

Renewable electricity

Make the switch



Project report



Renewable energy

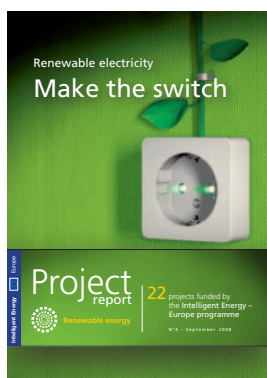
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Renewable energy

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Editorial information

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The reports are available in English, French and German.

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More details on the IEE programme and the EACI are available online (<http://ec.europa.eu/intelligentenergy>).

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Projectreport



Renewable energy

Introduction

Europe is becoming increasingly dependent on imported fossil fuels, which not only emit CO₂ and other greenhouse gases but also put us at the mercy of insecure supplies and unpredictable variations in energy prices.

Rising prices today, rising sea levels tomorrow – Europe could face turbulent weather patterns and coastal erosion as a result of climate change. The effect could also have a severe impact on our industries, causing them to lose their edge against increasingly fierce international competition. We need access to reliable energy supplies with stable prices.

In March 2007, amid growing concerns about the security of Europe's energy supplies, the European Union took an unprecedented step in the fight against climate change. It signed up to binding, EU-wide targets pledging to meet 20% of its energy needs from renewable sources such as biomass, hydro, wind and solar power by 2020. The agreement also includes commitment to a 10% use of biofuels in transport. Alongside this undertaking, the European Heads of Government also made commitments to bring down greenhouse gas emissions by 20% and to improve energy efficiency by 20%.

These targets are the latest steps taken by the European Community, which has long recognised the need to take action to promote renewable energy and in recent years has also acknowledged that the costs of inaction would be incomparably higher. The climate and energy package, initially requested by the European

Council in 2007 and to which their commitment was reconfirmed in 2008, aims to contribute to climate change mitigation. It will do so through the reduction of greenhouse gas emissions, sustainable development and security of supply. The development of a knowledge-based industry to create jobs, economic growth, competitiveness and regional and rural development will also be stimulated.

This political commitment is both a prerequisite for moving ahead and a milestone marking the way forward. However, formulating policies at European and national level is not enough; they also need to be implemented. The Intelligent Energy – Europe Programme paves the way for real changes on the ground, providing funding to support multinational project teams working towards 'putting policy into action'.

In its actions to promote electricity from renewable energies, the IEE programme supports projects which will bring down the barriers to the use of renewables – like market deficiencies, adverse regulations, and the lack of information, communication, know-how and skills. It also supports projects which provide potential users with access to renewable energy solutions and increase familiarity with renewable energy technologies. The IEE programme supports practical, concrete activities which impact positively on the market and generate momentum towards change.

This brochure presents a series of IEE supported projects with diverse objectives, from all over



the EU: analysing the efficiency of financial support instruments; bringing forward EU-wide, technology-specific targets; improving regulatory and administrative frameworks; assessing and modelling interaction within the electricity system in order to allow for better grid integration of renewables; promoting small

“The IEE programme supports practical, concrete activities which impact positively on the market and generate momentum towards change.”

hydropower projects; setting up standardised qualifications for those working in wind energy; helping distributed generation to get off the ground; bringing together stakeholders, authorities, developers, suppliers and consumers. The methodologies of these IEE supported projects range from the profoundly analytical to the entirely practical and all with one clear goal – using renewable electricity to help Europe move away from its carbon dependent lifestyle.



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1

Clean Energy Network for Europe CLEAN-E

Duration: 1/1/2005–31/12/2006

Objective

The project set out to establish a system of labelling on electricity generation, making it possible for consumers to select providers using environmentally friendly production as a criterion.

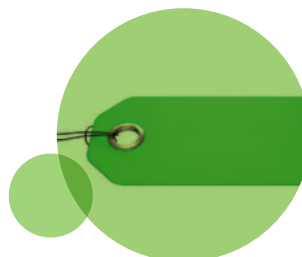
Promoting the notion of 'green energy you can trust', CLEAN-E set about establishing new, and improving existing, green power labels in certain EU countries. Objectives included the development of ecological minimum standards for the renewable technologies of hydropower and biomass and an investigation into the feasibility of widening the scope of green power labelling to renewable heat, as well as energy efficiency.

CLEAN-E analysed the interface of green power labels with renewable energy-related policies at the national and EU levels, including the Guarantee of Origin for renewable electricity and Electricity Disclosure. The project also included a wide range of activities aimed at disseminating and sharing best practices for green power procurement.

Results

- > In France the development and introduction of a new green power label was successfully carried out during the CLEAN-E project;
- > Several workshops with 10–20 stakeholders from industries, NGOs, the electricity market and public authorities were held in the following countries: France (five workshops), Spain (two workshops), Italy (two workshops), Austria (two workshops). In Sweden a conference on hydropower with 65 external participants was held;
- > An E-Bulletin in the form of a newsletter was sent to 2000 readers;
- > The project set up its own website receiving some 100 hits a day;
- > A forum bringing together local authorities, the business community and corporate buyers offered a platform for the sharing of information and an opportunity to network on green energy and green electricity options. Multinational companies participated in the workshops and two new contracts for green electricity were signed with, respectively, Tetra Pak and the FIFA World Cup 2006 organising committee.

Budget: €940 082 (EU contribution: 50%)



Distributed generation reduces costs



Renewable energy

2

Enhancement of sustainable electricity supply through improvements of the regulatory framework of the distribution network for distributed generation (DG) DG Grid

Duration: 1/2005–6/2007

Objectives

Distributed generation (DG) is the generation of electricity from a multitude of small energy sources, reducing the distance over which the energy needs to be transported.

DG Grid focused on four main objectives. The first was to review the current EU economic and regulatory frameworks for electricity networks and markets and identify how to remove the barriers to the use of renewable energy sources (RES) and combined heat and power (CHP). The second was to analyse interaction between regulations, the volume of RES and CHP used and innovative networks. Thirdly, the project set out to assess the impact of RES and CHP market penetration by looking at changes in revenue and expenditure flows, developing business models for an economically viable grid system and a cost-benefit analysis of different regulatory designs. Finally, the project sought to develop guidelines for the network planning, regulation and improved integration of DGs.

Results

- > A comprehensive review of electricity regulation in the EU Member States today;
- > Analysis of possible innovations and long-term development of electricity grids;
- > Assessments of costs and benefits to networks in the case of large-scale DG use;
- > Analysis of regulatory arrangements for economically viable grid systems;
- > Recommendations and guidelines for an improved regulatory framework for distribution networks.

Budget: €957 890 (EU contribution: 50%)

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3

European Local Electricity Production ELEP

Duration: 1/2005–6/2007

Objective

Distributed generation (DG) refers to the generation of power close to the point of consumption through the use of a variety of technologies. ELEP set out to support the use of DG in Europe by removing the regulatory and practical barriers currently restricting its use and by developing a roadmap and timeline for its take-up.

The project set out to identify and address the barriers affecting DG use and to propose solutions and methods by which the barriers could be minimised through policy and legislation. Another key objective was the establishment of detailed EU policy guidelines on connection charging, ownership of equipment, net metering and feed-in tariffs.

Results

- > Twenty-nine recommendations have been made to improve DG uptake, e.g. the suggestion that DG be used as an infrastructure development tool, and elements put forward on the issue of interconnection standards and the development of market rules, including connection charging and net metering;
- > Energy companies, equipment suppliers, project developers, industry associations; consultancy organisations, end-users and municipal authorities were all brought together to enhance DG uptake;
- > A series of energy efficiency case studies were carried out to demonstrate the energy efficiency/emissions benefits of DG;
- > Proposals were put forward for a generic certification and authorisation protocol for DG and renewables across Europe;
- > Authorisation practices across the EU Member States were reviewed.

Budget: €1 029 000 (EU contribution: 50%)



Tracking green electricity across Europe, first and second phases



4

A European Tracking System for Electricity – Phase II (building on Phase I) E-TRACK I and II

Duration: 10/2007–9/2009

Objective

By building on the achievements of the first phase of the project (1/2005 to 6/2007), which investigated the feasibility of a harmonised standard for the tracking of electricity generation in Europe, Phase II focuses on the specific situation in Member States.

Phase II continues the process of the harmonisation of tracking systems, including the new Guarantee of Origin, awarded to highly efficient cogeneration (CHP-E). The overall objective remains the same, namely to establish a comprehensive, reliable approach to tracking green electricity across Europe. Following the success of Phase I, key elements of the standard have been taken up by a number of countries already. A day-long final conference rounding off phase one brought together 150 attendees from 25 countries.

Results

The project is ongoing, but by its end the following should be completed:

- > A thorough revision of the proposed European tracking standard and more refined recommendations on the implementation of tracking-related policies in 29 European countries (EU-27 plus Norway & Switzerland) and an updated inventory of the tracking systems and tracking-related policies in Europe;
- > Integration of the new Guarantees of Origin for CHP-E in the recommendations from the project;
- > Better reflection of the requirements from small and large consumers in the recommendations from the project;
- > National workshops to be held in each of the 29 target countries (with the exception of one transnational workshop for the Nordic countries – Denmark, Sweden, Norway, Finland). On the whole, all workshops should count 260 attendees;
- > The advisory committee set up for E-Track I to be continued, bringing together all the leading international associations of energy stakeholders: Eurelectric, EFET, EREF, ETSO, CEER, AIB, RECS-International, plus the European Commission.

Budget: €1 160 512 (EU contribution: 50%)

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5

EUROSERV'ER (2005–2007 and 2008–2012)

Duration: 1/2005–12/2007

Objective

Since 1999, the Eur'Observ'ER projects have been working together to monitor progress in the development of renewable energies, analysing main trends and helping interested parties understand to what degree the EU and Member States are on track. They cover the different sectors and technologies like wind power, photovoltaics, solar thermal, solid biomass, biofuels, biogas/municipal solid waste, geothermal heat pumps, small hydro, and give outlooks on marine energy and concentrated solar power. They offer information on industrial key players and market shares. The projects' particular added value is the fact that they are right up to date, providing data considerably earlier than official statistics and so facilitating the analysis of the sector and its progress, especially with a view to the renewable energy targets set by the EU.

The projects have adapted over time to the developments in the sector: in this way, new biomass indicators have been developed and new technologies taken on board.

Results

- > 18 thematic barometers published over three years, i.e. six barometers per year, reviewing the industrial and economic dynamics and growth in each Member State with regard to a specific renewable energy sector (such as wind);
- > Publication of three annual, overview barometers summing up progress in the renewable energy sector in the EU and comparing it with the targets set out by the EU;
- > The setting up of a cartographic visualisation and information query Internet module (GIS).

Budget: €908 990 (EU contribution: 50%)





Support schemes for renewable electricity

6

Assessment and optimisation of renewable energy support schemes in the European electricity market

OPTRES

Duration: 1/2005–12/2006

Objective

The project was conceived to give clear empirical insights into the present successes and failures in the support of renewable energy sources for electricity (RES-E) throughout the EU, with particular emphasis on policy effectiveness and efficiency. It aimed to provide quantitative results on the costs and benefits of future policy options and to identify key barriers hampering the development of RES-E through in-depth interviews and an Internet-based questionnaire.

The questions the project raised, and set out to answer, were varied and included querying the impact of oil prices on the development of renewable electricity and examining the interactivity between CO₂ certificate trading and RES-E support schemes.

Results

- > Defining the effectiveness of renewable electricity schemes in the form of a ratio. This gives an unbiased, easily transferable indicator that can then be used to compare the effectiveness of support schemes for individual technologies in any given country. Using the indicator will help Member States develop specific renewable electricity sources;
- > The project examined the main national support instruments for RES-E in the EU on the basis of historical assessment and prospective, model-based analysis. Conclusions were drawn and a concrete set of recommendations outlined and published in the project's final report, available on the OPTRES website;
- > Establishing that the primary concern of suppliers was for a stable support scheme and that the primary source of discontent was the amount of red tape involved in getting installation permits and grid connection;
- > Web-based questionnaire and follow-up interviews aimed at identifying the barriers to the exploitation of renewable energy sources for electricity production. From March to June 2005, 533 questionnaires were completed involving 251 organisations;
- > A series of thematic and dissemination workshops were held across the EU.

Budget: €705 422 (EU contribution: 50%)

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Renewable energy

Projectreport

A future
vision of
renewable
electricity

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7

Deriving a future European policy for renewable electricity Futures-e

Duration: 12/2006–11/2007

Objective

The project's primary objective was to involve interested parties throughout the EU in the debate on how to optimise the use of renewable electricity, with a view to establishing a long term, stable deployment of electricity from renewable resources (RES-E).

With the need to develop a common European vision, the project also set out to identify best practice for the implementation of the different types of support such as feed-in tariffs, premium systems and quota obligations, based on green certificates. The cost-benefit ratio was examined on a national level and consideration given to how to share benefits under a future, coordinated European policy.

The long-standing Green-X modelling and analysis tool was applied, allowing in-depth examination of RES-E deployment and accompanying transfer costs due to the promotion of RES-E on countrywide, sectoral and technology levels in a real-world energy policy context.

Results

- > Six regional workshops were held throughout 2008 to debate the options for harmonisation or coordination of European renewable electricity policies. Representatives from Member States and the European Commission took part in lively debates on opportunities for RES-E within the EU;
- > Distribution of 300 brochures on 'Coordination v. harmonisation – future European policy for RES-E', plus a further 300 distributed on 'Deriving a future European RES-E policy';
- > Two hundred review reports disseminated on support schemes and another 200 on 'Scenarios on future European RES-E policies';
- > Around 50 visitors attended the international workshop, and a further 50 each of the six regional events;
- > Four hundred CD-ROMs on the project including the Green-X model, reports and the scenarios distributed.

Budget: €856 555 (EU contribution: 50%)





8

Guideline for safe and eco-friendly biomass gasification Gasification – Guide

Duration: 1/2007–12/2009

Objective

Poor awareness and lack of understanding of the health, safety and environmental (HSE) hazards of gasification plants is a major, non-technical obstacle. The Guideline for Safe and Eco-friendly Biomass Gasification project sets out to tackle this barrier effectively by developing practical guidelines in consultation with HSE experts.

The aim is to help authorities gauge risks correctly and so draw up reasonable and fair requirements which complement the guidelines established. The project has developed a software tool to identify potential hazards in a bid to accelerate gasifier uptake and commercialisation.

Results

The project is ongoing, but by its end the following should be completed:

- > A report benchmarking the existing legal framework;
- > Identification of gaps in the legal framework between European and national levels;
- > Publication of a state-of-the-art description of biomass gasification;
- > Development of a software tool, enabling licensing bodies to set clear parameters for the licensing of plants;
- > A conference in Vienna to discuss the guidelines for safe and eco-friendly biomass gasification which attracted 17 industry experts, 19 representatives from universities, 21 researchers and representatives from six public bodies including the European Commission. Twenty nationalities were present.

Budget: €1 041 161 (EU contribution: 50%)

Accelerating
the use of
biomass
gasifiers

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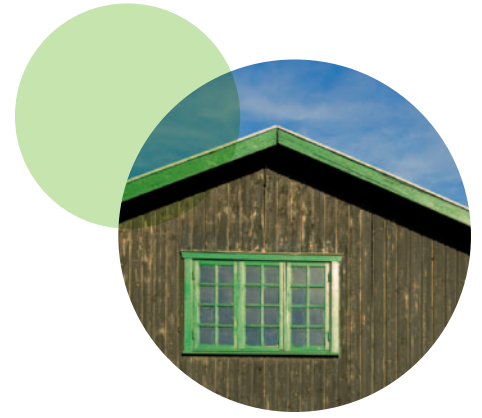
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9

RES & micro-CHP in rural lodges Greenlodges

Duration: 1/1/2005–31/1/2007

Objective

The project's aim was to inform the owners and managers of rural lodges about the use of renewable energy micro-cogeneration systems. By defining energy demand through the use of audits conducted in selected lodges across all regions, the project set out to develop a guide to help with the use of renewable systems.

On the understanding that each geographical region has its own imperatives and solutions, the project aimed to collect data on equipment and fuel suppliers as well as renewable energy sources in each region.

The aim was a four-pronged analysis of: the energy demands of rural lodges; the renewable energy sources on offer; the potential of micro-CHP; and ways in which to marry supply with demand. The final objective was to spread the results of the analysis phase to as wide an audience as possible. By involving each region in the audit process, the project hoped to make it possible to extrapolate findings to European countries not involved in the project.

Results

- > The use of renewable sources of energy in the lodges and facilities was enhanced, despite differences in the typology of buildings and between demand profiles;
- > Knowledge was shared between the eight participating regions regarding the different possibilities available for renewable energy sources in rural business;
- > Guests, managers and owners were informed of the choices available in the selection of renewable and micro-CHP technologies;
- > Project partners widened their scope by applying RES solutions defined in other regions to their own;
- > All partners developed a regional guide containing useful information for owners and managers on the installation of these energy systems in their lodges and a multi-regional guide containing information for potential users not included in the project.

Budget: €849 652 (EU contribution: 50%)

Marrying
demand
to resources
in rural
environments



Cheapest way to integrate renewables into the grid

10

Guiding a Least Cost Grid Integration of RES-Electricity in an extended Europe GreenNet-EU27

Duration: 1/2005–12/2006

Objective

The project was designed chiefly to develop strategies aimed at integrating energy from renewable sources into European power grids as cheaply as possible. The project's basic tool, the GreenNet Europe software, was developed further with the incorporation of various parameters, constraints and energy policies. Real costs for grid integration, extension and reinforcement were extrapolated and correlated with usual infrastructure costs and electricity prices.

By identifying the barriers to large-scale integration of RES-E and taking into account varying constraints, the project set out to develop best-practice concepts to overcome the barriers identified. The project team had utilities and transmission operators (Energinet, EnBW and Wienstrom) on board, a prerequisite to allow for real market input and for an effective dissemination.

Results

- > The GreenNet software was further developed, modelling strategies for the integration of renewable electricity as cheaply as possible. The various constraints and energy policies up until 2020 were incorporated in the model and the simulation software is being delivered free of charge on CD-ROM or is available on the website;
- > Comprehensive, empirical data were collected on the cost-resource curves for existing renewable energy generation and additional system operation reinforcement, factoring in extension costs triggered by intermittent integration within the different European systems;
- > Identification of the three major barriers to progress: allocation of grid integration costs; no common best practice in grid access charging; and no incentives for grid operators to connect RES-E generators;
- > Tailor-made, practical guidelines and action plans were published for decision makers and other interested parties, establishing a common understanding on strategies for least-cost integration of renewables across a wider Europe;
- > The www.greennet-europe.org website received more than 27 762 visitors.

Budget: €1 288 958 (EU contribution: 50%)

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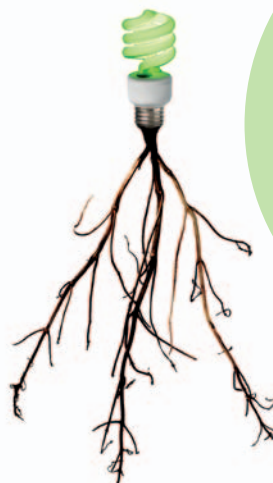
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Incentivising
'green'
electricity
grids

11

Promoting grid-related incentives for large-scale RES-E integration into the different European electricity systems GreenNet-Incentives

Duration: 11/2006–4/2009

Objective

GreenNet Incentives builds on the outcomes of GreenNet EU-27 and extends the project's scope towards the Balkans, which are part of the European electricity system. Its key objective is to promote financial incentives for large-scale integration of renewable electricity into the European grids.

The project team has set up expert platforms and a stakeholder consultation process involving first line grid operators and utilities, regulators, developers, investors and political decision makers. The project addresses, in particular, young academics and future experts (e.g. through the organisation of summer schools and training courses) to help achieve the objective of a common, European vision on the implementation of grid policies favouring green electricity networks.

Results

The project is ongoing, but by its end the following should be completed:

- > Extension of the simulation software tool, GreenNet-Europe, towards Turkey, Macedonia, update of Croatia and remaining Western Balkan countries (Bosnia and Herzegovina, Serbia/Montenegro and Albania);
- > Five expert discussion platforms on case studies of successful RES-E grid integration projects and stable system operation (incl. intelligent grid management systems) in Germany, Norway, Poland, Greece, and Romania;
- > A total of 60–80 documented interviews with key stakeholders, such as grid operators and regulators;
- > A critical review of existing grid regulation models and derivation of incentives to improve grid regulation policies and legislation enabling large-scale RES-E grid integration;
- > Organisation of summer schools, training and education events on strategies and sustainable policies for large-scale RES-E integration mainly addressing participants from new Member States and the Western Balkans.

Budget: €1 000 108 (EU contribution: 50%)



Working to achieve national PV targets

12

PV Policy Group

PV Policy Group

Duration: 1/2005–4/2007

Objective

The project's goal was to overcome the current political-legal barriers that are preventing investment in the majority of European PV markets namely: lack of political commitment and effective incentive schemes; insufficient and disparate monitoring systems and lack of cooperation between key actors in the definition of political action, especially on the trans-national level. Eight national energy agencies of key 'solar nations' (DE, FR, NL, AT, SL, PT, EL, ES) formed the 'PV Policy Core Group' to define common actions for the improvement and alignment of national support systems for PV. Italy and Sweden informally joined the Core Group later on. The Core Group published a common position paper seeking a clear commitment to national PV targets being put in place for 2010 and 2020.

Results

- > A shared assessment of the current market situation was developed, looking into the position in eight countries and examining the strengths and weaknesses of national support schemes and strategic options for improvement;
- > A joint action plan to improve and align the project's core participants' own activities for PV promotion in their home countries;
- > Proposals to political decision makers on how to improve and harmonise the current framework for PV investments until 2010;
- > Eight national groups developed the above results in parallel, led by the relevant energy agency and key stakeholders in their countries;
- > A European Best Practice report published the results of the assessment of 12 national policy frameworks.

Budget: €1 083 045 (EU contribution: 50%)



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Renewable energy

Projectreport

Freeing up
the market
for renewable
electricity



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13

Renewable energy and liberalisation in selected electricity markets – Forum REALISE FORUM

Duration: 1/2005–2/2007

Objective

The project addressed the role of renewable energies and their support within the liberalised electricity markets of Germany, Italy, the Netherlands, Belgium, Slovenia and Norway. It analysed the degree of liberalisation in the markets as a first step before looking at advantages and disadvantages of the different types of support for renewable electricity.

Feed-in and premium systems offering fixed tariffs/premiums to the generators of renewable electricity were compared with 'market-based quota/green certificates systems', which determine a quota of green electricity and leave pricing up to the market. The project team offered a platform to stakeholders (national desks) in a bid to reconcile the different systems and to develop solutions which benefit from both systems.

Finally, the project team argued for a coordinated approach to the issue of support, tailoring it to meet the needs of the technologies at the different stages of their development.

Results

- > An independent and coherent analysis and assessment of the relation between RES-E measures and the liberalisation of electricity markets in selected countries;
- > A characterisation of the current support schemes;
- > Establishment of a regular dialogue and of a web platform (REALISE Forum) in the shape of a forum (national desk activities and hearings/workshops) to promote a broad debate and exchanges of experience and information between policy makers, energy practitioners, regulators, NGOs, consumers associations and major stakeholders in the initiation, implementation and promotion of renewable energy;
- > The launching of a broad debate with national/international stakeholders, among other things about criteria to render future support schemes compatible with other policy objectives such as industrial and technology policy, environmental policy, competition policy, etc.;
- > Development of basic principles as guidance for a possibly coordinated RES-E support system.

Budget: €946 695 (EU contribution: 50%)



Renewable energy – a roadmap



Renewable energy

14

Monitoring and Evaluation of the RES directives implementation in EU-27 and policy recommendations for 2020 RES 2020

Duration: 10/2006–3/2009

Objective

The project intends to analyse the present situation regarding the use of renewable energy sources within the EU. It aims to define future options for policies and measures, calculate concrete targets for the contribution that can be achieved by the implementation of the various options available and examine the implications of achieving these targets for the European economy.

All renewable energy options are being examined, with systems modelling conducted using TIMES. This modelling system develops an aggregate parameter in order to quantify the impact of a wide range of support schemes. By combining recommendations of optimal mixes, the project hopes to set out recommendations for policy measures.

Results

The project is ongoing, but by its end, the following should be completed:

- > Data was collected on the potential of, and contributions from, the different sectors, i.e. renewable electricity, renewable heating & cooling and biofuels. This required a particularly close look at the biomass/biofuels potential;
- > Extended templates were created for the TIMES model, including enhancements for RES-E and bioenergy;
- > Scenarios and targets for 2020 and beyond under different policy options and framework conditions are being modelled;
- > Twenty-seven RES policy reviews were developed in a reference document, available on the project website;
- > Models and outcomes should be reviewed by external experts and the EnR renewable energy working group;
- > A workshop held in Amsterdam brought together representatives from 19 organisations in the field of renewable energy sources, namely the leading European renewable industry associations.

Budget: €1 309 938 (EU contribution: 50%)

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15

Creating renewable energy market places for investors and regional actors in rural areas

RES market places

Duration: 1/2005–7/2007

Objective

'RES market places' supports the use of renewable energy sources and energy efficient (EE) measures in new construction projects and in the refurbishment of buildings in rural areas throughout the EU.

In order to encourage RES/EE uptake, private and public investors need to be informed of the possibilities. The project sets out to bring together decision makers and end consumers on the one hand, and suppliers/service providers on the other, to develop common activities.

This is mainly done by 'virtual' market places (VMP), perhaps through web pages on the Internet, for renewable energy in rural areas. These regional market places offer lists of suppliers and service providers, information on renewable energy and energy efficiency solutions and model projects, as well as help on how to get financial support etc.

Results

- > Creation of seven regional virtual market places. The creation of websites for each of the target regions in the language of the country concerned to encourage the potential end-user to consider RES/EE in the planning of new construction projects and in the refurbishment of buildings;
- > Bringing together of suppliers and end-users;
- > Identification of different target structures and groups in each of the regions involved, for example: in Austria commercial buildings, in Germany new homes, in Italy farmers;
- > Setting-up of a database of key players in industrial and financial sectors with a view to sending out mailshots to update them on changes in the virtual market place;
- > Regional successes include several thousand participants in the seminars and conferences organised in the frame of the project, excursions for architects in Germany, direct mailing to 170 local authorities and 1 691 companies in Austria, workshops for farmers in Slovenia, Italy and Sweden, information campaigns for hoteliers in Ireland, the project was presented various times in the Basque media, including radio and television.

Budget: €746 407 (EU contribution: 50%)

Achieving targets through local action



Renewable energy

16

Boosting renewable electricity in 11 European regions

RES-E Regions

Duration: 1/2005–4/2007

Objective

If European targets on the use of renewable energy sources for electricity (RES-E) are to be met, local action will be essential. The project aimed to boost renewable electricity production in 11 European regions by defining regional RES-E targets and developing regional strategies.

Although the European directive on renewable electricity deals with some of the main barriers to uptake, the project contributes to making the ambitious national and European targets achievable by encouraging complementary action on a regional and local level.

RES-E Region's objectives were to use a variety of methods to keep on raising awareness and to run information activities targeting different elements of the market.

Results

- > Informing and motivating regional actors, e.g. organising more than 60 events attended by a total of over 3 300 regional and European stakeholders, producing and disseminating more than 30 000 copies of 30 different publications, holding more than 100 face-to-face advice sessions for RES-E projects, and answering more than 650 enquiries on 11 RES-E hotlines;
- > Identifying Best Practice Solutions for administrative procedures at the regional level;
- > Developing 'Regional RES-E Strategies' and supporting political processes for their adoption;
- > Providing insight into specific aspects of the regional RES-E situation by producing 11 RES-E maps as well as representative surveys and transposition reports on RES-E Directive implementation;
- > Launch of the 'Declaration of European Regions for Renewable Energy and Energy Efficiency', aiming to raise the profile of European regions' commitment to sustainable energy and to encourage regions which have not yet set quantitative sustainable energy objectives to do so in the future. Between March 2006 and April 2007, 79 regions expressed their commitment by signing the Declaration. This goes way beyond all project partner expectations and can be considered a real success. A platform of cooperation has been established which includes the Committee of the European Regions and the Assembly of the European Regions.

Budget: €1 379 520 (EU contribution: 50%)

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Renewable energy

Projectreport

Integrating
renewables
into the grid
system



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17

Renewable Electricity Supply interactions with conventional power generation, networks and demand RESPOND

Duration: 12/2006–5/2009

Objective

The RESPOND project aims at a better integration of large amounts of intermittent renewable energy sources and distributed generation such as onshore and offshore wind, PV and micro-CHP, into the European electricity system. In practice, current electricity market regulation does not always give sufficient incentives to market participants for the optimal support of integration of RES-E and DG.

The project analyses the interactions between different sectors of the electricity system (generation, demand, trade and networks), considering the possible, market-based responses from the different participants. It also examines the barriers and failures in market competition and present regulations that hinder these response options being developed and implemented by market participants.

Optimal and cost-effective policy options as well as regulation improvements are assessed and combined in a sort of regulatory roadmap.

Results

The project is ongoing, but by its end the following should be completed:

- > Assessment of the development of the power system in Europe up to around 2015;
- > A series of impact assessments exploring the technical and, where possible, economic/cost impact of RES and DG on the existing system. These detailed analyses split the system into its component segments of generation mix, demand, system balancing, markets and trade, transmission and distribution;
- > In-depth analysis of barriers in ca 10 EU countries;
- > Overcoming market barriers by introducing regulatory improvements in a roadmap to be used by governments and regulators;
- > By the end of 2008, four international project workshops and a conference will have been held.

Budget: €1 000 708 (EU contribution: 50%)



Promoting small-scale hydropower

18

Small Hydro Energy Efficient Promotion Campaign Action SHERPA

Duration: 10/2006–9/2008

Objective

SHERPA sets out to increase awareness among politicians and decision makers of the relevance of small-scale hydropower (SHP) as a renewable energy source. It addresses the issue of the environmental performance of SHP plants as well as a comprehensive territorial planning approach in relation to water bodies.

It also aims to make EU directives, such as the RES-E directive, and the Water Framework Directive more consistent and to ensure that future policy papers are more effective. The project is also working towards a more active debate through the frequent use of policy forums to discuss targets, licensing, and support and planning issues.

Results

- > Policy forums have been held in Lithuania, France, Italy, Poland, and Sweden;
- > The report on 'The technical and operational procedure to better integrate small hydro plants into the environment' was produced and is downloadable from the project's website;
- > Case studies were carried out in Italy, Spain, Slovenia and France, establishing good-practice examples for preventing, remedying or mitigating the adverse ecological effects of human manipulation of the environment and the hydrological characteristics of surface water bodies;
- > An international workshop on public image was held in Sweden, bringing interested parties together from various RES-E fields to exchange information and points of view. Improving SHP's public image was also a key issue: environmental groups, fishermen federations and other public opinion makers were invited to find common ground and collaborate to establish compromises;
- > Findings are being disseminated through, for example, information services to members, e. g. newsletters and the ESHA website, and by producing relevant studies and publications.

Budget: €766 185 (EU contribution: 50%)

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19

Smart Domestic Appliances in Sustainable Energy Systems Smart-A

Duration: 1/2007–6/2009

Objective

Coordinating the demand of domestic energy appliances with local sustainable energy generation and the requirements of regional load requirements in electricity networks is a complex yet necessary objective. Sustainable energy systems require smart energy loads to coordinate their operation with current levels of supply.

The project aims to determine if, and under what conditions, consumers would be ready to use 'smart appliances' to spread out the demand placed at peak hours on electricity grids. One possibility would be to offer lower tariffs to those who are prepared to be flexible.

Demand-side management (DSM) programmes consist of planning, implementing, and monitoring the activities of electric utilities which are designed to encourage consumers to modify their level and pattern of electricity usage. The project analyses consumer acceptance in EU countries in which case studies are running and extends the analysis to cover other countries as well.

Results

The project is ongoing, but by its end the following should be completed:

- > A thorough analysis of technological implications, user preferences, and the economic and ecological costs and benefits of improved coordination of domestic appliances with energy supply, will be conducted;
- > A clear understanding of how appliances should be designed to enable them for smart operation in the larger energy system;
- > A questionnaire-based survey will be conducted in five countries with support from regional energy utilities and appliance manufacturers;
- > Phone interviews, based on the results of the survey, will also be carried out in order to refine the qualitative analysis;
- > Focus groups of 6–12 participants will be held in four selected Member States.

Budget: €1 351 202 (EU contribution: 50%)





Harnessing wind power on a large scale



Renewable energy

20

Wind Power Integration and Exchange in the Trans-European Power Markets TradeWind

Duration: 11/2006–10/2008

Objective

The project aims to bring down barriers to the large-scale integration of wind energy in European power systems and to come up with recommendations for policy development, market rules and allocation methods which will support wind power integration.

Recent studies show that a large contribution from wind energy to European power generation is technically and economically feasible, would provide the same order of magnitude as individual contributions from conventional technologies, at a high degree of system security and at modest additional cost.

Wind power penetration is not constrained by technical but by regulatory, institutional and market barriers. Building on existing national and supranational wind integration studies, the project aims to answer the questions remaining on how best to facilitate uptake.

Results

- > Wind power scenarios outlined for selected target years up to 2030;
- > Methodologies and tools to be improved for simulating the impact of wind power on the trans-European power system, including modelling cross-border flows;
- > Recommendations as well as technical and economic justifications for the inclusion of wind power in existing networks;
- > Findings disseminated among national public authorities, EU institutions, TSOs, regulators, wind farm developers and operators, turbine manufacturers, and others involved in the wind energy sector;
- > Survey of power exchange market rules and constraints (mainland and on islands), including analysis of the economic consequences of gate closure time and insufficiencies in the allocation of interconnector capacity.

Budget: €1 747 690 (EU contribution: 50%)

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21

Skills network for European wind energy Windskill

Duration: 11/2006–10/2009

Objective

The wind sector has already created more than a hundred thousand jobs. Looking towards 2020, the European Wind Energy Association expects 1.8 million people to be employed in the sector.

Yet the wind industry has problems finding skilled staff to be in charge of installation and maintenance – occupations which could take up to 70% of the sector's workforce. Despite the emergence of a European market, staff qualifications are still regulated at local or national level which is an inadequate approach for a European market. Windskill is designed to overcome this critical barrier being an industry based initiative, aiming to create a European Qualification Profile for on- and offshore workers. Appropriate curricula will be developed and tested on approximately 50 workers in Germany, France, the Netherlands and Italy.

The project will include Europe-wide recognition of the established minimum standards – a major step towards a fully functioning industry and the mobility of its workers.

Results

The project is ongoing, but by its end the following should be completed:

- > Compilation of an inventory of all relevant but currently uncoordinated national and local regulations pertaining to key work assignments, such as working with high voltages, working at heights, working with cranes and marine survival;
- > Adoption of a strategy for the development of a European Qualification Profile for the wind energy sector. The Profile will be completed through extensive stakeholder consultations;
- > Curricula tested on approximately 50 workers in Germany, France, the Netherlands and Italy;
- > At least 12 authorities and 40 companies, mainly manufacturers and operators, are expected to adopt the European Qualification Profile;
- > Windskill was accepted as a partner to the 'Sustainable Energy Europe' campaign of the European Commission's Directorate General for Energy and Transport;
- > A conference was held in April 2008, at which the project's mid-term results were presented to hundreds of organisations involved in the field in order to kick-start dialogue on national implementation.

Budget: €879 773 (EU contribution: 50%)



Urban wind turbines powering local communities

22

Wind Energy Integration in the Urban Environment (WINEUR)

Duration: 1/1/2005–28/2/2007

Objective

Suitable technologies and new initiatives at regional and local levels will be required to achieve the renewable energy targets. Recently, a number of manufacturers have introduced new small wind turbine products, especially designed for installation in urban surroundings. Similarly to PV, these 'urban' wind turbines (UWT's) can generate electricity on-site where it is needed, avoiding transport losses and contributing to CO₂ emission reductions in urban centres. However, awareness of the potential, and consequently the markets, for urban wind turbines is underdeveloped.

Bringing together national and local government, R&D institutions, manufacturers and suppliers of UWTs, architects, town planners, energy suppliers, grid operators and home owners, WINEUR helps people who are drawn to the idea of exploiting wind-powered energy, to realise their goal.

Having set up national, urban wind networks in the United Kingdom, France and the Netherlands, WINEUR is continuing the exchange of knowledge and best practice to facilitate the establishment of other networks throughout interested communities. Suggesting ways to remove economic and regulatory barriers to new networks, the project is floating a viable alternative for the generation of electricity.

Results

- > A comprehensive inventory, including classification and detailed descriptions of existing projects and technologies worldwide (data collected from North America; Australia, Japan, Switzerland);
- > Assessment of the evolution of wind turbine prices, plus grid connection costs and constraints in different European countries;
- > Comparative study of the legal and administrative situation in eight different European countries;
- > Potential project identification – feasibility study and site identification;
- > Building on best practices gleaned from the way in which large turbines have dealt with the problems of noise pollution and implications for wildlife.

Budget: €909 704 (EU contribution: 50%)

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Projectreport



Renewable energy



2008 call for proposals: over 300 applications received

The EACI received over 300 applications in response to 2008's call for proposals for the Intelligent Energy – Europe programme. €45 million is available to fund projects across Europe and up to 75% of the project costs can be financed by the IEE.

A new call for proposals will be published in early 2009. Funding will be open to any public or private organisation from the EU, Iceland, Norway, Liechtenstein and Croatia.

Find out more on the IEE website <http://ec.europa.eu/intelligentenergy>

IEE News Alert

Keep in touch with the latest news by subscribing to the Intelligent Energy – Europe News Alert at

http://ec.europa.eu/energy/intelligent/whatsnew/subscription_en.htm

All you need to know about the programme delivered once a month, by e-mail.



Intelligent Energy – Europe online

Find out more about the projects run by the EACI under the Intelligent Energy – Europe programme at <http://ec.europa.eu/intelligentenergy>. The site provides guidance on how to implement IEE funded projects

http://ec.europa.eu/energy/intelligent/implementation/index_en.htm

EACI online

Visit the website of The Executive Agency for Competitiveness and Innovation (EACI), the body that manages the IEE, at

<http://ec.europa.eu/eaci/>

The site contains information about the Agency and the programmes it manages.



Projectreport



Renewable energy

Research and technology development

The development of new technologies for renewable electricity generation is supported under the Seventh EU Research Framework Programme (FP7). Further information on European research activities, including the results of previous projects and new calls for proposals, is available at

http://ec.europa.eu/research/energy/index_en.htm

Abbreviations:

CHP – combined heat and power

DG – distributed generation

HSE – health, safety and environment

PV – photovoltaics

RES – renewable energy sources

RES-E – renewable energy sources, electricity

Photos

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Renewable electricity Make the switch

This brochure presents 22 projects supported by the Intelligent Energy – Europe programme (IEE). They range from the profoundly analytical to the entirely practical and all have with one clear goal – using renewable electricity to help Europe move away from its carbon dependent lifestyle. The IEE programme promotes energy efficiency and renewable energy in order to create a more energy-intelligent Europe. This series of reports provides examples of projects funded by the programme in key areas. To find out more about the programme visit the website www.ec.europa.eu/intelligentenergy