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# RES-e Regions

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#### Partners:

- O.Ö ESV (AT) ■ Agencia Andaluza de la Energía (ES) ■ University of Ljubljana (SI) ■ EREN (ES) ■ Rhônalpénergie- Environnement (FR)
- STEM (SE) ■ IZES (DE) ■ ARE Liguria (IT) ■ DTI (DK) ■ Gobierno Navarra (ES) ■ FEDARENE ■ EREF

## Declaration European Regions for Energy Efficiency and Renewable Energy Sources

European regions are invited to sign the Declaration "European Regions for Energy Efficiency and Renewable Energy Sources". The aim of this declaration is to increase the visibility of the commitment and of the actions of European regions in the field of energy efficiency and renewable energy sources and to encourage and motivate regions that have not defined quantitative objectives to take action. The Declaration is available in [all EU languages](#)

Today, more than [77 regions](#) have signed! Join them!

 Dominique Bourges, Fedarene, [fedarene@fedarene.org](mailto:fedarene@fedarene.org)

## New and interesting publications

Local action is essential to achieve the targets set by the RES-e directive: not only are many initiatives for new RES-e installations started on local level but also some of the main obstacles can only be overcome regionally and locally. The following publications will give you a preview of the res-e development in the regions.

### Guide for municipalities (in national languages)

These guides aim to help answering some of the initial questions you may have about various types of renewable energy source electricity (RES-e), as well as pointing you in the direction of further help of a specific nature. The types of electricity production which are probably most relevant for local authorities are wind, PV, biomass, biogas, hydro..... Some of these have good demonstration value, and some are already making major contributions to energy production in local authorities across Europe: [Andalucía](#) - [Liguria](#) - [Oberösterreich](#) - [Rhône-Alpes](#) - [Saarland](#) - [Slovenia](#) - [Västra Götaland](#) - [Wales](#).

### Res-e in our Regions (in national languages)

These publications aim to increase general awareness about RES-electricity and its benefits. Based on shining examples, they contain the most up-to-date information about electricity from RES in the following regions: [Andalucía](#) - [Castilla y León](#) - [Liguria](#) - [Navarra](#) - [Oberösterreich](#) - [Rhône-Alpes](#) - [Saarland](#) - [Slovenia](#) - [Västra Götaland](#) - [Wales](#).

### Project developers leaflet (in national languages)

These project developers leaflets are based on regional analysis and outline the most relevant aspects relating to grid access and administrative procedures for the following technologies: [Small hydro power plants in Liguria](#) - [Oberösterreich](#) and [Rhône-Alpes](#); [PV](#) in [Andalucía](#) - [Castilla y León](#) - [Copenhagen](#) - [Navarra](#) - [Saarland](#) and [Slovenia](#); [Wind](#) in [Saarland](#) and [Wales](#); [Biogas](#) in [Saarland](#) and [Västra Götaland](#).

Much more publications available on:  
<http://www.res-regions.info>



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## Retrofitting programme of small hydro power plants in Upper Austria

The potential for retrofitting in Upper Austria is very high, existing hydro power plants are often quite old and the potential for new plants is limited. Mainly due to the lack of information and financing, retrofitting did generally not take place in the past, although quite a high number of plants could increase their output by cost-effective measures.

Thanks to the Upper Austrian support programme with a special funding scheme, attractive conditions for the retrofitting of hydro power plants were introduced. The main challenge was to monitor progress and motivate plant owners to invest in the modernisation of plants.

Therefore, the "O.Ö. Energiesparverband" developed a campaign on small hydro power plants within the Res-e project. The main part of this campaign was an energy advice service for plant owners. Special information activities were implemented to increase the number of renovation projects, including the publication of a six-page brochure titled "Retrofitting of small hydro power plants", as well as an information event with more than 260 participants and, most importantly, personal advice service.

In Upper Austria, there are 590 small hydro power plants in operation, with a total capacity of around 128 MW and a production volume of 691 GWh/year, which means 7% of the regional electricity consumption. Most of these plants are small (39% of the capacity is below 1000 kW).

So far, more than 481 small hydro power plant operators have received special energy advice through the campaign and were thus informed about renovation possibilities. More than 200 investment projects were triggered with a total investment of around 40 million €, now each modernised plant achieving an average of 31% more electricity output, which means an annual plus of 50 GWh.

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Bo Johansson describing the biogas CHP technology to the Swedish Prime Minister Fredrik Reinfeldt  
© Götene Gårdsogas AB

## Boosting the development of biogas production in Västra Götaland

During the last years the interest for farm-scale biogas production has been increasing rapidly. This is mainly due to the increasing prices on electricity, heat and fertilizers but also environmental concerns. The region is one of the largest agricultural areas in Sweden and has a lot of farms and companies active or with heritage from the agricultural industry.

The RES-e Regions project has stimulated this positive biogas development in many ways in the Västra Götaland region. Amongst others a range of project advices, meetings and workshops with individual farmers or groups has been held. In total more than 250 stakeholders has been reached. The project has also set up a project developer's leaflet with guidance on issues on building and environmental permits and a check-list and FAQ for farmers interested in biogas production.

Recently a dedicated farm biogas technology company called Götene Gårdsogas AB ([www.gotenegardsogas.com](http://www.gotenegardsogas.com)) was established. The company was visited by the Swedish Prime Minister in January 2007. The visit resulted in several newsletter articles and TV spots. The founders of the company, the farmer Bo Johansson and the blacksmith Lennart Svensson are very optimistic about the future. They are already building a new plant and have additional inquiries from farmers in West Sweden.

Contacts, workshops and coaching activities with a range of potential sub-suppliers to farm scale biogas plants have been carried out. The activities resulted in potential cooperation between three companies. Many existing companies has the know-how and skills required to be sub-supplier to biogas plants but an actor that can act as project manager/developer and take care of the sales is missing at the moment.

In the coming years we will most probably see a growing number of small-scale biogas plants located on farms and/or owned by farmers.

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## Didactic Photovoltaic Installations in Navarra

The development of Renewable Energies in Navarre has been very important in the last few years due to three main elements: the institutions' support, the existence of several companies that bet on these technologies and the unconditional support of the society owing to the fact that it has seen this development like something necessary in order to avoid the environmental problems, specially in the wind farms. Moreover, this work is considered like an alternative source of revenues of other domestic investments, such as the investments in photovoltaic panels connected to the net.

It is important to emphasize the educative and public awareness labour that the Administration has directly developed and also through the energy agencies and other public and private organisms. In relation with the solar photovoltaic, several municipalities have built a total of 16 Didactic installations grid connected.

Promoters	Installations
■ Municipality of Barañain	4
■ Municipality of Pamplona	8(*)
■ Municipality of Aibar	1
■ Municipality of Zulueta	1
■ Arangoiti Foundation	1
■ Student Parent Association. School of Zangotza	1

(\*) *Five installations are still under construction*

The municipality of Pamplona has the highest number of installations, 8 in total. The Municipal Energy Agency of the Environmental Area is in charge of the control and monitoring of these installations.

Pamplona has around 2.000 hours of sun, which provide with a high power of electric generation with solar energy (1.408 KWh/m<sup>2</sup>). Therefore, it was necessary to make citizens know about the great potential of the city. That was the reason why the Municipality started to create in the schools a net of installations, with didactic character, which were connected to the net.

The installations are connected to an interactive monitorization panel, which is placed in a visible place of the school. The panel gathers and shows the radiation that the panels receive, the produced and accumulated kwh, reached temperature and all the information about the avoided CO<sub>2</sub> and the number of trees that would be necessary to plant in order to compensate the same produced energy with the conventional systems, those which transform the oil and carbon derivatives into electricity. The panels are placed in flat roofs or easy access places for having no problem if someone wants to visit them.

In the centres, there are leaflets explaining how the installation works for making self-guided visits. Moreover, it is delivered a descriptive manual to the staff that took part in the creation of the installations and the teachers are trained in order to transfer these knowledge to the pupils within the scholar programme "discover the energy and tell it".

The installations are also opened to other centres, specific groups and everybody in general. The promoters announce the installations in press and speeches.

The aim of this type of installation is not only didactic, but as it is mentioned before, for obtaining information and carrying out studies and analysis related to the production and profitability of the installations.

In December 2006, there were 13 operative installations in Pamplona, with a total of 33,09 KWp, which have avoided the emission of 74,000 kg of CO<sub>2</sub>.

The energy sale to the net has involved 32,000 € of incomes for reinvesting in new installations.

The effects on the citizens are: the increasing interest in these technologies (the consults to the Municipal Energy Agency have multiplied by five) and the growth of m<sup>2</sup> installed in Pamplona (multiplied by 40 in the last few years).



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School Center Postojna

## Photo competition as an effort for wind power plant in Slovenia

In the framework of RES-e Regions project a photo competition of green electricity production has been organized at the University of Ljubljana, Faculty of Mechanical Engineering. A photo competition was targeted to all secondary schools from different municipalities in Slovenia. Interested schoolboys with their mentors photographed certain systems of "green electricity" production and those photographs supplemented with short description of the systems.

One of the awarded contributions is connected with an effort for setting up first wind power plant in Slovenia.

Wind energy is for Slovenia very important since we have relative high wind potential, especially on Primorska region. Wind power plant operates on the way that wind rotates a rotor of the wind mills. The Rotor cross transmission gear drives generator which wind energy transforms into electrical energy. The power of wind power plants is in range between few kW to some MW. For setting up wind power plant two landscapes were proposed – Vremščica and Volovja Reber. Slovenia is with ratification of Kyoto protocol engaged for reduction of greenhouse gas emissions released into environment for 8% between years 2008 and 2012 as regard to the year 1986. On account of wind power plant on Volovja Reber the quantity of carbon dioxide emissions released into environment would be reduced. Installed wind power plant on Volovja Reber should be sufficient for the needs in housekeeping, on the area of Ilirska Bistrica, Divača and Sežana.

In the framework of competition a windmill was set up in research purposes. Needed permissions were provided by mentor. The windmill (except column) was home made with usage of cheap materials. The column is five meters high. Windmill was set up only for research and study purposes.

During the project RES-e Regions also final barrier for setting up wind power plant on Volovja Reber has been removed. A building permit for setting up 29 wind turbines in total installed power of 28.05 MW was issued to investor. The construction of wind power plant will start soon.



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Photovoltaic Installation  
in Aznalcollar, Sevilla  
© Andalusian Energy Agency

## Res-e project on Photovoltaic Solar Energy in Andalusia

During the working period of the RES-e Regions project, the Andalusian Energy Agency has undertaken many different activities concerning the promotion of photovoltaic solar energy and high temperature solar systems in among different market actors and target groups in Andalusia.

The Andalusian Energy Agency has developed a Guide for Photovoltaic installations connected to the grid in Andalusia containing information concerning administrative procedures and legislation including the Spanish Feed-in Tariff, the Andalusian Incentive Order and new regulations, as well as practical information.

The Andalusian Energy Agency organises a Photovoltaic Planners Platform counting with the participation of Andalusian market operators: manufactures, promoters associations, electricity companies and public administration of the Autonomous Community debating and focusing on public procedure, financing and the retribution's system and new developments and strategies.

There is currently an increase of performance of systems, simplification and reduction of prices in the production of photovoltaic cells, development of more powerful, efficient and reliable inverters. All this in conjunction with regional, national and international financing and/or subsidy programmes that allow a good penetration of this technology in the global electricity production. There are significant installations in the campus of the University of Jaén (200 kWp), the Science Museum of Granada (15 kWp), as well as 269 installations made through the PROSOL programme (22 of which are in public schools in Seville, one photovoltaic tree and two solar exploitations of 173.25 kWp and 496.44 kWp, respectively), and other installations such as the Repsol service stations (15 kWp), and many new Installations as 0.88 MW in Sanlúcar la Mayor, 1.2 MW in Carmona, 1.5 MW in Aznalcóllar, Córdoba 1.2 MW and new installations under construction in Carmona 5.7 MW , and Ecija 8 MW.

It has been a great increase of these type of installations from the 902 kWp in 31st May 2004 to currently 17.36 MWp .

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PV plant on the roof of the Tower School  
in Dudweiler  
© IZES gGmbH

## Results of the RES e regions project in Saarland

During the project runtime of two years IZES (Institute for Future Energy Supply) and partners offered a lot of activities for different target groups to boost the renewable power generation in the region. Some new projects could be realised during this period.

Different events for craftsmen, municipalities, industry and trade as well as for private persons were launched to present technical details, financial issues and share models for power generation from renewable energies. All events were well frequented and provided a lot of information.

IZES also published two brochures. One of them showed successful installation examples of PV, biogas, hydropower and wind power plants accompanied by interviews of the plant operators talking about positive experiences with their plants. The second brochure summarizes technical, financial and legislative issues for the installation of renewable energies power plants. Also the feed in tariffs in the German Renewable Energy Act (EEG) are explained in detail.

Another activity was the competition on renewable power generation for municipalities. In the twelve participating municipalities the electrical load from PV plants increased from about 1800 to 2600 kW in one year.

The two winner municipalities should receive each one 1 kW PV plant sponsored by a private firm. The prizes were given for the highest additional construction of plants and the highest installed load – each parameter per head - during one year. Casually it was only one municipality which received the two prizes because it fulfilled both criteria. So in the field of PV power plants the project helped to increase the share of power generation from this technology.

Here a photo from one of the recent power plants on a school roof. It is a 31,5 kWp plant which should produce averaged 900 kWh per kWp.

In 2006 also three new biogas plants could be implemented in Saarland. A former farm has been transformed in a centre of employment for disabled persons. All eleven buildings of the farm like a shop, a restaurant, different stables, a market-garden are provided by the new biogas plant with 200 kWel and 300 kWth. The heat is used on the farm.

A second plant has an electrical load of 300 kW and the third will reach its final load of 500 kWel probably in April 2007. The heat is used for drying firewood for sale.

In Saarland the RES e regions project was co-financed by the regional ministry of environment.

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## The RES-e Regions project in Liguria

Liguria presents an internal energy production which exceeds the real needs (double the consumption). However, only a small part of this production comes from RES (1.5% of the total primary energy and 0.85% of electricity in 2003).

In the framework of the RES-e Regions project ARE Liguria has been able to deepen the dialogue with administrators, institutional officers and associations category. In this way ARE was able to identify the main difficulties which prevent a widespread use of renewables on a regional level.

Beside the difficulties pointed out during the meetings by designers and producers, mainly related to problems with the procedures, ARE Liguria has studied in detail the barriers from the local authorities' point of view. Among the problems, the financial aspects have the priority together with public approval which is often difficult to obtain for new and unknown technologies. In this way the survey carried out by ARE Liguria involving a vast test group of Ligurian inhabitants, has helped in selecting the technologies which ought to define better its information campaign. The survey found that not only is the public generally well inclined towards renewable energy sources, but also that people would like to be better informed about the technologies they know less about (in particular mini hydro and biomass). The information campaign organised by ARE as part of the project, has taken into account the survey results and it made a good use of the regional seminar and the brochures for the public, technicians and local administrators, to fulfil their needs in the best way possible. The success of the initiatives was measured not only through the attendance to the regional seminar, but also considering the number of phone calls received by the hotline.

Most of the municipalities have indicated problems related to the design phase as the main obstacles to the development of renewables in their territory. This problem also emerged during the phone calls that ARE received during the months before the hotline construction and in the requests for advice made by the Administrations.

Therefore, ARE Liguria, together with the Region has started a technical support programme which involves many municipalities in Liguria of every size. The project, which started in June 2006, includes an analysis of the energy critical points of the municipal buildings and plants and support in the realization of new plants which could exploit the renewable sources available in the area.

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## Res-e for citizens, investors and politicians in Castilla y León

In the framework of the Res-e Regions project the Autonomous Community of Castilla y León has gotten to bring renewable electricity to the population, increase the investments on Res-e installations and have a significant political support.

By one hand Res-e for population have been supported through measures such as subsidies and other financial support tools which have offered easy payment terms. And on the other hand communication strategies such as surveys to know if population agree with these energies and the grade of Res-e knowing were analysed with positive results. Press releases, articles in local newspapers, radio interviews and Res info-brochures have not only given information about Res-e but also promoted it into the population.

Regarding Res-e investments, during the last two years, have been notably increased. This means more private initiatives on Res-e with more innovative technologies, involving around 500 companies, circa 120 M€ of investment and more than 2,500 employees.

As a supporting instrument of Res-e investments, Castilla y León has developed different Res-e plans. One of them is the Regional Wind Energy Plan, which guidelines highlights to reach 6,000 MW of wind power capacity in the region, like a development in a whole country.

In the frame of the Res-e Regions project, an initiative of organising an annual Regional Wind Power Day has been emerged. The first edition took place the last September and the second edition is being planned for October 2007. This event congregates all Wind Power sector, promoters, manufacturing companies, politicians, even society in general.

A Regional Solar Plan, existing from 2001, has gotten more than 5 MWp, reaching higher ratios of 2 kWp/1000 inhabs 30 % over Spanish media. While a strategy in bioenergy has being currently drawn up, where demonstrative actions such as Small scale gasification plants and Electric power plants from straw are being provided for the planning.

From a political level has been approved a legal context in favour of Res-e installations where they will have priority status against conventional installations and a favourable feed in tariff system.

Furthermore, politicians have brought a Res compromise to the fore signing the Wels Declaration where Castilla y León commitment is based on reaching a share of 18 % of renewable energy in primary energy consumption and a share of **32% in electricity production** by 2010 (not including Large Hydro).

Res-e in Castilla y León involves not only superficial or unilateral visions but also an integration of environment, energy and socioeconomic views. Being dialogue, share experiences, and commitment the basis for Res-e successful development in the region.

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*St Genest Malifaux Municipality, winner of the Rhône-Alpes competition, category "small municipalities"*  
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## Green electricity fostered by RES-e Regions in Rhône-Alpes

Various activities, hold in the frame of RES-e Regions, were interesting inputs as regards to the development of green electricity in Rhône-Alpes.

### Information and communication

The publication of several leaflets, for planners, for municipalities, raised people's awareness on green electricity projects and gave them some clues about the different ways to conduct a project, the difficulties to be avoided or the professionals to be contacted.

The organization of trainings was also a useful mean to answer people's need of information on precise topics. In Rhône-Alpes, two trainings sessions were organized in April and correspond to some needs which were identified at a regional level. The first training dealt with the administrative procedures for low

voltage grid access and was organised by EDF. The second one was a visit in Switzerland on small hydro power plants, with a focus on plants working on waste or drinking water network, which is something hardly developed in our region. What's more the study tour organized in March in Upper Austria concerning biogas plants was a successful way to disseminate the Austrian best practices in our region.

### Examples

More and more municipalities are interested by the PV technology. The competition, organized within the frame of RES-e Regions, proved that municipalities can now be involved as planners of PV installations. Two categories were distinguished between municipalities with more than 10000 inhabitants and smaller municipalities. In each category, a prize and a special award were given (see picture below).

### Regional strategy

The project initiated a global thinking about the regional strategy on green electricity. This will be continued after the end of the project. Concerning hydro power plants, the main problems were identified and discussed; we now aim at proposing solutions and discussing precise cases within a workshop group. As regards biogas, Rhônalpénergie-Environnement will coordinate a working group with all regional players to spread good practices and exchange some information. Concerning wind energy and photovoltaic, our future activities will mainly focus on the different juridical and financial solutions which can be developed to support the projects.

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