writing, the project has completed collection of good practices but has yet to proceed with transfer and detailed analysis. Like More4NRG which had the same project leader, Regions4GreenGrowth uses peer reviews, but unlike its predecessor, all regions will act as hosts, producing fifteen peer reviews to analyse specific challenges related to the financing of RES projects and present tailored packages of instruments and actions to help achieve regional targets. Master Classes have been arranged to act as capacity building tools.

Analysis of good practices

Twenty one good practices have been identified by the project partners. As the chart (right, top) shows, the project collected practices mostly on RES and energy efficiency. The 'Other' category includes a general scheme to attract Foreign Direct Investment (FDI) into a Swedish region and a system of Cycle Paths in Romania which aims to decrease CO_2 emissions in the region.



As with More4NRG, a break-down of RES practices (right, bottom) shows that the largest group were not focused on one particular technology type, suggesting broad transferability of conclusions from good practice analysis.



Practice transfer will be visible in the final implementation plans produced from the peer review process and transfer has not yet begun. However, the Swedish FDI programme has attracted as an inspiration for Valencia and recommendations from the Swedish experience have been included in its peer review.

Outstanding good practices

1. The **Greater Manchester Low Carbon Investment Pipeline** is a scheme for achieving a 48% reduction in CO_2 emissions by 2020 through a Low Carbon Economic Area (LCEA) plan. The LCEA programme board recognised that a common approach was needed to avoid duplication of effort, optimise use of resources and create large scale projects that could attract investors. A part of this strategy was to create investment portfolios with both large and small projects included. Small scale green investments can often have low returns and it can be difficult to attract investment. The private sector is invited to invest into an Investment Fund,

which is used to fund projects in the pipeline, rather than having to seek investment for individual projects. Such a system allows for the prioritisation of investments by the region.

2. Flevoland directly supports leading actors and innovative SMEs with its **technological environment innovation subsidy**, which aims to encourage SMEs to innovate and work sustainably. Companies can apply for the subsidy to assist with the financing of environmental, and innovative technological projects. Sustainability relies on local synergies, so having sustainable local businesses and entrepreneurs to drive market growth is an essential prerequisite for future renewable development. Funding is 30% of total costs, with the SME expected to provide the rest to show credible commitment. The subsidy has been awarded to twenty companies, creating fifty new jobs.
3. The city of Baia Sprie established a **Public-Private Partnership (PPP) for a photovoltaic energy park** to provide sustainable energy for its citizens. The project was initially approved for financing from the structural funds, but was put on a waiting list. Therefore, other financing possibilities were sought. The city provided land for the installation, as well as planning permission, in exchange for 5% of shares in the project company, with the possibility to buy up to 15%. The private partner made all other investments for 85% of the project company. Profits will be shared in relation to share ownership.

RES success prerequisites

At the time of writing, the Regions4GreenGrowth project still had two years left in which to find and analyse practices and, from a financial support angle, Regions4GreenGrowth felt it was too early to make solid recommendations for prerequisites. They did, however, agree with the ones identified by More4NRG - regional energy strategies, political commitment and regional specialisation - as a few of the good practices identified were regional planning documents, either for all RES types or for one in particular, whilst other practices were identified as fitting into parts of other frameworks.

It was suggested that the implementation of Public-Private partnerships and funding portfolios would emerge as key recommendations and that the involvement of the private sector would be a prerequisite. This certainly plays out in the identified good practices where co-operation between public authorities and business investors arises several times.

The good practices also reveal communication and community-oriented action to be essential. Securing community buy-in is a strong way to overcome the NIMBY problem; either by communicating the good of an RES installation or ensuring that the local population benefits financially.

Difficulties identified

The main difficulty identified was the current economic climate, where receiving investment is a major challenge. This is not specific to RES, but is instead affecting all business areas. Ideally, public authorities should be stepping in to invest in technologies for the future, but this is not always politically feasible. In this case, innovative ways of attracting private investment should be found. Regions lacking political commitment, or with public opposition find it very difficult to implement renewable energy projects. This is especially the case in finance, where, if investment is high, it can become a sensitive political issue.

As noted by other projects, direct transfer rarely happens; instead, only inspiration is transferred. Implementing big and ambitious projects can be far too difficult for regions just beginning in RES implementation. A related problem for beginner regions is the presence of complex legislation, which takes time to adjust and change. Legislation can block planning processes, add outdated requirements to public procurement and, prevent the creation of public-private partnerships. Excessive bureaucracy in beginner regions can be a major cause of slow RES development, which is especially damaging for investment.

Other outcomes

The main outcome of the project is intended to be the peer reviews and their resulting recommendations and implementation plans. The peer review exercise, as also used in More4NRG is again proving itself to be a very useful methodology for RES promotion. Its success in the previous

project has meant that in Regions4GreenGrowth, all partners are hosting peer reviews to improve their regional strategies. At time of writing, only one peer review had been fully completed (for the region of Valencia).

Two recommendations of interest were to promote the Energy Service Company (ESCo) business model and to create loans with public money, rather than grants. An ESCo will provide the investment for energy efficiency and RES installations and then make a return based on the final energy savings made. Therefore it is funded by energy savings made by the customer. ESCo operations should be defined by a regional authority to undertake certification of projects and assist in funding with government grants.

Mature Markets
University programmes

In 2007, five universities in the Lazio region (IT) introduced courses dedicated to renewable energy sources and energy efficiency after signing an agreement with the regional authority. The courses are available to students in a wide number of disciplines to encourage maximum outreach of knowledge on the subject, even to non-scientific students. At one university, passing an exam on sustainable energy is a prerequisite for a degree, regardless of faculty of study. Extending the course to non-scientific faculties brings in other areas important to the growth of sustainable energy, such as law, economic and social sciences. The universities have also created e-learning platforms, dedicated websites and training materials, as well as installing a photovoltaic plant for demonstration purposes.

Greenovate! Europe elaboration of More4NRG good practice

For public financial support, reliance on grants can have a negative outcome as the public makes investments and then sees no tangible return. Using the money to create loans is an alternative financing model whereby returns are made (perhaps with a small percentage of interest) to be used for future investment. As with co-financing, a loan scheme would require credible commitment from an entrepreneur.

Recommendations

- Search for innovative financial models, such as community schemes. Good examples have been found in Schleswig-Holstein and in Wales (RENREN), as well as in the RESTOR project. [38]

- Innovation voucher schemes are an interesting tool to finance innovative renewables. Inspiration on how to develop and implement voucher schemes for renewables can come from the KIS-PIMS project, but also from GreenConServe and REMake.[39]

- Considering the current economic climate, the initial findings made in the Valencia peer review should definitely be put into wider circulation. Green loans from local authorities (rather than grants) and ESCos are proven tools that have so far, unfortunately, received only limited uptake.

[38] More about the project can be found at www.restor-hydro.eu/
[39] For more on these projects, see www.greenovate-europe.eu

3.1.6. RENREN

Regional Initiative Project

ERDF funding: €1,646,507
Budget: €2,095,360
Start date: 1st January 2010
End date: 31st December 2012
Partners: 14
Countries: 12
Good practices: 54

www.renren-project.eu

RENREN (the Renewable Energy Regions Network) aimed to improve regional policies in RES to optimise existing frameworks, as well as establish strategic co-operation between regions for new approaches, projects and solutions. This was achieved through the exchange of good practices and experiences. The project included regions with expertise in wind, hydropower, solar-thermal, photovoltaic, biomass, geothermal and ocean energy, as well as learning regions.

RENREN made recommendations and selected case studies for both 'learning' and 'experienced' regions. However, it was understood that every region was a learning region in at least one type of RES.

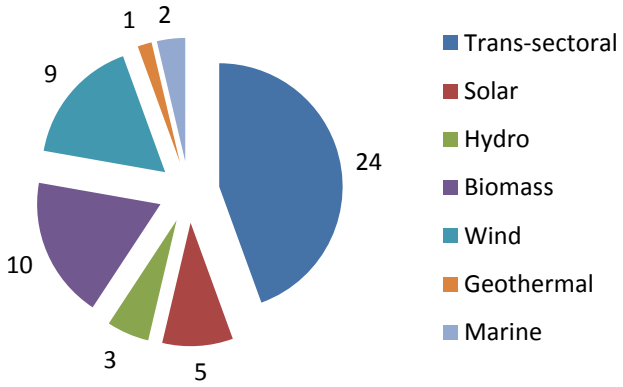
Analysis of good practices

The RENREN partners identified 54 policy practices. All practices are policy instruments, and the majority of practices are trans-sectoral (including energy efficiency practices) followed by sector-related practices from biomass and wind.

RENREN was the only project to identify marine/ocean energy practices, both of which were in Wales. The practices were strategic initiatives (preparatory actions and spatial planning) designed to allow for capitalisation on future opportunities once the technology has developed more.

At its final conference, the project published a comprehensive booklet with all policy practices grouped per major project topics:

- Strategic planning for RES at regional level
- Permits and compliance
- Fostering job market, RTD and innovation
- Finance and incentives.



Outstanding good practices

1. **Zoning for on-shore wind** was identified as a good practice by both Wales and Schleswig-Holstein. The aim is to concentrate wind power into controlled areas and ease people's concerns about visual impact. The NIMBY syndrome is a big issue for wind farm development, and planning is a politically sensitive issue. By concentrating installation into one area, local people can be assured that wind farms will not emerge all over the countryside. Zoning designates land usage based on an analysis of electricity production potential, local acceptability, environmental impact, and other such categories of concern, giving a higher chance of acceptance of the technology.
2. To further mitigate the NIMBY concern, Schleswig-Holstein has promoted the emergence of **Community owned windfarms.** Such windfarms can be entirely community initiated and

funded or have some government involvement, and have been developing in Schleswig-Holstein for some years. The first community owned off-shore windfarm is currently being planned. All local citizens are able to join the co-operative, even with a small investment. The farms are funded by the community, requiring an equity position of 20%, with the remaining finance provided by local institutions and authorities. Community windfarms bring a variety of benefits to a region, especially in terms of construction and operational jobs.

3. Small hydropower plants had been widely used in Andalucía until the 1960s, when many were abandoned. **Restoring abandoned small hydropower** was identified as a good way to meet RES targets at a minimal cost, and with limited legal difficulty. With much of the infrastructure in place, investment costs were not as high as building new plants and permitting processes were less complex. Small hydropower, despite mitigation practices, is often, inaccurately, considered environmentally damaging and can face public opposition. Restoring existing plants can lessen such resistance. The restoration process occurred following a comprehensive survey of the region. Once identified, the regional energy agency promoted their restoration to investors, who could recoup investment through an existing feed-in-tariff.

RES success prerequisites

A major pre-requisite for each region aiming to develop renewables is a clear commitment to RES implementation, followed by a regional RES strategy, tailor-made for each region. For 'learning' regions that are starting with the development of policies for renewables, the first strategy should focus on one RES, following analysis to see which would be most effective and best suit the region. Regions must concentrate on the source that can have fastest, strongest, initial growth. To facilitate this, a regional strategy should contain quantitative targets.

Difficulties identified

The RENREN project identified four main difficulties in the implementation of the project with regards to renewables:

1. For regions without an energy strategy (and thus missing long-term political commitment or targets for renewable energy), it has been difficult to implement and transfer suitable practices. Strategies and regional action plans need to be developed with stakeholder involvement.
2. Missing grid infrastructure and storage capacity for renewables, need to be put in place (or developed) often in collaboration with neighboring regions or at a national level.
3. A lack of regional data and information on renewables has been a problem for the RENREN partners. There is a strong interest in data (for example to provide benchmarks for the development of regional strategies). The data is not currently collected and Eurostat should be encouraged to begin collection at the regional level.
4. Implementation is the hardest part of INTERREG IVC projects and it was felt that too much time is spent doing preparatory work such as indentifying good practices. Projects are a maximum of three years long, with no chance of extension. A prolongation of the projects should be considered, with the same budget as present, to allow more time for implementation and transfer.

Other outcomes

The project partners produced a comparative analysis monitoring tool to establish what counted as a good practice and what factors were acting as bottlenecks. It was found that bottlenecks were almost identical in every region: storage, grids and infrastructure. Similarly, most regions had similar support frameworks: local climate plans, permitting, local networks and incentives.

Apart from the publication of good practices, a booklet of policy recommendations, "to accelerate the implementation of RES across the regions," has been produced.[40] The recommendations present a wide range of policy instruments, procedures, processes and structures that are useful for renewables

[40] http://www.renren-project.eu/images/stories/dokument/documents/policy_recommendations/new_9oct/1006_policy_recommendations-print-12pt%20update.pdf

policy making. In addition to RES specific recommendations (biomass & geothermal, wind, ocean hydro and solar-thermal, PV and CSP), policy recommendations have been made that apply to both learning and experienced regions. The main chapters under which these recommendations can be summarised are as follows:

1. **Institutionalise renewable energy** (committing to RES by setting goals and objectives; providing a guiding framework; establishing regional RES management and communication structures)
2. **Increase the success rate at the project development phase** (Using spatial planning as a strategic tool for RES development; providing information & guidance for developers; reducing complexity of the permitting process; increasing transparency of the permitting process)
3. **Use RES as motor for jobs & driving innovation** (Qualifications & skills - key to attracting jobs in a region; creating and using co-operation opportunities within and beyond your region; fostering innovation by integrating existing and/or new research facilities in your regional strategy)
4. **Incentivise the use of renewable energy in your region** (Supply & demand standards for the use of RES ; providing incentives to use RES by demonstrating its benefit and added values; reviewing specific RES use for transport & mobility; awarding forerunners)
5. **Facilitate access to finance** (Mobilising EU funds & programmes for regional RES projects; creating demand - use Public Procurement as a (strategic) tool; leveraging private money)

Commitment and planning
Regional RES strategy and policy

Marine energy is a relatively untapped energy source, with technology still in the development stages. Despite this, the Welsh government (UK) is seeking to capitalise on the future opportunities of the sector by adopting a forward-looking approach. A planning document, 'Wales: A Low Carbon Revolution', has set a target of 4GW of energy from marine sources by 2025. Current policy is focused on marine energy exploration, zoning and licensing, designing planning processes and compiling data. The planning exercise has shown the commitment of the Welsh government to marine energy, created working relationships between stakeholders and established a framework for the eventual growth of the industry.

Greenovate! Europe elaboration of RENREN good practice

Another key output of the project is the RENREN declaration in which the partners link the major challenges facing regional RE deployment with the achievements of the project. The aim is to continue to develop solutions in these areas and further develop RENREN to enable key regional governmental bodies to exchange experiences and establish co-operation.

Recommendations

- RENREN should continue to promote the results and policy instruments identified by the project, particularly to partners in INTERREG IVC projects working in the area of renewables;
- Particular attention should be paid to the promotion of community schemes as found in the RENREN best practices for wind power;
- For the promotion of community schemes and to support the best practice "Recovering small hydros" from RENREN partner Andalusia, it could be interesting to find synergies with the RESTOR (Renewable Energy Sources Transforming Our Regions) Hydro project, which is funded by the Intelligent Energy Europe (IEE) programme.[41] This project has fully explored the topic of restoring old hydropower installations, especially the replicable model for regional authorities that the project is intending to produce. RESTOR focuses on the advantages that bringing technology back on-line and decentralised energy production can have on community development, therefore having a similar regional focus.

[41] More about the project can be found at: http://www.restor-hydro.eu/

3.1.7. RETS

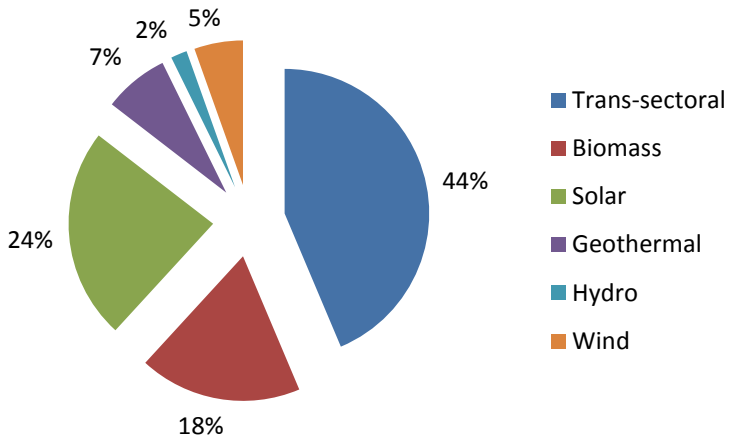
Regional Initiative Project

ERDF funding: €1,484,054
Budget: €1,908,715
Start date: 1st January 2010
End date: 31st June 2012
Partners: 12
Countries: 9
Good practices: 55

www.rets-project.eu

The Renewable Energies Transfer System (RETS) aimed to improve the knowledge and competencies of local and regional policy makers (especially in regions with a population of less than 25,000) in renewable energy systems to facilitate a greater deployment of renewable energy policies at regional levels. Partners work in association with the expertise of existing competency centres that produce research and provide services on renewable energies.

Small regional authorities have specific difficulties related to RES uptake, in terms of territorial competitiveness and project management skills for implementing complex RES practices. The core of the project was to create simple, usable tools for local authorities to help them make informed choices for implementing projects for an efficient and effective energy-mix.



Analysis of good practices

Fifty-five good practices were identified by the project partners.

The project collected 52 practices that were specifically focused on RES implementation, and three that looked at energy efficiency measures. In terms of a breakdown by RES technology, the majority of practices were trans-sectoral, however, sector-specific best practices for solar energy, biomass, geo-thermal energy, wind and one hydro practice was also described.

Outstanding good practices

1. **Derbi Pole of Competitiveness** was created in 2005 and is a network of 71 clusters. It is made up of companies, laboratories universities and local authorities in a triple-helix structure, with many of its members being small organisations that can co-operate on projects (around 80% are SMEs.) Its objectives are to boost the creation of green goods and services and develop the regional renewable energy industry by connecting research with SMEs. The Pole shows that small companies can turn a profit from RES and green development, which is essential for achieving critical mass.
2. The **Cwmni Gwynt Teg (Fair Wind Company) operates a community wind farm** in Moel Maelogan, Wales. The company is a co-operative set up by three farming families with the intention of overcoming decline in the rural economy and providing future income for their families by diversifying their income. The local community was involved in the development of the project, with the installation of three wind turbines. After this, nine more turbines were

planned in a second phase expansion, with the local community able to invest through a bond scheme. Some local opposition was encountered, especially in the second phase of the project, but by sharing the benefits of the development, much was overcome.

3. **Sitaard-Geleen Biomass central** is a private initiative by a local entrepreneur that uses biomass waste in cogeneration of heat and electricity. A deal was struck with the local electricity company to secure grid access, and the price of electricity and heating from the system is the same for the residents as before, so they do not pay extra for the implementation of the system. The municipality did make a small investment into the installation, but in return it gets a way to treat its biomass waste. In order to secure supply of fuel, a green waste collection service was established, representing a useful and profitable synergy.

RES success prerequisites

An important pre-requisite for the success of renewables is communication about the fact that renewable energy is good for the local economy. To this end, the integration of stakeholders is essential, including local authorities, community development agencies, business owners, farmers, economic agencies, etc.

To enable the transfer of good practices, they need to be broken down into constituent parts and mapped onto the new region so that they can be built locally. This involves matching stakeholders – finding an organisation in the 'new' region that can carry out the roles of an equivalent organisation in the 'old' region. Here, a 'blended learning approach' is essential; even experts need bottom-up training in order to see outcomes. A good practice cannot be transferred directly – the knowledge and model from a practice can be transferred, but own partnerships need to be developed. Transfer instead the building blocks of process, knowledge, framework, management training, etc.

Difficulties identified

The main challenges for RES deployment are at local authority, not regional, level. One answer to challenges is to combine a local authority with an expert centre and local stakeholders in a triple helix structure. This sets the base for discussion, and stakeholder involvement ensures that local difficulties can be overcome. Infrastructure issues and cross-border co-operation cannot be solved at the regional level. The EU must create this infrastructure and a single energy market.

Another key issue is the difficulties involved in transferring best practice. It involves change management at every level; from policy-makers to civil servants, companies and economic associations. In RETS, this process was not clear at the beginning of the project and had to be developed step-by-step. It took almost three years before RETS had outlined a transfer process. The project partners concluded that three years is too short to transfer policy practices and that for the local development of renewables projects – not just regional recommendations - more time is needed. It would be good to be able to have access to the same team; same managers, civil servants, and so on, for 4-5 years.

In general, transfer by technology push is wrong. The main challenge that needs to be overcome is in fact training and management. In the view of RETS, the success comes down, almost entirely, to the skills of the project manager, who needs to be open and willing to accept challenging targets. Local authorities are much more likely to work with those who show project management skills and dedication. There is a shortage of skilled renewable energy project managers, and there needs to be training at the European level for such positions. RETS has produced a variety of training manuals and is pursuing a range of educational outputs.

Other outcomes

A RETS community wiki was developed to manage communications between partners. The RENREN project were given access to the database, which was a good way to get the projects to work together, but interaction could have been more in depth. The platform acted as a gateway between activities, and became a way to link best practice databases.

Along with identifying good practices, the RETS partners also took part in 37 events (site visits and seminars) with the intention of sharing experiences. The collective knowledge gained lead to the creation of several policy recommendations in the project's final brochure, many reflecting the RETS-specific focus on energy management, particularly for small and rural local authorities.

Recommendations included that local authorities develop green loan systems, and put in place local tax incentives for green growth and sustainable entrepreneurship. In order to overcome the 'owner-tenant' dilemma (also experienced in Geo.Power), it was recommended that partnerships of local authorities, social landlords and housing associations be created, with financial incentives developed for retrofitting the existing housing stock.

One particular area of strength for the RETS project was its focus on educational issues. The RETS partners recommend that local authorities work in close partnership with colleges and universities to identify and develop appropriate training packages and courses for professional develop. (For an example, see box, right). It was also recommended that individuals be trained in 'energy bookkeeping', to provide a house-to-house service for reviewing energy use.

Further in line with this educational and awareness-raising push, it was recommended that local authorities create regional agencies to provide free, unbiased local energy advice services to advise people on energy efficiency and RES.

Emerging Markets

Capacity building through training programmes

COPROTEC (Alsace, FR) equips energy professionals with a set of tools enabling them to understand what is happening in traditional and new energy markets. The company is the result of a public-private partnership and has been designated as a National Innovation Centre by the French Minister for Trade. COPROTEC instructors have backgrounds in energy and climate engineering, and tackle issues ranging from marketing clean energy to technical application. Training is provided either at the COPROTEC headquarters which have workshops for practical activities, or anywhere else in the region using specially adapted vehicles, fitted with materials needed for learning to design energy sources. These courses award certificates and offer online support to keep people up to date with new developments.

Greenovate! Europe elaboration of RETS good practice

Recommendations

- RETS should promote its results and policy instruments to other partners in INTERREG IVC projects working in the area of renewables;
- The RETS wiki provides a valuable source of knowledge and should be developed further, with access granted to others outside of the project
- Educational practices identified by the project were particularly strong. Few other projects put such a focus on the importance of human capital. Further elaboration should be put onto development of regional education policies, to make local RES possible;
- Both RETS and Geo.Power showed concerns over the 'owner-tenant' dilemma in retrofitting housing. The RETS project partners should contact the Geo.Power partners and discuss their practices and findings on the issue;
- The RETS process of 'building block' transfer should be developed into a full methodology that can be made available to other projects to facilitate the expansion of sustainable good practices (not only in RES).

3.2. Thematic analysis

Building upon the individual project analysis, this section of the report introduces the thematic analysis of the capitalisation. It uses the analytical framework explained in Chapter 1 in order to draw out broader conclusions on transferring RES good practices.

Common features and successes

Interviews with representatives of the projects pointed mostly towards generic features and successes. This is because it is often difficult to see the results of good practice transfer, which can be a long and slow process.

However, the collection of a substantial number of good practices can be considered a success in itself. Good practice collection, although not necessarily leading to direct transfer, was identified by interviewees as a valuable experience that can raise awareness of RES potential. The projects have used the 212 practices collected for the development of policy recommendations and as an inspiration for RES policy development in their region. One evident feature was that most practices collected were representative of the Emerging Markets phase of the development cycle. Of the 212 practices collected, 155 were from this stage. The Commitment and Planning and Mature Market phases were represented, though neither to a substantial degree. The Saturated Market phase was represented by only 6 good practices.

The sector-specific projects emphasised the collection of best practices that demonstrate the application of different RES technologies and technical displays, whilst those projects taking all renewables into account focused more on the collection of policy practices and support instruments.

Commonly, considering the complexity of the topic, RES projects have undergone a very impressive and successful **learning process** regarding different technologies and how they work, as well as learning about a wide range of policy instruments used for the introduction and promotion of RES in the regional context.

> **"Best practices are a great way of raising the awareness about the potential of renewable energy technologies."**
>
> *Marco Meggiolaro*
> *Co-ordinator GEO.POWER*

The learning process reached out to project participants as well as local stakeholders by involving them in project activities such as study visits, peer reviews, workshops and seminars. This will raise the awareness of RES and their potential for the local economy. The INTERREG IVC programme had a strong geographical reach, reaching out to 57 NUTS2 regions (21% of the 271 regions. total) in the EU. This should be considered a real success.

In addition, the finalised projects have drawn up **policy recommendations** that should be used for designing future policy instruments not only at regional level such as the development of smart specialisation strategies but also at European level in developing thematic approaches, for example, for the Structural and Cohesion Funds. The policy recommendations (and RES plans) produced can be seen as the evidence of a very successful learning process.

Common challenges and difficulties

When it comes to common challenges for both experienced and less experienced regions there is still an enormous **lack of information and awareness** about RES technologies as well as about legislation and policy instruments that can be used to establish and expand their use. The main challenge for RES projects is to raise awareness about the potential of renewable energies for the regional economy and to establish a common knowledge base on which to build and expand.

Saturated Markets
Clusters of international scope

Noord-Brabant (NL) has invested in knowledge infrastructure and innovation activities to create an internationally competitive solar industry. The province identified regional strengths in solar technology and then worked with stakeholders throughout the whole innovation value chain to support the industry. A cluster working on thin film solar PV technology was created by combining four separate R&D institutes together. A regional innovation scheme, operated by a regional development agency, helps to bring the research produced by the cluster to market through training and provision of financial assistance to start-ups. The cluster and business support services together contribute to the goals set out in Noord-Brabant's 2010-2020 roadmap, which encompasses a variety of energy themes.

Greenovate! Europe elaboration of Regions4GreenGrowth good practice

Long-term political commitment and a stable legal framework are vital for planning and investing in renewable energy. A lack of legal certainty will block implementation of RES projects and undermine investor confidence, be that for a venture capitalist or an individual house owner. In order to introduce new policies and to transfer policy instruments, the projects have to get involved in the formulation and development of political will and interest. This process is long and very much depends on the willingness and involvement of individual political actors. Obtaining political commitment and legal stability therefore remains a major, ongoing challenge for all RES projects. Each of the projects found that it was **difficult to transfer best practices** but agreed that they are formidable tools to get inspiration for own RES policy development and to promote renewable energy generally. The difficulties in transferring best practices are linked to different factors.

Difficulties in transferability of good practices

All projects confirmed that it is nearly impossible to transfer entire practices. Best practices have to be broken down into their core elements and then adapted to different regional frameworks. The transfer of best practices in 'policy development and tools' often requires the right political moment, in line with current political trends and aspirations. If the practice is proposed too early or too late it may be impossible to transfer. It is therefore of the utmost importance that the (permanent) regional administration is aware of the practice, finds it useful, adapts it to its specific circumstances and finds the right moments with right (yet temporary) politicians in order to actually complete the transfer. This process takes time and needs persistence and is often only successful because a local administrator is convinced by the practice and drives the transfer process on a long-term basis.

"The four pillars that need to be in place for a successful transfer are the "basics" (infrastructure, functioning legal and financial systems), technology (whether imported or produced locally), people (political will and regional education) and business (investors, finance, tech skills and specialisation)."

Hans Hoogma
RETS

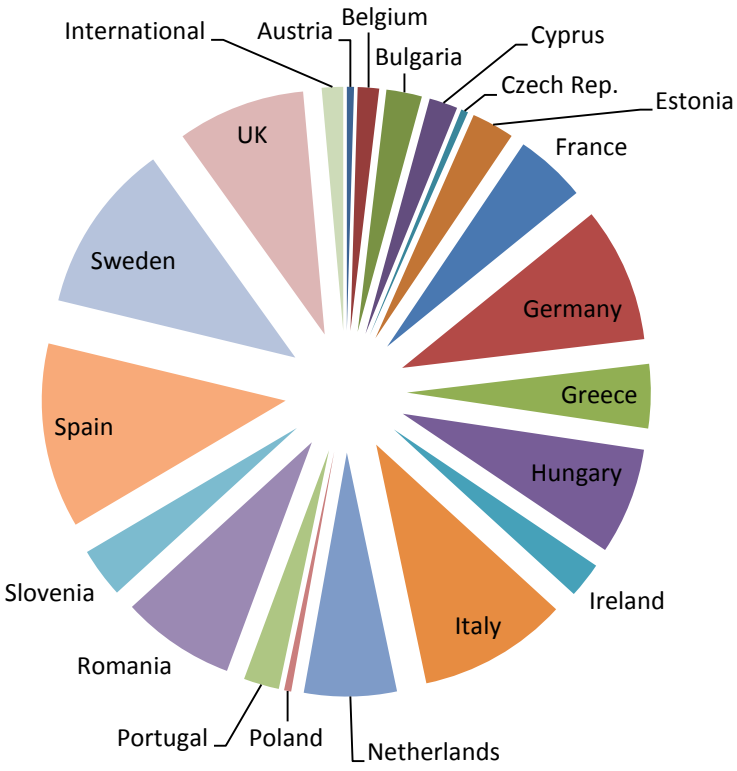
Best practices of a more technical character often face the "not invented here" syndrome and need to evaluate all risks under local conditions in order to demonstrate that they function in a different regional context. A showcase or demonstration practice is therefore often an appropriate means to carry out this risk evaluation and promote the RES technology. Also here it should be noted that some of the most impressive and complex good practices cannot be transferred. An example is 'Arlanda Airport' (GEO.POWER). The project partners showed a very high interest in this good practice, however, due to the complexity and the extremely high investment volume of the practice, it has been identified as being least transferable.

Another factor that can impede the transfer of best practices is time. The change from a well established, centralised energy system based on fossil fuels to a decentralised renewable energy system is a major undertaking that encounters a lot of resistance, making change process very complex and time intensive.

Those projects that had been completed or nearly completed at the time of writing underlined that they were short of time for implementation. Whilst the project partners are committed to continue working on the implementation once the project is finished, the focus that is provided by a European project is often gone and people that worked on the project will have moved on to other tasks. It was explained that a longer project duration did not necessarily mean additional financing but rather that a project prolongation by one or two years that would help – particularly in the political and legislative process – to complete the transfer of policy measures and instruments.

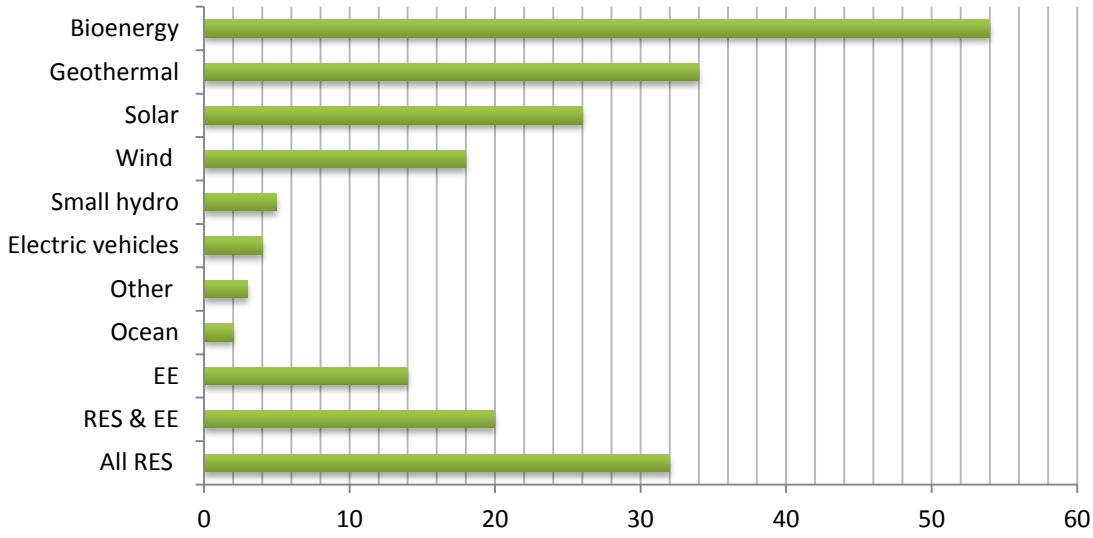
Common best practices

In total, 212 good practices were identified by the projects. It should be remembered that good practices are still unavailable from the 4Power project. These practices, when taken together to find synergies can identify much that can be of use to other regions in Europe. The collected good practices are presented in short form in the Annex. Full versions are available through the project websites. The chart, right, shows the distribution of the good practices that were identified, by Member State in which they were found. The N/A section of the chart accounts for international practices.



The high presence of certain countries – Spain (26), Italy (21), Germany (19) and the UK (18) – is to be expected, as they are some of the larger Member States, but Sweden's practice share (24) particularly stands out, supporting its reputation as a leading country in RES deployment. As a whole, newer Member States have had a weaker showing, although Romania (16) and Hungary (15) provided a substantial amount of practices.

The bar chart on the next page shows the RES sub-sectors covered by identified good practices. Bio-energy was the most prevalent RE sector covered, followed by geo-thermal energy. As both bioenergy and geo-thermal energy had dedicated projects (BIO.EN.AREA and GEO.POWER), this finding is perhaps not so surprising. In the projects addressing all renewables, wind, solar and biomass are generally present. Practices fall into two types; those which are focused on an RES type, and those which are applicable to multiple RES types, such as investment support policies. As a very closely linked field, there were 14 practices that discussed energy efficiency (EE) measures and 20 that discussed RES and energy efficiency together.



Division of practices into technology field

In terms of the development cycle/analytical tool (Table 2), the bulk of collected good practices (73%) fall under the 'emerging markets' classification, and within this, 'Demo investment in proven RES solutions, is the most dominant, representing 101 of the 155 'emerging markets' practices, and 48% of all practices together. The table below represents the identified good practices according to development stage.

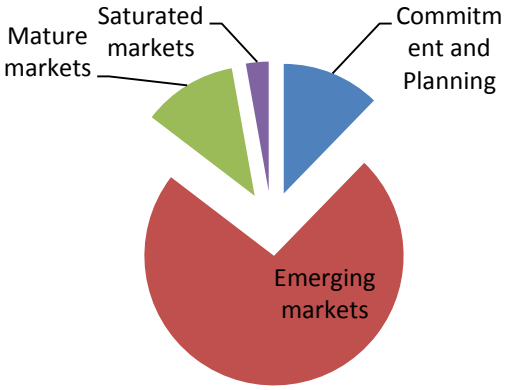


Table 8 – Division of good practices by policy type and Development Cycle stage (see Table 2)

Commitment and Planning	**26**
Analysis of market and SWOT	7
Debates with key stakeholders	4
Regional RES strategy and policy	10
Public information campaign	5
Emerging Markets	**155**
Awareness raising	7
Demo investments (w/GPP)	101
Capacity building	6
Local ownership	4
Cluster development	10
Support for investors	7
Financing instruments	13
Permits and planning	7

Mature Markets	**25**
More ambitious RES targets	3
Communication	2
Commitment to R&D	12
Triple helix clusters	3
University programmes	4
Support to innovation and start-ups	1
Saturated Markets	**6**
Innovative demo investment	4
Involvement of world leading companies	1
EU leading R&D centres	1

Different solutions to the same issue

The projects have identified a lot of different practices, approaches and solutions to address policy challenges.

By far the most prominent common policy measures were regional strategies, target setting, roadmaps and financing instruments, the latter category being split into a variety of measures, including loans, subsidies and tariffs. Regional strategies were focused on either individual RES technologies or on broader RES targets, leaving scope for uptake of several technology types. Others were energy or climate packages; with RES just a small part of the content.

Clusters were a popular measure, in both early and advanced stages. Mature markets had developed stronger clusters, identifiable by their triple-helix structure (public authorities, private enterprises and research organisations), whilst emerging markets showed regional authorities working with either research institutions or businesses (support for investors, financing instruments, cluster development).

Other widespread solutions were practices for communication and awareness raising throughout the cycle. It is not just those practices marked as 'communication' though, with publicity aspects present in many of the other practices. For example, a key part of demonstration projects is awareness-raising.

"Success is due to dedicated management and the involvement of regional authorities."

Catherine Ledig
RETS Co-ordinator

There were very few practices provided that were indicative of saturated markets, a logical result as these markets take a long time to develop and, once developed, are often only in one RES type, such as wind power in Flevoland and bio-energy in South East Ireland.

Innovative practices and policies

There are a large number of very interesting best practices available. However, three practices stand out as particularly interesting for the development of renewable energy regions and deserve to be made available to other regions. Whilst many of the other good practices identified were reliant on private actors, these three practices successfully highlight the role that regional authorities can play in RES uptake. Further, these practices show high growth potentials and indicate innovative approaches to overcoming the most frequent uptake barriers: access to finance and NIMBY resistance:

- The Manchester investment pipeline (Regions4GreenGrowth), creates portfolios of sustainable investments and is a promising practice for financing renewable energy developments and innovative technologies. The programme was established as part of a larger regional initiative to make Manchester a greener and more economically prosperous city. The practice has large potential for transfer, as long as regional governments are willing and able to implement such programmes.
- Community windfarms and projects, such as in Schleswig-Holstein (RENREN) and the Cwmni Gwynt Teg, Wales (RETS), highlight that renewable energies can play an important role in regional economies. The move towards decentralised ownership of energy generation equipment will boost uptake of RES by spreading financial gains around, thus grinding down regional resistance. However, such developments rarely happen spontaneously. In particular for wind energy, spatial planning and permitting play a large role. As with most RES, guaranteed feed-in tariffs and long-term security are also required
- The Sittard-Geleen PPP on biomass boilers ('Biomass Central') (RETS) represents a very good practice for district heating; an technology with huge growth potential. Renewable heating and cooling remains the sleeping giant of the RES world, as yet not fully explored or implemented. District heating will gain more prominence in relation to many upcoming Smart

Cities initiatives and can be applied at a variety of scales. Although Biomass Central was started by a private partner, as a PPP it shows that there is a clear role for public authorities to play in matters surrounding installation of this infrastructure.

Planning and zoning

The Environment Agency of England and Wales has created a streamlined application process for small hydropower and provided transparent sources of data for developers to support applications. Hydropower installations need government consents on environmental issues such as water abstraction and impoundment, flood risk and fish passage. The Environment Agency has created maps that highlight opportunities and areas of environmental sensitivity for hydropower in an effort to support the development of sustainable hydropower. The open-access online resource can inform installers of the environmental conditions in an area, giving an indication of whether consents are likely to be given or not. The Environment Agency has also provided a simplified application with a pre-application phase, and provides guidance on planning and the application process.

Greenovate! Europe elaboration of RENREN good practice

Particularly interesting results

In addition to the impressive collection of policy best practices in the area of renewable energy, the projects have also achieved other interesting results. Most of these results have been described in the individual project sections. However, here we would like to highlight the following four for consideration by other projects and projects partners:

- Although often a part of INTERREG IVC projects, the policy recommendations produced by RENREN and GEO.POWER can provide good guidance for policy makers and inspiration for new projects. The recommendations from RENREN are especially well thought out and provide a substantive overview of policy options. They should be used as a starting point for future RES projects.
- Peer reviews: MORE4NRG has developed a system of peer reviews for engaging policy makers in an intensive review process of renewable energy policies with experts from academia and business. The process allows regional stakeholder involvement and provides a region with an 'outside' review of like-minded people. Peer reviews are continued in the Regions4GreenGrowth project and are certainly recommendable for other projects as well.
- Regional Action Plans: BIO.EN.AREA has developed a template to draw up regional biomass action plans that can be taken as a guide by regions interested in bio-energy. Although many of the projects highlighted the importance of regional action plans, the BIO.EN.AREA template particularly stands out as it can be adapted to any region, with instructions on what to include and how to analyse current and future bio-energy potential.
- Best practice database: The RETS project has developed the RETS wiki holding description of the best practices that have been collected by the project. The project has invited RENREN to participate in the wiki and is willing to open the wiki to other interested partners.

Pre-requisites for successful implementation

With regard to regional policy for the use of RES, the projects emphasise concentration or specialisation as a core pre-requisite. **Each region should concentrate on its existing regional strengths and local conditions when building RES policy strategies and action plans.** This is especially true for regions that have little or no experience with RES implementation. They should first focus on the RES with the highest growth potential.

In addition, the following core pre-requisites for successful RES development and implementation were brought forward by the projects:

- Capacity building / training of suppliers and service providers along the entire supply chain (installers, operation & maintenance, etc.);

- Adequate grid infrastructure and storage systems;
- Easy permitting processes;
- Long-term political commitment, legal stability and political will;
- Coherent policies, clear programming and target setting;
- Demonstration of business potential for creating jobs and income for local economy;
- Public awareness and communication at all levels also with the media;
- Public involvement and co-operation for example in community schemes or Public-Private Partnerships;
- Involvement of the private sector and other relevant external experts;
- Access to finance and RES incentives;
- Common support of local and regional stakeholders;
- Creation of a science and innovation infrastructure.

Saturated Markets
Involvement of world leading companies

In Vasternorrland (SE), leadership from private companies is playing an important role in regional RES development. SCA Forest Products is planning to create seven wind-farms in undeveloped woodland, providing over 2TWh of electricity, to power its paper mills. SCA is Europe's largest private forest owner and operates throughout the forestry value chain from wood to end products. The wind farms are a joint venture between SCA and Statkraft – a large Swedish energy company – working together as Statkraft SCA Vind AB. Initial construction will consist of 63 wind turbines, reaching 350 in the coming years. In total SCA Vind are investing 16 billion krona (around €1.8 billion) and the wind-farms will reduce yearly carbon emissions by more than 2 million tonnes.

Greenovate! Europe elaboration of Regions4GreenGrowth good practice

Possible synergies with other EU programmes

Renewable projects under INTERREG IVC fulfil the important function of spreading knowledge and policy approaches to a large number of regions. This large scale implementation at regional level is the backbone of the Europe 2020 strategy. Synergies with other European programmes can be achieved in particular with regard to access to:

- State-of-the-art research results (FP7 and Horizon 2020);
- Capacity building and demonstration projects for renewable energy (IEE – Intelligent Energy Europe financed by CIP);
- Eco-innovative cluster co-operation (ECOCLUP financed by CIP);
- Collaboration of eco-innovation policy makers (ECOPOL project financed by DG ENV);
- Innovative policy approaches as for example voucher schemes tested for renewable energy services and services in the sustainable construction (KIS-PIMS and GREENCONSERVE projects under Europe INNOVA programme financed by CIP).

"Peer Reviews as a way of engaging policy-makers, by bringing them face to face with experts who can provide simple, clear and respected suggestions."

Bob Pels, MORE4NRG Co-ordinator

4. Key policy messages and conclusions

4.1. Main thematic outcomes

4.1.1. Regional renewable energy

Renewable energy technologies and services can be formidable drivers for regional growth and job creation. To date, several European regions and municipalities have successfully shown how renewables can be used to instigate development and investment. The decentralised nature of renewables also means that the benefits they bring are local, and that jobs and growth can be created locally through harvesting, transforming, transporting and storing renewables, provided that the right political framework conditions have been created.

The change towards renewable energy is a true energy revolution. This total system change requires a strategic approach and long-term political commitment in order to trigger the necessary investments. Regions engaging in this change process need to keep in mind that it may take 30 years before they can be considered a renewable energy region!

The multitude of renewable energy sources has brought about a complex landscape of innovative technologies and services that require learning and better understanding for reasonable decisions to be made. This concerns policy makers, building owners, investors, businesses and citizens alike. To overcome this hurdle, professional communication and education as well as participatory projects will need to be deployed at a large scale. The large choice of technologies and service is also an opportunity for regions, allowing them to find their own market niche and thus provide a fertile ground for smart specialisation.

4.1.2 Participating regions

It is an encouraging sign that the 69 EU regions involved in INTERREG IVC RES projects recognise the large potential that RES has, and that they are willing to learn and collaborate in this area. The involvement of both 'experienced' and 'learning' regions brought a good mixture of practices to the table, representing how renewables can be supported throughout the four different stages of market development ('Commitment & Planning, 'Emerging Markets', 'Mature Markets' and 'Saturated Markets').

In order to increase uptake of renewables at the regional level, more effort should be made to provide regional statistics. Information is available at global, European and national level, but there is no systemic collection of data at the regional level. This is a blockage to the uptake of renewables as it complicates attempts to draw up action plans and to take stock of the existing energy situation.

However, the intensive exchange in INTERREG IVC projects offers access to regional experience and the opportunity for spreading and taking-up policy instruments in a large number of European regions. The INTERREG IVC projects have done a great job of raising awareness of the challenges that face regional authorities. Additional experience and practices are available through the Intelligent Energy Europe programme, Europe INNOVA (for example, the KIS-PIMS project) and through EurObserv'ER regional case studies.

4.1.3 Best practices

An excellent collection of 212 good practices are now available thanks to the INTERREG IVC partners. The study has shown that the projects are beneficial for both experienced renewables

regions that seek inspiration for new and efficient policy schemes and learning regions that can get a head start using policy schemes and approaches that have already been tried and tested. The majority of practices concern the 'Commitment & Planning' (12%) and 'Emerging Markets' (73%) stages which appears to be the right concentration since most regions are at these development stages. Nevertheless, for regions with more experience in one or more renewables, more advanced policy practices have been collected ('Mature Markets' 12% and 'Saturated Markets' 3%). Within the 'Emerging Markets' segment, a high concentration of "technology demonstration" practices can be observed, mainly originating in the sector-specific projects. The focus on demonstrating and show-casing technologies underlines a strong need for information and awareness-raising on the technological and economic possibilities that renewables offer.

4.2. Systemic strengths and weaknesses in INTERREG IVC

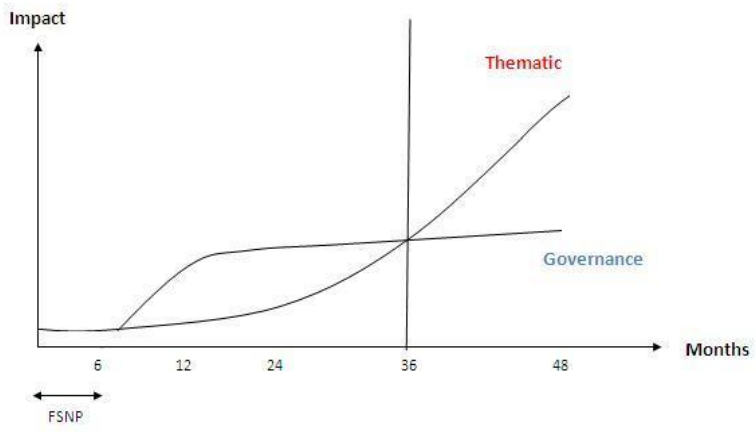
Often mentioned and widely disliked by our interviewees, the projects stop when they are finally starting to create real thematic impact. A common request was to extend project duration to 48 months.

4.2.1. Types of impact: thematic impact, and impact on governance processes

We need to distinguish between two types of impact: the impact in the thematic area, (i.e. new renewable energy support policies introduced or local feasibility demonstrated), and the impact in policy learning, international engagement and governance changes. While the first impact is probably the one programme designers mainly had in mind, the second is a more hidden impact that comes along when regional policy makers engage, maybe for the first time, with their peers from other regions in a joint project. It is not uncommon that these projects trigger regional governance changes, such as the establishment of local stakeholder groups, the inclusion of external expert knowledge into decision-making processes or cross-sectoral, cross-department and cross-institutional exchange and co-ordination. This less visible impact which is systemic and not specific to a given thematic area is usually perceived as very beneficial by participants and must be stressed and fed-back to programme designers.

4.2.2. Timing of impacts: not all impacts occur at the same time

Just like any other project team, newly formed INTERREG IVC consortia require time to become teams that are able to function as a unit and get the job done. The Forming – Storming – Norming – Performing (FSNP) model of group development describes these typical stages that make a *team* out of a group of individuals. [42] There is no magic potion to shorten this process, and programme design needs to take it into account that in each consortium there is a rather non-productive starting phase while the team is developing. Tools like the joint development of rules of group management and communication



Graphical interpretation of impact timing

[42] A common model of group development first proposed by Bruce Tuckman in 1965: "Developmental sequence in small groups"

flows coupled with socialising to get to know each other can speed up the process.

The impact on governance processes occurs right from the start of projects, once the consortia have become teams. While more is always nicer, in general this policy process learning impact is reached after 12-18 months.

The tangible thematic impact in regions typically comes towards the end of INTERREG IVC projects, sometimes only after 30 months. By then, the teams are highly performing, have finished all the exchange and analysis of good practice cases, identified the practice(s) each region wants to implement and started implementation. At this point, the teams could easily create further impact: they have accumulated thematic knowledge, identified sources for expertise, engaged local stakeholders, and started off processes to make things happen. Hence the call for extension of project duration to reap the full benefit from the action.

Apart from extending project duration, what other options are there to bring about thematic impact more efficiently?

4.3. Outlook: How to go from here?

4.3.1. Manage and promote the body of renewable energy thematic knowledge

Each of the analysed thematic projects has accumulated a lot of relevant knowledge. Taken together, this sum of individual projects' knowledge represents a common 'body of knowledge' in thematic best policy practices. At present, however, we cannot yet speak of a 'body'; the knowledge is not yet pulled together and organised in a user-friendly manner for future initiatives – with or without public support – to draw from. It is highly recommendable to centrally manage the knowledge created by the projects to preserve it from being lost at the expiry of project funding for the project website. A central body of thematic knowledge – or a renewables policy tool box - will be of great benefit for future projects: it will allow shortening the time for search for useful practice, for background information and for analysis of transferability potential. To the programme owner, it will be useful for checking if proposals are optimally building on previous initiatives and making effective and efficient use of public funding.

4.3.2. Complete and continuously enrich the body of renewable energy thematic knowledge

The total of good practices in the renewable energy thematic area that have been identified, collected, analysed and described by the seven projects in the area is already impressive with over 200 practices, but this body of knowledge is not complete. For the four market development stages of renewables need completion, while the knowledge on demonstration projects in most renewable energy sub-sectors is rather encompassing. Further thematic funding decisions should privilege applications that allow for filling the current gaps of the readily available body of knowledge and should expand on areas of particular interest highlighted by this report, such as co-operative ownership and financing structures.

4.3.3. Accelerate the implementation of available ready-to-adapt good practices in the thematic area

The following lines simplify and over-emphasise the complex and heterogeneous reality of INTERREG IVC (renewable energy) projects in order to better make a point.

Most projects start from scratch: before significant thematic impact in the region is created, many months (up to two years) are spent on gathering knowledge, searching for background data, analysing the information at hand, and examining how it fits into the regional context. While this is relevant in areas where the common thematic body of knowledge is still incomplete, this time could be shortened for areas where previous projects have already gathered sufficient, relevant knowledge.

To speed up the creation of regional thematic impact, a new streamlined family of 'accelerator'-projects could be designed to complement the current INTERREG IVC project types. These would focus, essentially, on creating the maximum regional impact in a given, optimised, time frame.

Accelerator projects would:

- Allow single-region applications
  This allows gaining up to six month required for consortia to become performing teams (cf. FSNP). It follows the logic that regional impact is ultimately created by the empowered regional actors.

- Require applicants to send, in their application, a pre-selection of a limited number (e.g. four) of best policy practices from the online public thematic body of knowledge that the applicant aims to promote inside of his/her political system for implementation in his/her region.

  This allows full use of the already gathered, analysed and described best practices. Pre-selecting four practices allows for the subsequent discard of three practices for reasons of political agenda, negative results of feasibility studies, resource limitations, etc. but is likely to guarantee at least one practice will get approved for implementation. Inviting applicants to pre-select before applying ensures applicants have done their homework, browsed the available knowledge and made first reflections about suitability and transferability into their own region.

- Fund the in-depth discussion of the four best practices with all regional stakeholders at public and private level relevant for the implementation of such practices. This allows the number of practices considered for implementation to be narrowed down to two based on the feedback from the stakeholder groups.

- Fund feasibility studies for the two remaining best practices
  This allows assessment for compatibility of the selected practices with existing laws and complementary measures and estimating the potential impact. Based on the result of the feasibility studies, the more feasible of the two practices is selected for pilot implementation in the applicant region.

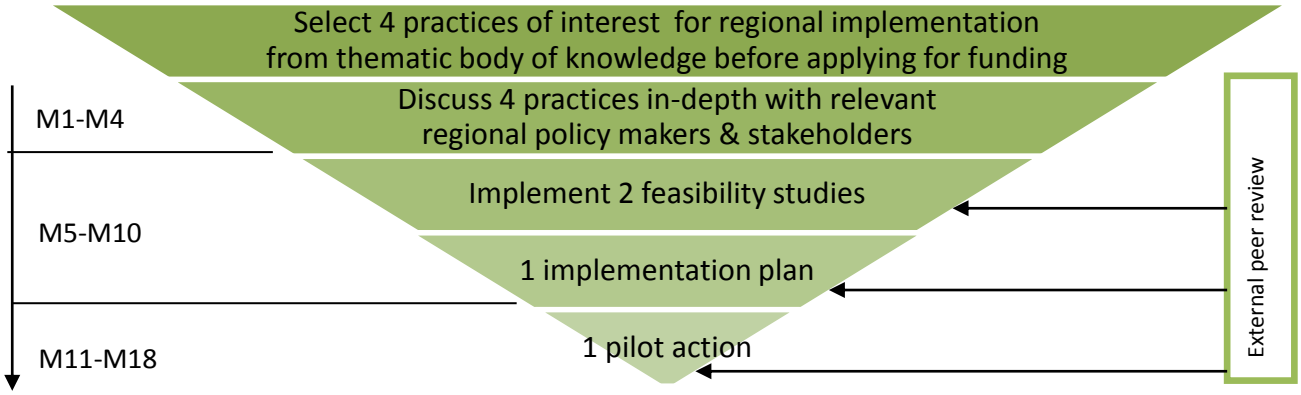
- Fund the development of a detailed implementation plan with resource planning and milestones
  This allows for optimal preparation of the implementation of the selected practice.

- Fund the management, coordination and monitoring of the implementation of the pilot action, as well as a limited amount of other costs required for its implementation. This allows kick off of pilot implementation of the chosen best practice in the region and helps to overcome resource limitations.

Accelerator projects could last 18 months, with 4 months planned for in-depth discussion with stakeholders, 6 months planned for conduct of the two feasibility studies and the development of one implementation plan, and 8 months for implementation of the best practice in the region.

The graphic below describes the process and the timing for accelerator projects.

A 5-step approach from identification of interesting thematic best policy practices to pilot action



In parallel to the accelerator projects it would be useful to set-up a **thematic support structure**, possibly the same that manages the body of knowledge. This support structure must possess thematic expertise, be familiar with the best practices in the body of knowledge, and have extensive networks into the thematic community of practice at European level.

Accelerator projects would be able to consult the support structure to get external feedback during each step of their work to remove knowledge bottlenecks that might hold up accelerator project progress.

Support of accelerator projects would not exceed 75,000 EUR per applicant. Funding for accelerator projects could be made available as a lump-sum to simplify administrative procedures, in line with the philosophy of the overhaul of the European Programmes. A voucher-type of funding looks promising and adequate, given the limited financial risk.

An experience report from a similar type of action will be available from the ECOPOL project in Spring 2014[43].

[43] ECOPOL is funded by the CIP by the European Commission, DG Environment, contract number 02.0201/2010/580767/SUB/E4. ECOPOL is a transnational public partnership that aims to accelerate the implementation of eco-innovation policies across Europe. ECOPOL has developed a "scale-up model" that is the first of its kind and test a new approach for replication of good practices. http://www.ecopol-project.eu/

Annex I – Renewable energy overview

Project acronym	Project name	Detailed topic
4 POWER	Policy and Public-Private Partnerships for Offshore Wind EneRgy	Preparing EU (coastal) regions for off shore wind developments
BIO-EN-AREA	Improve regional policies for bio-energy and territorial development	Enhancement of the use of bio energy (biomass)
GEO.POWER	Geothermal energy to address energy performance strategies in residential and industrial buildings	Strategies related to low enthalpy energy supply
MORE4NRG	MORE4RG	Renewable energy and energy efficiency policies
Regions4GreenGrowth	Regional policy instruments and approaches for improving access to finance and speeding up investments in sustainable energy.	Equipping Regions with policy instruments to improve access to finance and speed up investments in sustainable energy projects
RENREN	RENREN - Renewable Energy Regions Network	Strengthening of renewable energy sources
RETS	Renewable Energies Transfer System	Development of renewable energy (in municipalities with less than 25,000 inhabitants)

Project acronym	Number of partners [44]	Country of the LP[45]	ERDF funding (€)	Total budget (€)	Starting date	Ending date	Type of project
4 POWER	11	THE NETHERLANDS	1,228,472	1,570,880	01/01/2012	31/12/2014	RIP[46]
BIO-EN-AREA	6	SPAIN	2,444,370	3,125,000	01/01/2010	30/06/2013	RIP
GEO.POWER	12	ITALY	1,612,258	2,031,530	01/11/2010	31/12/2012	CAP[47]
MORE4NRG	12	THE NETHERLANDS	1,030,689	1,326,559	01/09/2008	30/09/2011	RIP
Regions4GreenGrowth	15	THE NETHERLANDS	1,621,843	2,090,577	01/01/2012	31/12/2014	RIP
RENREN	13	GERMANY	1,646,507	2,095,360	01/01/2010	31/03/2013	RIP
RETS	12	FRANCE	1,484,054	1,908,715	01/01/2010	31/12/2012	RIP
	81		**11,068,193**	**14,148,620**			

[44] Representing 22 Member states + Norway

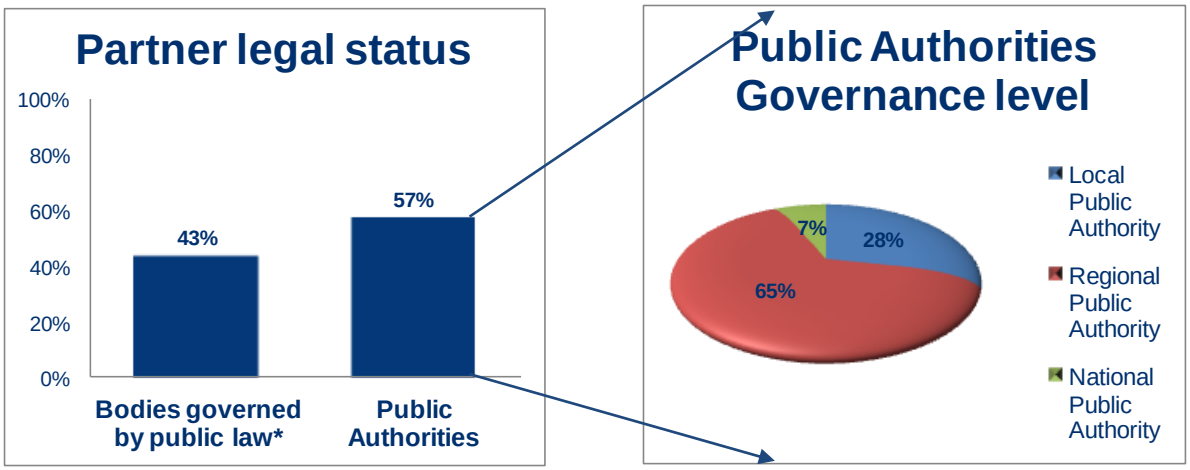
[45] LP: Lead Partner

[46] RIP: Regional Initiative Project

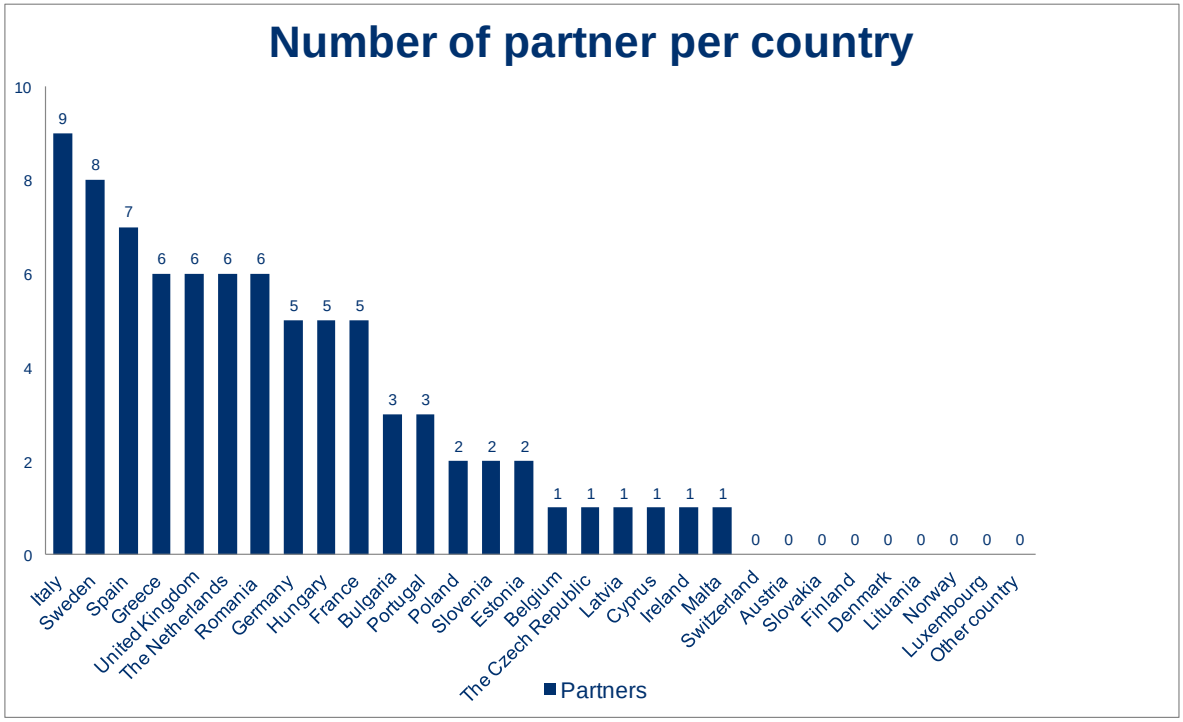
[47] CAP: Capitalisation Project

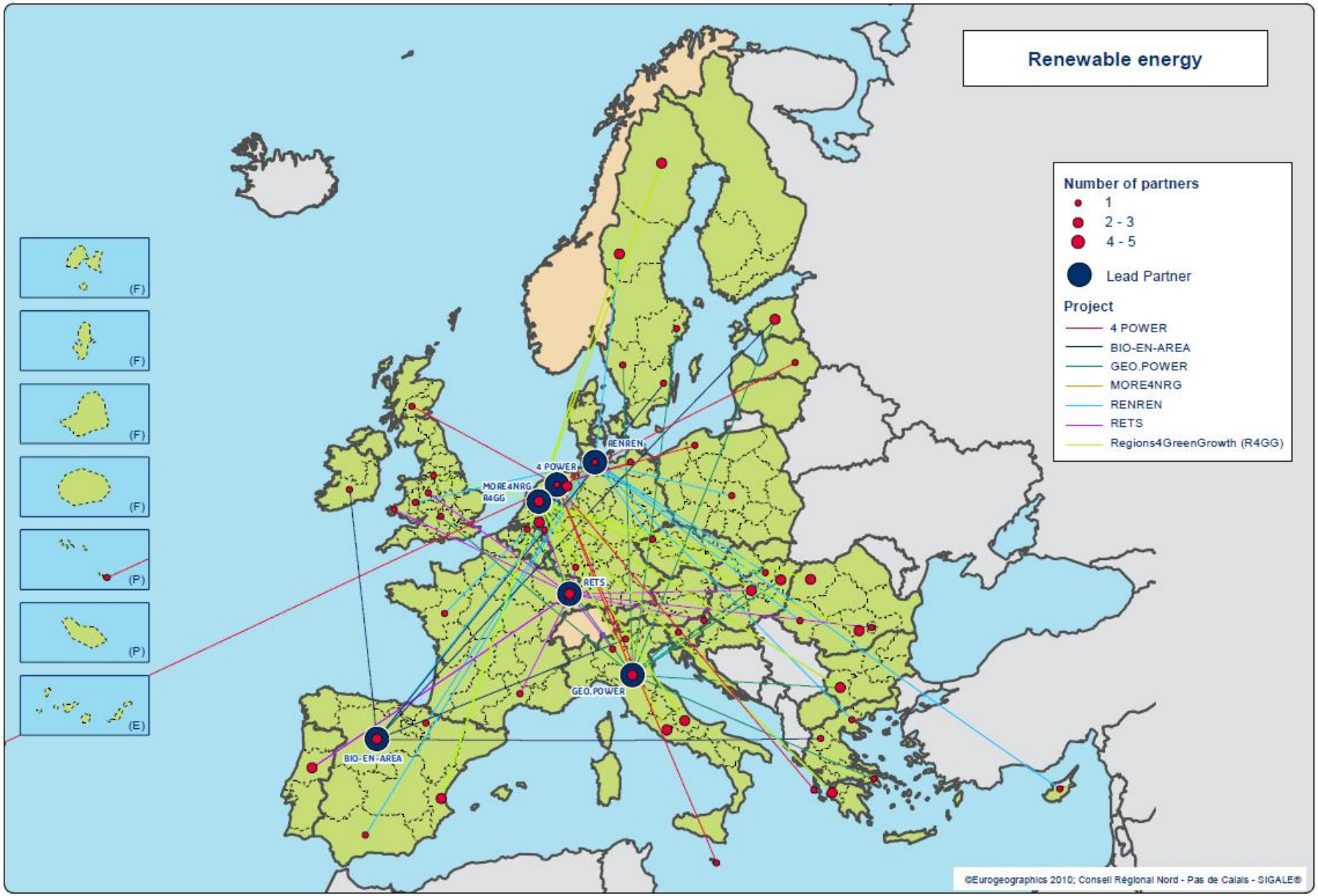
Indicators - as of Summer 2012						
		Outputs		Results		
		No. of regional / local policies and instruments addressed	No. of good practices identified by Regional Initiative Projects	No. of regional / local policies and instruments improved or developed	No. of good practices successfully transferred within Regional Initiative Projects	No. of staff members with increased capacity (awareness / knowledge / skills) resulting from the exchange of experience at interregional events
Project acronym	**End date**					
4 POWER	31/12/2014	10	0	0	0	0
BIO-EN-AREA	30/06/2013	6	31	0	0	26
GEO.POWER	31/12/2012	11	0	0	0	46
MORE4NRG	30/09/2011	11	35	6	5	90
Regions4GreenGrowth	31/12/2014	13	19	0	0	31
RENREN	31/03/2013	14	48	0	2	40
RETS	31/12/2012	12	55	1	2	0

* Projects (RIP) do not always result in the transfer of good practices, but they always have to identify good practices with view to improving policies.



* **Bodies governed by public law**: e.g. Regional and local development agencies, Public universities etc.


Number of partner per country
10
8
6
4
2
0
9
8
7
6 6 6 6
5 5 5
3 3
2 2 2
1 1 1 1 1 1
0 0 0 0 0 0 0 0 0
Italy
Sweden
Spain
Greece
United Kingdom
The Netherlands
Romania
Germany
Hungary
France
Bulgaria
Portugal
Poland
Slovenia
Estonia
Belgium
The Czech Republic
Latvia
Cyprus
Ireland
Malta
Switzerland
Austria
Slovakia
Finland
Denmark
Lituania
Norway
Luxembourg
Other country
Partners


Renewable energy
Number of partners
1
2 - 3
4 - 5
Lead Partner
Project
4 POWER
BIO-EN-AREA
GEO.POWER
MORE4NRG
RENREN
RETS
Regions4GreenGrowth (R4GG)
RENREN
4 POWER
MORE4NRG
R4GG
RETS
GEO.POWER
BIO-EN-AREA
(F)
(F)
(F)
(F)
(P)
(P)
(E)
©Eurogeographics 2010; Conseil Régional Nord - Pas de Calais - SIGALE®

Annex 3 – Renewable energy analysed projects

4 POWER

Policy and Public-Private Partnerships for Offshore Wind EneRgy

PROJECT DETAILS

Priority: Environment and risk prevention

Theme: Energy and sustainable transport

TYPE OF INTERVENTION

Type of intervention: Regional Initiative Project

Duration: 01/01/2012 - 31/12/2014

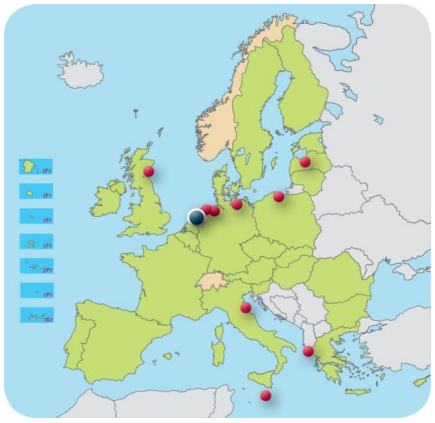
Website: www.4-power.eu

BUDGET

Total budget: EUR 1,570,881

ERDF contribution: EUR 1,228,472.22

PARTNERSHIP



Lead partner:

Province of Groningen
P.O. Box 610
9700 AP, Groningen
NETHERLANDS

	Country	Institution, Town
1	Netherlands	Province of Groningen, Groningen
2	Italy	Province of Rimini, Rimini
3	United kingdom	Sustainable Industries Institute, Dundee College, Dundee
4	Latvia	Latvian Association of Local and Regional Governments, Riga
5	Germany	Rostock Business and Technology Development GmbH, Rostock
6	Poland	Maritime institute in Gdańsk, Gdansk
7	Portugal	AZORINA – Society for Environment Management and Nature Conservation, Horta
8	Greece	Municipality of Corfu, Corfu
9	Malta	Malta Intelligent Energy Management Agency, Paola
10	Germany	City of Emden, Emden
11	Germany	German Offshore Wind Energy Foundation, Varel

BIO-EN-AREA

Improve regional policies for bio-energy and territorial development

PROJECT DETAILS

Priority: Environment and risk prevention

Theme: Energy and sustainable transport

TYPE OF INTERVENTION

Type of intervention: Regional Initiative Project

Mini-programme: Yes

Duration: 01/01/2010 - 30/06/2013

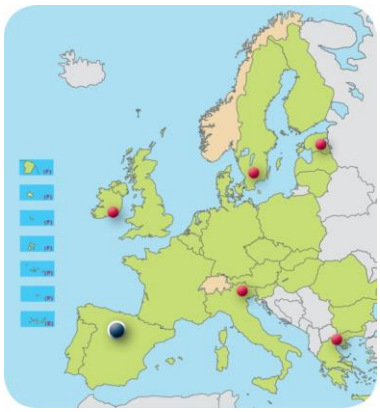
Website: www.bioenarea.eu

BUDGET

Total budget: EUR 3,125,000

ERDF contribution: EUR 2,444,370

PARTNERSHIP



	Country	Institution, Town
1	Spain	Regional Entity of Energy of Castilla y León, León
2	Greece	Region of Western Macedonia, Kozani
3	Italy	Autonomous Province of Trento, Division for Energy Planning and Incentives, Trento
4	Ireland	South-East Regional Authority (SERA), Clonmel, Co. Tipperary
5	Sweden	Energy Agency for Southeast Sweden, Växjö
6	Estonia	Tartu Regional Energy Agency (Region of Tartu), Tartu

Lead partner:

Regional Entity of Energy of Castilla y León
Edificio EREN, Avenida Reyes Leoneses

N° 11
24008, León
SPAIN

GEO POWER

Geothermal energy to address energy performance strategies in residential and industrial buildings

PROJECT DETAILS

Priority: Environment and risk prevention

Theme: Energy and sustainable transport

TYPE OF INTERVENTION

Type of intervention: Capitalisation Project

Duration: 01/11/2010 - 31/12/2012

Website: www.geopower-i4c.eu/

BUDGET

Total budget: EUR 2,031,530

ERDF contribution: EUR 1,612,257.5

PARTNERSHIP

Lead partner:

Province of Ferrara
Castello Estense
44121, Ferrara
ITALY

	Country	Institution, Town
1	Italy	Province of Ferrara, Ferrara
2	Greece	Centre for Renewable Energy Sources and Saving, Pikermi Attikis
3	Bulgaria	Ministry of Regional Development and Public Works, Sofia
4	Hungary	ENEREA Észak-Alföld Regional Energy Agency Nonprofit LLC, Nyíregyháza
5	United kingdom	Reading Borough Council, Reading
6	Sweden	SP Techincal Res. Institute, Borås
7	Hungary	NATIONAL ENVIRONMENTAL PROTECTION AND ENERGY CENTER NON-PROFIT LTD., Budapest
8	Sweden	Royal Institute of Technology, Stockholm
9	Italy	Emilia Romagna Region, Bologna
10	Estonia	Institute of Geology at Tallinn University of Technology, Tallinn
11	Belgium	VITO (Flemish Institute for Technological Research), Mol
12	Slovenia	Geological Survey of Slovenia (GeoZS), Ljubljana

MORE4NRG

PROJECT DETAILS

Priority: Environment and risk prevention

Theme: Energy and sustainable transport

TYPE OF INTERVENTION

Type of intervention: Regional Initiative Project

Duration: 01/09/2008 - 30/09/2011

Website: www.more4nrg.eu

BUDGET

Total budget: EUR 1,326,559

ERDF contribution: EUR 1,030,688.95

PARTNERSHIP

Lead partner:

Province of Flevoland
P.O.Box 55
8200 AB, Lelystad
NETHERLANDS

	Country	Institution, Town
1	Netherlands	Province of Flevoland, Lelystad
2	Sweden	County Council of Norrbotten, Luleå
3	Romania	Maramures county council, Baia mare
4	Italy	Region Abruzzo, L'Aquila
5	Spain	Valencia Agency of Energy, Valencia
6	Italy	Lazio Region – Civil Protection Direction, Roma
7	Romania	Prahova County Council, Ploiesti
8	France	Assembly of European Regions, Strasbourg
9	Sweden	County Council of Västernorrland, Härnösand
10	Bulgaria	Euro Perspectives Foundation, Sofia
11	Netherlands	Province of Noord-Brabant, s-Hertogenbosch
12	Greece	Patras science park S.A., Rion, Patras

Regions4GreenGrowth

Regional policy instruments and approaches for improving access to finance and speeding up investments in sustainable energy

PROJECT DETAILS

Priority: Environment and risk prevention

Theme: Energy and sustainable transport

TYPE OF INTERVENTION

Type of intervention: Regional Initiative Project

Duration: 01/01/2012 - 31/12/2014

Website: www.regions4greengrowth.eu

BUDGET

Total budget: EUR 2,090,574

ERDF contribution: EUR 1,621,843.26

PARTNERSHIP

Lead partner:

Province of Flevoland
Visarenddreef 1 / P.O. Box 55
8200 AB, Lelystad
NETHERLANDS

	Country	Institution, Town
1	Netherlands	Province of Flevoland, Lelystad
2	Sweden	County Council of Norrbotten, Luleå
3	Romania	Maramures County Council, Baia Mare
4	Italy	Region Abruzzo, Pescara
5	Spain	Valencia Energy Agency (AVEN), Valencia
6	Italia	Lazio Region, Roma
7	Romania	Energy Efficiency and Renewable Energy Agency “AE3R Ploieşti-Prahova”, Ploieşti
8	Sweden	Västernorrland County Council, Härnösand
9	Greece	PATRAS SCIENCE PARK S.A., PATRAS
10	Netherlands	Province of Noord-Brabant, ‘s-Hertogenbocsh
11	France	Assembly of European Regions (AER), Strasbourg
12	Hungary	Észak-Alföld Regional Development Agency Non-profit Limited Company, Debrecen
13	United kingdom	Oldham Council, Oldham
14	Spain	Instituto Tecnológico de la Energía, Paterna (Valencia)
15	Bulgaria	Euro Perspectives Foundation, Sofia

INTERREG IVC
INNOVATION & ENVIRONMENT
REGIONS OF EUROPE SHARING SOLUTIONS

RENREN

Renewable Energy Regions Network

PROJECT DETAILS

Priority: Environment and risk prevention

Theme: Energy and sustainable transport

TYPE OF INTERVENTION

Type of intervention: Regional Initiative Project

Duration: 01/01/2010 - 31/03/2013

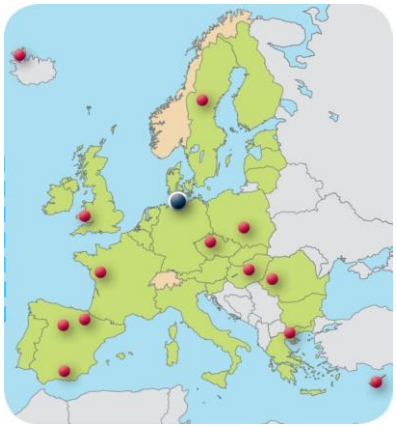
Website: www.renren-project.eu

BUDGET

Total budget: EUR 2,095,361

ERDF contribution: EUR 1,646,507.2

PARTNERSHIP



Lead partner:

Federal State of Schleswig-Holstein
Düsternbrooker Weg 94
24105, Kiel
GERMANY

	Country	Institution, Town
1	Germany	Federal State of Schleswig-Holstein, Kiel
2	United Kingdom	Welsh Assembly Government, Cardiff
3	Sweden	Region of Jämtland (changed name to: Regionalförbundet Jämtlands län), Ås
4	Cyprus	Cyprus Institute of Energy, Nicosia
5	Spain	Navarra - Department of Economy, Finance, Industry and Employment, Pamplona
6	Spain	Regional energy agency of Castilla y Leon, León
7	France	Pays de la Loire region, Nantes
8	Romania	The Agency for Social and Economic Development of Timis County, Timişoara
9	Poland	Lodz Region, Łódź
10	Czech Republic	Ústí Region, Ústí nad Labem
11	Greece	Decentralised Administration of Macedonia-Thrace (DAMT), Thessaloniki
12	Spain	Andalusian Energy Agency, Sevilla- España
13	Hungary	Bay Zoltán Nonprofit Ltd., Miskolctapolca

INTERREG IVC
INNOVATION & ENVIRONMENT
REGIONS OF EUROPE SHARING SOLUTIONS

RETS

Renewable Energies Transfer System

PROJECT DETAILS

Priority: Environment and risk prevention

Theme: Energy and sustainable transport

TYPE OF INTERVENTION

Type of intervention: Regional Initiative Project

Duration: 01/01/2010 - 31/12/2012

Website: www.rets-project.eu

BUDGET

Total budget: EUR 1,908,715

ERDF contribution: EUR 1,484,054.25

PARTNERSHIP

Lead partner:

ADEC
37 rue d'Engwiller
67350, La Walck
FRANCE

	Country	Institution, Town
1	France	ADEC, La Walck
2	Portugal	Serta town council, Sertã
3	Portugal	Pinhel town council, Pinhel
4	United kingdom	Institute for Environment, Sustainability and Regeneration, Staffordshire University, Stoke-on-Trent
5	United kingdom	ECO CENTRE WALES, Newport, Pembrokeshire
6	Germany	IHK Zetis GmbH - center for technology- and innovation consulting South-West, Kaiserlautern
7	France	Pezenas city, Pezenas
8	Netherlands	City of Sittard-Geleen, Sittard
9	Slovenia	Energy agency of Podravje - institution for sustainable energy use, Maribor
10	Romania	Energy Research and Modernizing Institute Icemenerg Bucharest, Bucharest
11	Italy	Province of Varese, Varese
12	Hungary	Town of VECSÉS, VECSÉS

Bibliography

EU documents

COM(97)599 - Communication from the Commission – Energy for the Future: Renewable Sources of Energy. White Paper for a Community Strategy and Action Plan

COM(2010)2020 – Communication form the Commission – Europe 2020: A strategy for smart, sustainable and inclusive growth

COM(2011)885/2 – Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Energy Roadmap 2050

COM(2012)271 – Communication from the Commission and the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Renewable energy: a major player in the European Energy Market

Committee of the Regions – *Special Eurobarometer 307 – The role and impact of local and regional authorities within the European Union: Opinions on the different levels of public authorities and awareness of the Committee of the Regions* (2009)

Consolidated version of the Treaty on European Union

Directive 2001/77/EC of the Europeran Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market

Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC

European Commission, DG Enterprise and Industry – *Innovation Union Scoreboard* (2011)

European Commission, DG Enterprise and Industry – *Regional Innovation Scoreboard* (2012)

European Commission, JRC Scientific and Policy Reports – *PV Status Report* (2012)

Eurostat – *Regional Yearbook* (2011)

Eurostat – *EU Energy in Figures: Statistical Pocketbook* (2012)

Eurovoc – *Multilingual Thesaurus of the European Union*

Other sources

Centre for European Reform – *How to Expand Renewable Energy after 2020* (2012)

Eurelectric – *Power Statistics and Trends Synopsis* (2011)

European Geothermal Energy Council – *Second Geothermal Market Report* (2012)

European Renewable Energy Council – *Renewable Energy in Europe: Building Markets and Capacity* (2004)

European Renewable Energy Council – *Renewable Energy in Europe: Markets, Trends and Technologies, Second Ed.* (2010)

European Renewable Energy Council – *Mapping Renewable Energy Pathways Towards 2020: EU Roadmap* (2011)

European Renewable Energy Council – *45% by 2030: Towards a Truly Sustainable Energy System in the EU* (2011)

European Small Hydropower Association – *Small Hydropower Roadmap: Condensed Research Data for EU-27* (2012)

European Technology Platform on Renewable Heating and Cooling – *Common Vision for the Renewable Heating and Cooling Sector in Europe* (2011)

Frankfurt School, UNEP Collaborating Centre for Climate & Sustainable Energy Finance – *Global Trends in Renewable Energy Investment* (2012)

Greenpeace & European Renewable Energy Council – *Energy [R]evolution: A Sustainable EU 27 Energy Outlook (2012)*

International Energy Agency (IEA) – *Tracking Clean Energy Progress: Energy Technology Perspectives 2012 Excerpt as IEA Input to the Clean Energy Ministerial* (2012)

International Energy Agency (IEA) – *Joint Public-Private Approaches for Energy Efficiency Finance* (2011)

L'Observatoire des Energies Renouvables (EurObserv'ER) – *The State of Renewable Energies in Europe* (2012)

Kleßmann, C. – *Increasing the Effectiveness and Efficiency of Renewable Energy Support Policies in the European Union* (2012)

RE-Shaping - *Shaping an Effective and Efficient European Renewable Energy Market* (2012)

Renewable Energy Policy Network for the 21st Century (REN21) - *Renewables 2012: Global Status Report* (2012)

N.B. *Additional annexes of Thematic Workshop minutes, Interviews with project lead partners, event write-ups and the full database of good practices are available as a separate document*

.