

# **EU LOCAL ENERGY ACTION**

## Good practices 2005



The 2000 Green Paper 'Towards a European strategy for the security of energy supply' analysed Europe's structural weaknesses: energy consumption is rising, while the EU is becoming increasingly dependent on external sources of energy. At the same time, to respect its commitments under the Kyoto Protocol, the EU must reduce its production of greenhouse gases. The Green Paper proposes a strategy to reduce energy consumption in Europe through improved energy efficiency, to increase the use of renewable energy sources and to diversify energy imports. Promoting local initiatives for more efficient use of energy and greater use of energy from renewable sources is crucial for reaching the targets set out in the Green Paper.

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Further information about ManagEnergy can be found on the web at [http:// www.managenergy.net](http://www.managenergy.net)

Information on the Directorate-General for Energy and Transport can be found at [http://europa.eu.int/comm/dgs/energy\\_transport/index\\_en.html](http://europa.eu.int/comm/dgs/energy_transport/index_en.html)

A great deal of additional information on the European Union is available on the internet. It can be accessed through the Europa server (<http://europa.eu.int>).

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# Introduction

## Local initiatives lead the way

### A European challenge

Energy consumption in the European Union is rising, and most worryingly so is our dependence on fossil fuels – principally oil and gas – imported from outside the Union's borders. At the same time, the EU has signed up to the Kyoto Protocol, committing us to reduce greenhouse-gas emissions in 2012 by 8 %, in comparison to 1990 levels. In November 2000, the European Commission adopted a Green Paper, setting out the strategy to reduce the EU's dependence on imported energy. The twin focus of this strategy is to improve energy efficiency and to increase the use of energy from renewable sources – which exist within the EU. The Green Paper on Energy Efficiency of June 2005 lists a number of options to save 20% of energy consumption by 2020 in a cost effective way through changes in consumer behaviour and energy efficient technologies. Moreover, the Biomass Action Plan of December 2005 provides a basis for expanding the production and use of biomass across the EU.

Whilst action at EU and national levels is a vital part of realising these objectives, without action at the local level, there is no chance that they can be achieved. The drive to improve energy efficiency requires end-users to examine their energy consumption and consider means to reduce it – but without reducing their standards of living. Initiatives such as installing insulation or more efficient heating/cooling equipment, or simply ensuring that lights and equipment are switched off when not in use all bring savings in energy consumption, and reduce the cost of bills. Increasing the use of renewable energy sources is often appropriately tackled at local level. Individual installation of photovoltaic panels to capture solar energy, or district heating plants fired by biofuels, or local wind farms to provide electricity to an area, are different examples in which local communities can commit themselves to using renewable energy.

Local – or individual – initiatives are critical to achieving the EU's targets in the energy sector. The more such initiatives are taken, the closer we come to meeting our commitments. But if local citizens do not take up the challenge, we cannot reach our objectives. Certainly there is an initial investment that needs to be borne, but in the longer term, these initiatives will pay for themselves in cost savings, in addition to reducing environmental damage.

### Energy agencies as local facilitators

Information and encouragement are at the heart of successful local initiatives to encourage take-up of energy efficiency and renewable energy use. Individuals, organisations and companies which stand to benefit from such measures often do not have the resources to investigate the possibilities and, therefore, do not consider taking them up. To help provide local citizens and organisations with the information and encouragement needed, the European Commission has supported the creation of local energy agencies across the EU. These are set up by public authorities (regional or local authorities made up of elected representatives) and partner organisations, although the agency itself must be established as a separate legal entity. The role of energy agencies is to promote and disseminate good practice in the areas of energy efficiency and renewable energies.

**Achieving the European Union's ambitious goals for improving energy efficiency and increasing the share of energy from renewable sources cannot be left to governments and utilities alone. If these goals are to be reached, individuals – householders, companies, organisations – need to make choices, and take responsibility for their own energy use. Local energy agencies are about informing and encouraging local citizens to take these decisions, so that local actions bring direct benefits to local people. Ideas for local initiatives are frequently simple, and have already proved their worth elsewhere, but successful implementation requires commitment and resources.**

## **The European network of energy agencies**

Today there are some 400 energy agencies within the EU and new agencies receive support on a regular basis, through the Intelligent Energy – Europe programme <sup>(1)</sup>. In particular, the Commission expects to approve funding for a number of additional local and regional energy agencies in the new Member States in the coming months. EU funding is used to get energy agencies up and running, and lasts for a maximum of three years, beyond which the agency is expected to be viable. In principle, EU funds may cover up to 50 % of an agency's budget in the first three years. The remainder of the budget comes from the local authority and other public or private partners. In many cases, an energy agency will generate funds from its activities which can then be reinvested in its work. Each energy agency works with local people in its area. Given that these local citizens are directly responsible for more than half of all final energy consumption in the EU, the focus of energy agencies is on disseminating good practice in demand-side management to consumers. Good practice may come from all over Europe and beyond, although in many cases, the details need to be adapted to different local contexts. The need to access as wide a range of examples of good practice as possible on behalf of local citizens means that local and regional energy agencies across Europe need to communicate and co-operate with each other.

## **The ManagEnergy initiative**

To support the many energy agencies operating across Europe – as well as other organisations working in the energy field at local and regional levels – the Commission is funding the ManagEnergy initiative. ManagEnergy's primary aim is to facilitate the sharing of information. It does this through its website <sup>(2)</sup> and helpdesk, and through events and publications, by providing a forum for exchange of ideas and experiences. In particular, ManagEnergy supports the collection and dissemination of good practice throughout the network. It also helps organisations find partners to implement projects, and provides information on EU policies in the energy sector and on funding opportunities.

## **Exchanging good practice**

The basis of the ManagEnergy network is exchanging ideas and experience between local actors. Schemes which have worked well in one situation may fit in well in another, or may work with some adaptation, or may not be suitable for a given context. The essential basis for exchange of good practice is circulating the available information to as wide an audience as possible. People's different reactions to ideas mean it is essential that as many local actors as possible have access to good practice examples; whilst one person may not be able to envisage a scheme in their own situation, their colleague may be able to visualise it clearly. Equally important is the ability to contact a counterpart, who has the experience of implementing a scheme, and can discuss informally the benefits and difficulties in implementation, as well as the key criteria for success.

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*(1) [http://europa.eu.int/comm/energy/intelligent/index\\_en.html](http://europa.eu.int/comm/energy/intelligent/index_en.html)*

*(2) <http://www.managenergy.net/>*

ManagEnergy provides a range of information channels for the exchange of dissemination of good practice, of which this brochure is just one. This brochure is the second in a series entitled 'Local Energy Action - EU Good Practices'. The first volume was published in October 2004, and can be downloaded in PDF format from the ManagEnergy website, which also includes a searchable listing of over 650 case studies and other documents. The more people that see these examples the more chance they have of being replicated in other parts of Europe. Whilst the details would undoubtedly change when implemented in a different context, the principles will remain the same – not just the design of the scheme, but its results as well.

## **Selection of case studies**

This brochure contains just 12 examples of good practice from energy agencies across Europe. Each has been validated by the European Commission against a set of objective criteria, and they have been chosen for their strong contribution to the promotion of energy efficiency and/or renewable energy use, and for their strong possibilities of replication. The selection in the following pages demonstrates the wide variety of spheres in which energy agencies operate, from small rural districts to large cities, and in Member States of varying sizes and historical energy policies and infrastructures. Furthermore, different agencies have chosen to work with different target groups. Some have worked with individual householders, some with companies, some with whole villages or districts, some have gone straight to young people in schools to promote energy efficiency, and some have worked directly with public authorities to change policies and oversee their implementation.

The examples of good practice in the following pages represent a wide variety of approaches, and all of them could be replicated elsewhere. But there are many other approaches which could be taken, and this brochure is meant to stimulate thought rather than provide all the answers.

# Promoting energy awareness in the east of Ireland

## Energy Awareness Week 2004

### *Meath Energy Management Agency, Ireland*

**A concentrated burst of media campaigning is a great way to raise energy awareness among a wide range of consumers. In 2004, Meath Energy Management Agency (MEMA) extended its Energy Awareness Week to everyone who lived or worked in the County of Meath, Ireland. Visits to schools, information displays, widespread media coverage, competitions, a 'Car Free Day' and an offer of free CFL light bulbs encouraged participation at all levels. The campaign dramatically increased requests for information from the energy agency. The competitions and promotions also improved local knowledge of energy efficiency, and encouraged people to choose sustainable energy and transport options in the future.**

### The aims of the scheme

Energy Awareness Week took place in Ireland from the 19th to 25th September 2004 and was promoted nationally by Sustainable Energy Ireland (SEI). The aim was to give local people an opportunity to think about how they use energy and learn how to become more energy efficient. The previous year, Meath Energy Management Agency (MEMA) had focused its activities on the town of Navan 30km north of Dublin. In 2004, the agency expanded its Energy Awareness Week activities to the whole of the county. The main objectives were to promote energy efficiency and renewable energy, to provide and disseminate energy information, and to reduce energy wastage in all sectors of the community. A long term aim of the campaign is to reduce reliance on Irish energy imports, and ensure security of supply with regionally generated renewable energy.

### The partners

Energy Awareness Week activities were coordinated and carried out by MEMA with the support of the Environment Department of Meath County Council. The direct costs for the campaign were €3520. This covered printing and copying of promotional materials, prizes, and provision of reflective jackets for walking bus participants. Additional prizes and sponsorship were provided by local companies and by SEI. During the week, the Pfizer Science Bus visited several local schools. ENFO (Ireland's publication information service on the environment) provided an exhibition on sustainable living and energy saving. Assistance was also provided by Sonairte (the national ecological and environmental awareness centre). Local newspapers and radio stations provided news coverage and interviews.

### How it worked

During the campaign, MEMA carried out a range of parallel activities designed to raise awareness of energy issues and solutions across the community. An Energy Awareness Week poster was produced, and information displays were organised in libraries and civic offices. These included MEMA's in-house publications on renewable energy, sustainable transport and energy efficiency at work and home, as well as SEI posters and leaflets.

A wide range of competitions were organised including: an Energy Awareness Week quiz, promoted through civic offices; a Meath County Council intranet quiz; an energy quiz on regional radio; a prize draw for a wood pellet stove; and a school poster competition. Entry details and prizes were promoted by local media coverage, which also included live radio interviews with MEMA staff and features in the 'Meath Chronicle' and 'The Weekender'.

The media also helped to promote a Car Free Day in the town of Navan. Letters were sent to local businesses and community groups, encouraging people to 'give their car a holiday' and walk, cycle or use public transport instead. These were followed up by phone calls. The event was also supported by the County Council and a local cycling group.





## Results

The publicity gained by the Energy Awareness Week led to a significant increase in requests for information on energy efficiency and renewable energy. This trend continued in the weeks that followed. The in-house CFL light bulb promotion helped attract new visitors to the MEMA office. Only 20% of participants in the home energy survey used low-energy bulbs prior to the promotion. Many more choose to do so following their visit. Following media coverage of the Walking Bus launch, two schools took immediate steps to introduce the scheme, and many more schools look set to follow. Newspaper articles and radio interviews promoted energy saving ideas to thousands of local people.

Competitions and quizzes, which offered the chance to win a hot air balloon trip and a pellet stove, were also very successful with hundreds of people entering. The awareness week enabled the local energy agency to interact directly with local people of all ages. It encouraged many of them to make more energy efficient choices, helping to reduce energy consumption and carbon emissions across the county.

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MEMA also ran an energy efficient lighting promotion from their offices, where visitors were invited to complete a brief home energy survey and select a free CFL light bulb to try out at home. This was combined with a week of special offers on CFL bulbs in local shops. Raising energy awareness in schools was another important element of the campaign. SEI provided MEMA with various educational materials and games, which were presented at schools across the county. Schools were also encouraged to start a 'Walking Bus' scheme. The first of these was officially launched by the Minister of State Sile de Vera (Department of Education and Science) on Car Free Day, gaining extensive media coverage.

## Could it be repeated?

Energy Awareness Weeks (or days) are an excellent way to gain media coverage and focus community attention on energy issues. They can be carried out in any area, but require careful planning and coordination. A good relationship with local TV, radio and newspapers is vital to publicise events, and the participation of local 'celebrities' and dignitaries will increase media coverage. Competitions help boost participation in events, especially when they offer attractive prizes provided by sponsors. Close cooperation between local environmental and energy organisations is also essential.

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# Promoting energy labels to Czech retailers & consumers

## ELAR - Energy Labelling of Household Appliances

*SEVEN, The Energy Efficiency Center, o.p.s., Czech Republic*

Energy labelling can be a successful and cost-effective way to increase awareness and use of energy efficient appliances. However, it can be time consuming to implement due to the large number of stakeholders involved. The ELAR project promoted the commercial benefits of energy labels to make them more attractive to appliance producers and retailers. It also improved the information that was provided to consumers. The project involved regional energy utilities and consumer organisations, and covered the Czech Republic (as well as Slovenia, Slovakia and Poland). Promoting energy labels as a positive marketing tool (and not merely as a strict legal requirement) proved very helpful in making this project a success story in the Czech Republic both on a national and regional level.

### The aims of the scheme

Although the Czech Republic adopted EU legislation on energy labels in the 1990s, some manufacturers and retailers of electrical goods were not initially keen to make labelling a priority. However, rising electricity prices have made consumers more eager to reduce energy consumption and cut household bills. In turn, this has provided a positive way to promote the concept of energy labels to all stakeholders. The aim of the ELAR project was to present energy labels to the appliance manufacturers and retailers as an advantageous marketing tool (rather than a minimum legal requirement) and to show how they could be used in sales activities. An additional aim was to work with regional energy utilities and consumer organisations to increase public awareness and understanding of energy labels. The main tools used by ELAR were personal communications, seminars and information presentations, in co-operation with the project partners.

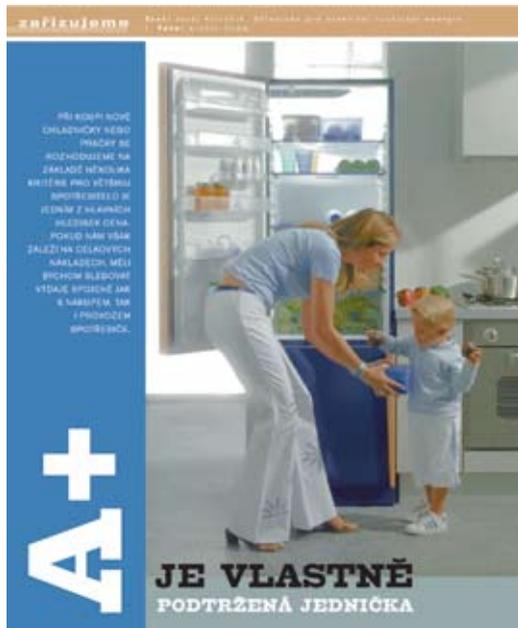
### The partners

The ELAR project was led by SEVEN, a not-for-profit energy efficiency consultancy based in the Czech Republic. The consultancy was supported by E.V.A., Austria and CRES, Greece, who provided international marketing experience and assistance with production of promotional products. Other partners included the local offices of electrical appliance manufacturers, various retailers, the Czech State Energy Inspectorate, Czech Trade Inspection, Regional Environment Centre, ABF a.s., the South Moravian Energy Utility, and a number of media organisations and magazines. The European Commission SAVE programme funded half of the core project costs, which were €55 000. Some specific promotional activities (such as leaflet production and distribution) were co-financed by local partners.

### How it worked

The ELAR project adopted a comprehensive communications strategy to share information and motivate all stakeholders. This involved negotiation with major partners, such as manufacturers, retailers, utilities and the media, and the provision of appropriate information in an attractive format to different stakeholder groups. The project helped to spark a chain reaction, stimulating the media and other partners to launch their own campaigns to raise awareness of energy labels.

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Specifically, 180 000 copies of a leaflet on energy labelling were distributed in the catalogues of appliance manufacturers. 4000 copies of an educational brochure for retailers and shop assistants were distributed at trade shows and regional energy labelling seminars. Other promotional materials, including leaflets, magazines and competitions, were prepared in cooperation with manufacturers, retailers and energy utilities. For example, the Prague Energy Utility (PRE) prepared a special issue of its consumer magazine. The utility also distributed a leaflet, including information on energy labelling of dryers, to all households and small businesses in Prague. The energy label campaign was widely covered by the media, with news articles stimulated by the ELAR project reaching a readership of over 1.5 million. The project also involved cooperation with NGOs and state organisations, who helped promote energy labelling to elementary school pupils during environmental lessons. The two largest internet shops in the Czech republic added ELAR information on appliances to their web pages. In addition, The ELAR project established its own web site as a central source of independent information on energy labels.

Before the project started, energy labels were used passively to mark appliances. The project, and the spin-off campaigns, prompted manufacturers to promote the most energy efficient appliances in their production lines. Ultimately, this enabled consumers to make informed choices about energy efficiency issues, when purchasing appliances.

### Could it be repeated?

This scheme demonstrates a cost-effective model for promoting energy labelling that could easily be applied in other European countries. The lessons learned are particularly relevant to new (or future) EU member states where similar issues with retailers and manufacturers may initially occur. To duplicate the success of the ELAR project, similar schemes will need to motivate national and regional partners who have the resources to communicate the benefits of energy efficient appliances to a much wider consumer base.

## Results

The ELAR project reached over 1.5 million people through the distribution of printed promotional material and associated media coverage. This included articles in the Czech Republic's largest newspaper, 180 000 project leaflets, 150 000 leaflets produced in cooperation with a leading appliance manufacturer, 30 000 consumer magazines on energy labelling, and seminars involving 370 shop assistants.

The ELAR campaign prompted utilities to produce their own leaflets on energy labelling, and led to additional promotion of the new A+ and A++ energy classes. Surveys of retailers (carried out before and after the project) showed a significant increase in general energy labelling and awareness.

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# Energy efficient urban renewal in 11 European cities

## European Green Cities

### *Cenergia & Green City Denmark, Denmark*

Large scale urban renewal and new builds in cities provide great opportunities to create hundreds of energy efficient homes. The European Green Cities project turned this potential into reality - ensuring that over 1000 residencies in 9 countries incorporated solar energy and low energy features. The project established a network of building professionals who can provide high performance technical solutions and low-cost installations. It also demonstrated to civil servants and home owners how initial investments in energy saving technology can be recouped by lower running costs. These include savings of 40-60 % on heating and hot water, and 30-35% on electricity and water consumption.

#### The aims of the scheme

New buildings and renovations offer significant scope for inclusion of energy efficient technologies. However, in practice, only a fraction of the potential energy saving possibilities are implemented. This can be due to a lack of local building professionals with necessary experience, or apprehension about the extra costs of using technologies, such as photovoltaic panels. European Green Cities aims to overcome these barriers by introducing an integrated, solar low-energy design using best available technologies. The scheme demonstrates a cost-effective model for sustainable and energy efficient building that can be applied across European cities. This involves: working with contractors on early price calculations; training city authorities, builders and consultants; and establishing local working groups to define standards for energy efficient construction. Based on this, 'Green Cities' certificates can be awarded to buildings that meet the energy saving criteria. In addition, the project aims to improve quality of life within existing buildings.

#### The partners

European Green Cities was coordinated by two Danish companies, Green City (administrative) and Cenergia Energy Consultants (technical), who formed a management team with Institut Cerda, Barcelona, and Metec Engineering, Torino. The other project partners were mainly civic representatives and housing associations from the 11 European cities that participated in the project. The promotion of the energy saving scheme and project implementation was carried out by local builders, technicians and key personnel in city departments, who also became involved in training. The extra investment required to introduce the energy efficiency measures was around €9400 per dwelling. This was funded by a €2.9 M package from the European Union Thermie programme. On average, funding covered 35% of the cost of the new technologies used. The remaining 65% was provided by the housing associations and cities, who were also responsible for the total construction cost.

#### How it worked

Initially, the project identified proven technical solutions that offered well documented energy savings based on extensive research and development. These included low energy windows, extra wall insulation, solar heating, passive solar, centralised heating systems, condensing gas boilers, combined heat and power units, natural and mechanical ventilation with heat recovery, photovoltaic modules, heat and water meters, and so on.



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The project then established how these diverse technologies could be cost-effectively integrated to provide significant energy savings in nine different countries. The main project phases were design, project development, tendering, construction, monitoring and, finally, local training. Parallel to this, a management team developed tools such as OptiBuild (for calculating the economic viability of specific low energy building components) and BEAM (for assessment of energy and environmental impacts). Although a common methodology was applied, individual processes had to be adapted to each of the countries involved - Denmark, France, Spain, Italy, England, Belgium, Austria, Finland and Greece. This was due to major differences in building technology, construction practices, and energy efficiency awareness of partners, key target groups and end users. These issues were overcome by common partner meetings held in each country. Visits to demonstration projects were combined with local conferences and visits to other local projects. In addition, local training and promotion was introduced to raise awareness. This was based on the Green City concept of Sustainable Urban Management, and was mainly focused on politicians and key building department decision makers, as well as builders, architects, engineers and tenants.

## Results

The key performance indicators in the European Green Cities project were energy consumption for space heating, domestic hot water and electrical appliances. Consumption was monitored during the first years of operation and compared to that of similar local buildings that did not include the new technology. The energy efficiencies provided by the 11 projects varied greatly, with a maximum of 70% of energy saved by the Houtvenne-project (Belgium). The success of this project led directly to the establishment of a training centre for promotion of low-energy technology in the Antwerp region.

The projects in Finland and Austria also established new regional standards for low-energy building. Economic viability was measured using the Simple Payback Time method, with two projects demonstrating a total payback time of only ten years. For many projects, the total cost benefit/analysis is more complex. For example, some of the older housing blocks showed relatively small energy savings. However, the retrofit transformed them into modern dwellings, dramatically improving the quality of life of residents.

## Could it be repeated?

The Green City construction concept has already been successfully applied in 11 cities in 9 countries, and has generated a wealth of experience and good practice that can be shared with urban developers across Europe. However, the project identified that the cost of specific low energy technologies can vary by as much as six times between different cities.

To address these anomalies, developers can use the planning tools created by European Green Cities for life cycle costs optimization. Planners can also apply the 'energy points' system, pioneered in Austria, as a tool for approving the funding of sustainable construction projects based on environmental benefits (see [www.greenglobal.com](http://www.greenglobal.com)).

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# Expanding district heating for apartments in Bulgaria

## Feasibility Studies on JI Project under Kyoto Protocol *Municipal Energy Agency - Rousse, Bulgaria*

The use of individual heating equipment for space heating and domestic hot water in multiple dwellings is very inefficient. Huge cost and energy savings can be made by replacing outdated domestic boilers with a district heating system. The Municipal Energy Agency in the city of Rousse, Bulgaria carried out an extensive feasibility study to establish what savings could be made if such a scheme was introduced to 6432 flats. It was established that district heating could reduce local greenhouse gas emissions by over a million tonnes in a single decade. Residents would decrease their heating and hot water costs by 50-60% and many would benefit from greatly improved living conditions. Many of the implementation costs could be covered by the Joint Implementation (JI) scheme under the Kyoto Protocol.

### The aims of the scheme

Joint Implementation (JI) under the Kyoto Protocol is a mechanism that enables a country to gain Emission Reduction Units (ERUs) by investing in a project that reduces carbon emissions in another country. This helps the investor country to meet its emission targets, and helps the recipient country to carry out projects that would otherwise not be possible. The scheme is particularly aimed at transitional economies in Eastern Europe. The feasibility study carried out by the Municipal Energy Agency - Rousse investigated the potential of using this financial mechanism to extend the district heating network in the Bulgarian city. The main aim of the project was to provide cheaper heat and hot water supplies to citizens living in urban apartments, and to reduce the production of greenhouse gases (GHG) in the city. Specifically, the project aims to construct a 1555 metre heat mains, and 12 secondary branches totalling 5454 metres. 6432 households will be connected to the network by 2007.

### The partners

The initial feasibility study, project design document and coordination of local stakeholders was carried out by Municipal Energy Agency - Rousse, Bulgaria, with support from EnEffect, Sofia, and the Regional Environmental Centre for Central and Eastern Europe (REC), Budapest. The district heating project will be implemented by CHP-Rousse who will invest 20% of the costs (€652 000). Additional funding of €2.6 M will be provided by foreign investors and by the sale of ERUs via the Joint Implementation mechanism. A potential project investor Electric Power Development Co., Ltd. (J-Power), Japan, has already entered preliminary discussions with the project team.

### How it worked

Initial technical and economic studies indicated that expanding the district-heating network was a viable way to meet the requirement for cheaper and more environmentally friendly heat and hot water supply in the city of Rousse. The target district covers an area of 97 415 m<sup>2</sup> with 378 buildings including 270 block of flats, 6 schools, 6 public buildings, churches, banks, small industrial enterprises, and company offices. Currently, people living in the target area use a variety of energy sources for space heating and hot water, including electricity, briquettes, wood and diesel. Mostly, these are used with outmoded and inefficient equipment that adds to local pollution.

For the detailed feasibility study, 264 buildings were chosen as potential consumers of the project (once implemented, several other buildings would also have access to the proposed district heating system). The feasibility study was carried out by Municipal Energy Agency - Rousse in cooperation with REC, Budapest, following the rules and procedures of the United Nations Framework Convention on Climate Change (UNFCCC).

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## Results

A full set of documents, including detailed findings of the feasibility study and a Project Design Document, have been prepared for approval under the UNFCCC and Bulgaria's own internal JI procedures. These indicate a number of direct and indirect benefits that will result from expansion of district heating.

Expenditure on space heating and DHW will be reduced by 50-60%. Increasing the heat load of the local CHP provider will improve its overall energy efficiency (in terms of fuel consumption per unit of energy produced). Municipal buildings (including schools) would gain more consistent heat supply and improved indoor air quality. 200 jobs would be created during construction of the new heat mains, and 15 permanent employees would be required to maintain and service the system. Annually, the replacement of outmoded electric heaters and boilers, would reduce 121 257 tonnes of carbon dioxide emissions, 5 tonnes of methane and 30 tonnes of nitrogen dioxide.

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Various baseline scenarios for expansion of the district heating network were prepared, covering different production processes and numbers of connected customers, etc. The most viable was then selected. The source of replaced electricity was identified, and projections were made of the annual energy consumption by type of fuel. Annual GHG emissions were calculated for both the baseline and project scenarios. From this, net GHG emission reductions were calculated for the project time frame, and ERUs were determined for the crediting period. Based on this feasibility study, a Project Design Document (PDD) has been prepared for international validation. This indicates benefits for all stakeholders in the project, including citizens of the City of Rousse (particularly residents in the target area), TPP Rousse, the Municipality of Rousse and other institutions. In addition, two opinion surveys were carried out, demonstrating positive local support for the project. The JI mechanism will be used to finance the expansion of district heating. Discussions with potential investors are already in progress.

## Could it be repeated?

The expansion of district heating through the JI mechanism of emissions trading offers a viable way to extend the service to new customers, increase electricity production from co-generation, and boost business for local CHP providers. The feasibility study in Rousse indicates that there would be similar opportunities for district heating companies in Sofia, Plovdiv, Varna, Bourgas, Pernik and Vratza. JI projects could also be initiated in cities in other New Member States and Candidate Countries, where there is a need for cheaper sources of space heating and domestic hot water, and a requirement to reduce carbon emissions.

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# Energy performance contracts boost efficiency in Austria

## Establishing a regional market for Third Party Finance (TPF) in Upper Austria

*O.Ö. Energiesparverband, Austria*

**Third Party Financing (TPF) is a very useful instrument for financing sustainable energy projects but requires careful market preparation. In July 1998, Upper Austria started a programme to build up a third party financing market. The programme combines a comprehensive information & advice strategy with financial support. Promotional measures included information events, publications, advice sessions, R&D projects, 'market places' and an internet platform. Using a targeted approach, O.Ö. Energiesparverband established a successful TPF market in Upper Austria with more than 100 projects implemented involving a total investment of about €35 M.**

### The aims of the scheme

The aim of the O.Ö. Energiesparverband programme was to establish a favourable market for third party financing (TPF) in Upper Austria, through a coordinated strategy of communications, advice and promotion. Within this programme, energy service companies (ESCO) pre-financed energy conservation schemes. Subsequent energy savings were then used to cover investment costs over a specified pay-back period. The first target in the Upper Austria TPF programme was energy efficiency in public buildings. Drawing on this experience, the programme was enlarged to commercial clients and renewable energy sources in 2002.

### The partners

The market development activities for the TPF programme in Upper Austria were coordinated and managed by O.Ö. Energiesparverband. The main partner was the Government of Upper Austria. Schools, sports facilities and other municipal buildings benefited from the initial phase of energy efficiency projects. These were carried out in cooperation with ESCOs who were responsible for financing energy saving measures as well as implementation, operation and maintenance. Once established, the scheme was extended to commercial organisations who used TPF to finance the development of advanced renewable energy systems to provide heat, cooling and electricity for manufacturing facilities in the region. With over 100 projects financed by the scheme, it now embraces a wide network of service providers on the supply side, and a diversity of customers on the demand side in both the public and private sectors.

### How it worked

The guiding principle of energy performance contracting is that efficiency and cost savings are generated without investment by the building owner. To achieve this, the building manager contracts a third party, an ESCO, to reduce energy costs by a guaranteed percentage each year. The ESCO then pays for the introduction and maintenance of energy efficiency measures over an agreed period (typically 10 to 15 years). The investment is refinanced by cost savings that result from the improved efficiency. After the pay back period is complete, the client then benefits from the ongoing energy and cost savings. The development of a market for this type of TPF scheme in Upper Austria, began in 1988 with the ECIP Programme (Energie-Contracting-Impuls Programm) in 1998. The ECIP programme, the first of its kind in Austria, focused on energy performance contracting in public buildings. After a successful first phase, it was broadened in 2002 to embrace the new Energy Contracting Programme (ECP). This also supports investment in renewable energy technologies, and covers the business sector as well as public buildings. The programme finances up to 6% of investments in renewable energy or efficiency (with a maximum of €100 000 and a minimum of €40 000). Besides financial incentives, the programme has always provided a number of advice and information activities. These involved both ESCOs, on the energy service supply side, and municipalities and companies on the demand side. Specific promotional initiatives included seminars, publications, exhibitions, consultancy, and a web site providing best practice examples, lists of ESCOs, as well as comprehensive advice and information. This combination of financial and communication activities is a key factor for the successful development of a broad TPF market in the Upper Austria region.

## Results

Since the start of the programme, more than 100 TPF projects have been implemented in Upper Austria with a total investment of about €35 M. These enabled significant improvements in energy efficiency, and installation of renewable energy plants. Early projects included the retrofitting of 7 municipality buildings in Friedstadt, with energy saving initiatives implemented in school buildings, the kindergarten, sports facilities and street lighting. This reduced energy costs for heating and electricity by 24% with annual savings of €66 205. The expansion of TPF projects into the commercial sector, enabled the construction of Austria's first biomass tri-generation plant in Ried for Fischer GmbH and FACC GmbH.

The biomass plant produces 26000 MWh heat, 1000 MWh cooling and 2500 MWh electricity annually, which is used for production of ski and aeroplane components. The total investment amounted to €3.63 M. Another TPF programme in the municipality of Bad Goisern, enabled an investment of 188 000 in 842 new energy efficient street lamps and 681 lighting points. Annual energy consumption was reduced from 225 000 kWh to 157 000 kWh, reducing the cost to the public from €36 000 to €21 000 €



## Could it be repeated?

The wide-reaching success of the TPF programme in Upper Austria demonstrates how energy performance contracting can accelerate the introduction of energy efficiency measures and renewable energy in both the public and private sectors. Energy agencies can make a significant contribution to the rapid development of a regional TPF market. To achieve this it is essential to develop in-house knowledge within the organisation. The concept and the concrete ways in which TPF schemes are implemented needs to be repeatedly explained to all participants. Targeted advice should be provided at all stages of the project. Initial projects should have a simple, specific aim (such as increased efficiency in public buildings). These can be used to establish a standardised procedure for operation on energy performance contracts. Once the procedures are in place, these can be expanded to embrace a diversity of technologies and a wider range of clients, including commercial organisations.

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# Investing in solar power on municipal buildings

## Solar Roof Initiative - Berlin

### *Senatsverwaltung für Stadtentwicklung Berlin, Germany*

Berlin has idle roof area on 6000 municipal buildings, which could be used to harvest solar energy. To make more of this under-utilised resource, the climate protection unit of the Senatsverwaltung für Stadtentwicklung has created a Solar Roof Initiative (Solardachbörse) to motivate the construction of solar power plants by private investors. About 80 buildings (schools, administrative buildings, sport complexes) are included in the initiative. All buildings are published on a web site, with photos and data providing potential investors with an outlook for the energy-generating potential of each site.

### The aims of the scheme

Public authorities should act as a positive role model to the public by reducing greenhouse gases and saving natural resources. With this in mind, Berlin's Government Coalition made an agreement in 2002 to offer roofs of public buildings to install solar power plants. To fulfil the agreement, the Solar Roof Initiative was created. The goal of this initiative is to decrease carbon dioxide emitted by the city of Berlin and establish a solar power friendly community.

Additionally, it was hoped that the project would stimulate an increase in Research and Development for urban solar power solutions. The project also has an educational objective. Many people get their first experience of solar energy from the project. So each roof-top development helps raise the profile and possibilities of the technology.

### The partners

The Solar Roof Initiative is financed by the Senatsverwaltung für Stadtentwicklung, Berlin. Roof space is made available to private investors, dependent on certain criteria being met. Crucially, since 1 January 2004, Germany has raised feed-in tariffs for renewable energies. This has made electricity generated by solar power plants more economically viable, and has led to increased interest from investment partners. Building managers have a central role to play in liaising with investors. Other municipal employees act as advocates for solar energy, by promoting the Initiative to colleagues, and encouraging its wider use. In addition to being installation sites, schools can use this scheme to foster a future generation of renewable energy users.

### How it worked

The Solar Roof Initiative was launched in 2002. All city districts were asked to list useable buildings. Together with the local authorities, the Climate Protection Unit set up 17 pools, representing the city districts and other municipal building owners. Within these pools were 86 buildings with more than 144 000 m<sup>2</sup> of available roof area. The details of these roofs were then publicised. Many private investors showed interest, but initially no concrete contract was made. This was possibly due to lower feed-in tariffs at that time and higher module costs.

In 2003, when it became clear that the feed-in tariffs would raise, the Climate Protection Unit launched a second wave of publicity. An appraiser was sent to all buildings to verify the feasibility of installing solar power plants. The buildings then were photographed and catalogued on a website where details are available to potential investors. This enables the investors to choose an appropriate area, location and roof type. Once the investor has short-listed their favourites, they can e-mail the contact person for the building, or they can phone and make an appointment to view the building.

Once the solar roof has been installed, the investor is obliged to create a display showing the generated electricity and an explanation of the systems used in the main hall of a designated school.



## Results

By early 2005, 25 private investors had shown interest in the Solar Roof Initiative and negotiations are still in progress. The first plants were installed in the summer. There continues to be steady traffic to the website, with a noticeable increase in visitors following the launch of roof details in new districts.

In addition to directly leading to new solar installations, the publicity and promotion surrounding the scheme has significantly increased awareness of solar energy among municipal employees and across the city as a whole.

## Could it be repeated?

Important lessons have been learned following the launch of the Solar Roof Initiative in Berlin. These can help pave the way for other cities in Germany and across Europe to use their municipal roof areas for solar energy generation through private/public partnerships.

Before promoting similar schemes, it is essential that extensive building data is available. Carefully worded contracts between the building owner and the investor should also be prepared in advance. Before considering the timing of replication, attention should be paid to local market conditions within the solar industry. In Germany, after the increase in feed-in tariffs for solar power, there was increased demand for solar modules, which could not be met by the existing production capacity. This delayed construction of new solar power plants. However, if such issues are taken into account prior to launch, virtually every medium-sized city/community in Europe could successfully adopt their own Solar Roof Initiative.

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# Involving the community in sustainable energy projects

## Lydney Local Power

### *Severn Wye Energy Agency, United Kingdom*

**Actively engaging local residents and businesses in sustainable energy projects enhances their enthusiasm for new technology. It also changes attitudes to personal energy issues. The Lydney Local Power project set up a Community Energy Club that involved local people in the planning and development of a small-scale hydro power site and a community wind turbine. The club also promotes domestic energy efficiency in the town, and works with schools and other groups to change energy behaviour. As a result, around 500 energy efficiency measures have been installed offering savings of €66 000 with lifetime carbon dioxide savings of 3865 tonnes.**

### The aims of the scheme

The Lydney Local Power project is part of wider scheme to bring social and economic regeneration to an area that has suffered from the closure of mines and the decline of industrial waterways. The principle objective was to empower local people to develop renewable energy projects, including a micro hydro power system and a community wind turbine. At the centre of the project was a Community Energy Club. This was open to all and provided a structure of regular meetings at which the general public was able to suggest local projects and make decisions relating to their development. The club also provided an opportunity to raise awareness and encourage the installation of domestic energy efficiency measures. Data on these installations was collected and recorded to demonstrate the environmental and cost benefits provided.

### The partners

The Community Energy Club played the lead role in the development of the Lydney Local Power project, supported by a part-time coordinator from the Severn Wye Energy Agency. Support was also provided by the Environment Agency, the Dean Forest Railway (owners of the micro hydro site) and the local strategic partnership (Lydney Area in Partnership). A series of energy efficiency campaigns were also carried out with the aid of the Gloucestershire Energy Efficiency Advice Centre. The Energy Saving Trust invested €20 000 into an initial feasibility study and business plan for the project. The Trust then provided €70 000 for the two year Implementation phase of the project.

The project steering group put in over €7350 worth of voluntary hours and €66 000 were spent on installing local energy efficiency measures. The micro hydro project is being funded by the Sainsbury's Family Trust, the EDF Green Energy Fund and DTi Clear Skies program. The Countryside Agency Community Renewables Initiative (CRI), British Telecom and Energy for Sustainable Development (ESD) are supporting the community wind project.

### How it worked

An initial study was carried out, which indicated a high degree of local support for renewable energy and community based projects in Lydney. Local volunteers with an interest in sustainable energy were then invited to form a Community Energy Club. Several potential participants were identified during the consultation process, and additional members were recruited by posters, local press coverage and word of mouth.

The group decided to elect a main steering group and smaller project specific steering groups for the renewable energy schemes. The smaller groups were made up of around 8-10 local people and were responsible for decisions about the individual projects.

The hydro power steering group identified a promising micro hydro site located at the outfall of an abandoned coal mine that spans the Forest of Dean. Nortchard Drift offers near constant year round flows and the water contains very little debris or aquatic life. It is located near the entrance to the Dean Forest Railway, which attracts 33 000 visitors a year.



## Results

The Lydney Local Power Community Energy Club now has 115 active members, and has established itself as a partner in the regeneration of the town. The club has developed a committed working structure and has a very committed steering group of 14 people. The Nortchard Drift hydro project is now operational and will provide 55 000 kWh of electricity per annum over the next 25 years.

The energy efficiency campaign helped change local attitudes and energy behaviour. It led to the installation of domestic solar water heaters, a pellet stove and a ground source heat pump, providing lifetime carbon savings of 3864 tonnes. The club continues to develop, and these installations and savings are likely to be repeated in the local area in future. Initial concerns about the community wind turbine have been addressed. A package of financial support has been put in place, and final technical issues are being resolved.

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Once the site was agreed, a financial package and installation plan was developed. A site was also identified for a community wind turbine. This offers good wind speeds and is away from the wildlife corridor of the Severn Estuary. The landscape already contains a number of large pylons and a major road, which were felt to mitigate the visual and noise impacts. The land owner is an active member of the Lydney Local Power Steering Group and was prepared to charge a minimal rent. However, there were still a few local objections to the site. These were successfully addressed by the Community Energy Club, and final technical assessments of the area are now being made. The club's activities also included a series of energy efficiency campaigns, events and site visits. These raised awareness within the group and promoted sustainable technology and energy saving to other members of the community.

## Could it be repeated?

Community Energy Clubs could be set up in any area where there is sufficient local support, and available land and energy resources. However, a realistic time frame for the project needs to be established. Negotiations to develop new technology, such as wind turbines, are often very prolonged. And community involvement in such schemes only occurs gradually. It is essential to carrying out an initial consultation with local people and establish steering groups with specific tasks and responsibilities. Visits to successful schemes in other areas help to build enthusiasm for local power projects.

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# Installing solar electricity at a rural hospital in Wales

## Switching onto Sunlight in Wales *Mid Wales Energy Agency, Wales, UK*

Hospitals are ideally suited for solar energy generation. They have large communal spaces with a shared requirement for power. They also have extensive roof areas, suitable for photovoltaic (PV) arrays. In March 2005, following assistance from Mid Wales Energy Agency (MWEA) and Dulas Ltd, Bronllys Hospital in Powys, Wales (owned by Powys Local Health Board) became the first UK national health hospital to generate electricity from sunlight. The 60.62 kW Photovoltaic installation developed by Dulas Ltd employed 14 people during the construction period. The array will generate around 45 500 kWh / year, displacing an average of 20 tonnes of carbon dioxide annually.

### The aims of the scheme

The 'Switching onto Sunlight in Wales' project aimed to identify high profile public buildings that could implement energy efficiency and renewable energy measures. The project identified Bronllys Hospital, in the rural region of South Powys, as an excellent site to demonstrate the benefits of sustainable energy in the public sector in Wales. The direct purpose of the project was to provide sustainable energy to the hospital, and reduce carbon emissions. Its broader role was to raise energy awareness throughout the health sector, and to promote the relationship between clean energy and good health. This was achieved by disseminating information on energy efficiency, supplied by the Carbon Trust. The initial promotion was followed up by the installation of energy saving measures that could be replicated by other hospitals and health centres across the country.

### The partners

The Community Energy Club played the lead role in this project involved significant public/private sector partnership between companies, funding bodies, energy agencies and the client, Powys Local Health Board (LHB) which carries out National Health Services in mid Wales. The project was co-ordinated by the Mid Wales Energy Agency which identified the most appropriate renewable energy system for the hospital, and liaised between the working and funding bodies. The commissioning, project development and installation of the Photovoltaic array was carried out by Dulas Ltd (plus sub-contractors).

The Carbon Trust provided information and promotional material, which aimed to improve energy efficiency and raise awareness. The total project cost was €547 586 (capital, installation and commissioning). Approximately 38% came from the European Regional Development Fund and 62% came from the UK Government / Department for Trade and Industry Solar Demonstration Programme.

### How it worked

The first stage of the project was to identify specific energy efficiency opportunities at the hospital and to raise general awareness of energy saving measures. The direct end users for this project are hospital staff and patients, who were provided with information and advice on energy saving. However, the promotion was more broadly aimed at the local Health Board and other public sector bodies through ongoing press releases and publicity.

Following initial improvements to energy use at Bronllys Hospital, the managers looked at various renewable energy options. A wood fired boiler was considered. However, there was already an efficient heating system in place. What the hospital really needed was a sustainable source of electricity. Helpfully, Bronllys was originally built to provide TB sufferers with the best aspect to speed their recovery and so is south facing. This also makes it ideal for photovoltaics. The energy agency knew that funding sources for solar energy were available, and following consultation with Dulas Ltd, it became clear that the PV proposal was technically viable.



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Having established that solar power could be generated at the hospital building, the Mid Wales Energy Agency then formally applied for funding. This was provided the European Regional Development Fund and the UK's major PV demonstration programme. The availability of financial support from both bodies was critical to the viability of the scheme.

An activity and payment schedule was negotiated, and Dulas Ltd and a team of sub-contractors began the commissioning and installation of the photovoltaic panels. Once the solar energy system was operational, a further phase of promotion took place, including a high profile official launch, which aimed to encourage other hospitals and public sector buildings to introduce similar initiatives across Wales.

## Results

The electricity generated by the 60 kW Photovoltaic array goes into the national grid and helps to reduce dependency on fossil fuels in Powys. On average, it will displace 20 tonnes of carbon each year. The efficiency measures introduced at the hospital, and the raised awareness among patients and staff, has also led directly to savings in both energy, emissions and costs. In addition, the project led to a number of indirect benefits. During the construction period, it created jobs for 14 people.

Valuable experience was gained on developing public-private partnerships in the region, and the project opened up new channels of communications between the local Health Board and funding bodies. Above all, 'Switching onto Sunlight' brought together a strong team of local energy experts and public service professionals, helping to create a new infrastructure for sustainable development across Mid Wales.

## Could it be repeated?

Although individual public sector buildings may have very different requirements and resources, there is always scope for improving efficiency and sustainability. A comprehensive consultation and feasibility study is essential to establish the most appropriate solution. Once this is done, it is very important to communicate the conclusions to the right people, and provide them with accurate information. To achieve their full potential, such projects require a local team of installers and energy experts, and a definite source of funding. Local energy agencies are often ideally placed to bring all these factors together. Initially, this may take a lot of time and patience. However, the end result is a strong regional network that can collaborate in the future to improve the sustainability of other public buildings.

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# Producing biodiesel from waste oil in Spain

## La Ribera in biodiesel

### *Agència Energètica de la Ribera (AER), Spain*

Using waste products as an energy source offers both financial and environmental benefits. The wastes are safely disposed of, while the low raw materials cost makes production of fuels more commercially viable. This was demonstrated by The Agència Energètica de la Ribera (AER), Spain, which created a project called 'La Ribera in biodiesel'. During 2004, 260 698 litres of waste vegetable oil were collected from 418 local businesses and converted into biodiesel. Initially, the fuel was used by municipal vehicles. However, the scheme is being extended to private vehicles, helping to reduce the region's dependence on fossil fuels.

## The aims of the scheme

The broad aim of AER is to introduce an energy saving culture to the local region. This is achieved by demonstrating the benefits of endogenous energy sources, increasing the use of renewable energy and contributing in a practical way to local sustainable development. 'La Ribera in biodiesel' was an important part of this process. The specific aim of the project was to collect and recycle waste oils from local businesses and convert it into biodiesel. In the first phase of the project, the biodiesel was used by public transport and local government transport fleets. A second phase aims to make this biofuel available to all citizens, and to expand oil collections to local households.

## The partners

The 'La Ribera in biodiesel' project was organized and managed by Agència Energètica de la Ribera (AER). This is a local energy agency co-financed by the Mancomunitat de la Ribera Alta and La Ribera Baixa, and the European Commission SAVE programme. The agency covered the direct cost of administering the project, which was around €000. A local company CENRESA (which collects waste oil) paid for the collecting tanks, at a cost of €10 000. The waste oil was converted to biodiesel by Bionet Europe, a company based in Reus. A local fuel distributor purchased the biofuel and delivered it back to the municipalities. The end users were 32 town councils, with each municipality paying for their biodiesel storage tanks, which cost a total of €70 000.

## How it worked

The project began in July 2003, when an agreement was signed between AER and CENRESA for the collection of waste vegetable oils from food industries and restaurants in the region. The energy agency also signed an agreement with 30 town councils to provide biodiesel for use in municipal vehicles and public transport. In 2004, collections of industrial waste oil began, and a progress report was sent to the Mayor of each town. This detailed the number of organisations involved with the project in each area, and the volume of oil collected. In total, 260 698 litres were collected from 418 premises. During the year, a further two towns also joined the scheme, bringing the total number of participants to 32.

CENRESA delivered the waste vegetable oil to Bionet Europe, a company based in Reus. Bionet used an established chemical process (transesterification) to convert the waste oil into biodiesel, which is also known as Fatty Acid Methyl Ester (FAME). A local fuel distributor was then used to deliver the biodiesel back to local municipalities, where it was dispensed to vehicles in the 32 town councils.

A new biofuel dispenser was also installed in the 'El Serrallo' petrol station in l'Alcudia. This provides commercial biofuel - B10 (a mix of 10% biodiesel and 90% conventional diesel) - which is available for use both by the town council and by private vehicles. Following the success of this initiative, it is planned to install a biofuel dispenser in every town that is involved with the project.

## Results

During the first year of 'La Ribera in biodiesel', the total number of restaurants and food businesses collaborating with the project increased by 58% to 418. This resulted in significant increases in collections of local waste oils, which would otherwise have ended up in sewers. The biodiesel produced was mainly used by four larger councils (and to a lesser extent by the other councils). This replaced hundreds of litres of fossil fuels, helping to reduce carbon emissions by local government vehicles.

The scheme also significantly raised local awareness of recycling and biofuels, both among businesses and consumers. The number of participating businesses is increasing steadily. Additional B10 biodiesel dispensers are being made available at petrol stations across the region. The collection of waste oils is being extended to domestic users. Tanks will be situated in public places, but with appropriate supervision.



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In addition, the project aims to extend the collection of waste vegetable oils to domestic homes. However, local councils are reluctant to locate oil collection tanks on streets, due to the risk of accidents. AER is now collaborating with councils and other organisations to identify appropriate 'safe' sites where local people could take their oil.

## Could it be repeated?

Waste vegetable oils are produced by homes, restaurants and food companies across Europe, so the raw material is widely available. However, to convert this raw material into a useable biofuel requires the participation of several partners; a waste oil collection company, a local biodiesel manufacturer and a fuel distributor. There also needs to be an established end user for the biofuel, for example a well organised group of local councils or a network of local petrol stations. Ultimately, the success of local waste-to-fuel projects depends on the ability of a central organisation - such as an energy agency - to ensure that all partners work smoothly together within the supply chain.

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# Stimulating the 'greening' of industry in rural Estonia

## The Rõuge Energy Park for renewable energy sources *Rõuge's Municipality, Estonia*

**Energy parks provide a central location where renewable energy technologies and energy efficient equipment can be developed and demonstrated to home owners, farmers, planners and industry. The Rõuge energy park in Estonia achieves these aims while providing a tourist attraction and sustainable employment within an agricultural community. The Energy Park attracts 40 000 visitors annually, provides specialist training courses and seminars, and promotes the development of biomass and hydroenergy schemes in South Estonia.**

### The aims of the scheme

Concerns about climate change and energy costs are making renewable energy and energy efficiency increasingly attractive to industry. However, business people often don't know what technology is available in their region, where to find the right equipment or how to get it installed. The Rõuge Energy Park aims to bridge this gap, by creating a single centre where a comprehensive range of energy saving advice is available, and where proven solar, hydro power and biomass energy solutions can be demonstrated. The energy park creates a supportive environment where energy professionals can develop an integrated model for sustainable energy supply, and provide a 'one-stop shop' for reliable information and training. The park also attracts thousands of visitors to the area, providing a welcome boost for the local rural economy. In addition, it provides a convenient gateway for European co-operation and transfer of energy experience into Estonia.

### The partners

The Energy Park project is led by the Rõuge Municipality located in South Estonia. The principle partners are Tourism Association of Maliena (Latvia, Aluksne region), the Estonian Alternative Energy Development Chamber, the Võrumaa Tourism Association, and the Business Advisory Centre of Võru County. Funding of €48 000 has been granted by Phare CBC SPF for seminars, publication of a handbook on hydroelectricity, equipment and a solar energy system. The 2365 local inhabitants are also important participants in this scheme, and support the tourism infrastructure that underpins the park. The project also depends on a network of various institutions and target groups, who facilitate the transfer of renewable energy technologies.

### How it worked

The Rõuge Energy Park was developed in two phases. The initial phase included planning and development of the core area. Sites were restored and developed to stimulate local business opportunities, while protecting the area's rural heritage. A demonstration centre was created for information, promotion and providing training courses and seminars on energy, environment and sustainable development.

Phase two involved the physical installation of various types of renewable energy systems. These include water turbines and pumps, bioenergy solutions, solar energy collectors and heat pumps, which are all used to generate green electricity and heat.

The solar thermal system is positioned on the roof of the Rõuge school building and is connected to heat pumps to create a universal system of heat supply. The solar energy system and heat pumps are equipped with energy meters. These are connected to a computer in the school, so that students (and anyone else who is interested) can follow the system's energy production on screen. An RETS (Renewable Energy Technology Simulator) has also been provided at the school. In addition, the project has set up a database on energy resources, technological solutions and infrastructure.

For ongoing management and monitoring of tourism sub-projects, a working group of the Rõuge Energy Park has been created. The main task of the working group is the selection and development of new components to be added to the tourism infrastructure in the Rõuge region.

## Results

As a demonstration project, the direct impact of the Rõuge Energy Park's biomass, solar and hydro power systems is limited. However, there are many extended benefits of the project. The park created 7 local jobs during development, and 3 long-term employees are required for day-to-day operations. Local employment and wealth has also been stimulated by an increase in visitors to the region. The park has helped to maintain a historic area that may otherwise have fallen into decline.

The main value of the park is as a catalyst for sustainable energy development in South Estonia. Specialist and engineering training courses at the park stimulate the 'greening' of businesses and industries. New ideas and opportunities are provided to local SMEs and farmers. A wide range of local people, including teachers, are also encouraged to attend courses and seminars on renewable energy generation and energy conservation. By combining recreational facilities with energy education in attractive surroundings, the park draws in 40 000 visitors each year. They all leave with greater knowledge and enthusiasm to introduce energy efficiency and renewable energy in their homes and work places.



## Could it be repeated?

Renewable Energy Parks are an excellent way to bring jobs and visitors to rural areas, while enhancing the environment. They are appropriate for any rural region where development needs to be balanced with conservation of local heritage and areas of outstanding natural beauty. The technology used in energy parks can easily be adapted to the renewable resources that are available locally (wind, solar, hydro or biomass). The formation of a strong partnership between local people, businesses, tourism organisations and energy professionals is the key to success.

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# Creating a 'positive climate' for PV in the heart of Italy

## PV Campaign within the Programme 'Photovoltaic Roofs 2003' *ALESA / Province of Chieti, Italy*

In many areas of Southern Europe the long hours of sunshine make photovoltaics (PV) an attractive option. However, even when the climate is right and buildings are available, local promotion is still necessary to get solar projects up and running. In the Italian Province of Chieti, the ALESA energy agency took advantage of the 'Photovoltaic Roofs 2003' programme, to launch a campaign to raise local awareness and implementation of solar energy. The agency worked closely with the Provincial Administration of Chieti, to promote Renewable Energy and Energy Efficiency to local citizens and companies. More specifically, the campaign increased installations of Photovoltaic with the support of a 70% subsidy, which was available for both public and private investors.

### The aims of the scheme

The overall objective of the ALESA promotional campaign was to spread the principles of sustainability to a 'vast and various' cross-section of the community in the Province of Chieti. In addition to generating local enthusiasm for renewable energy and energy efficiency, the promotion aimed to bring together citizens and local municipalities to participate in clearly focused projects, particularly in the area of photovoltaics. Through the organisation of meetings, seminars and workshops, the ALESA energy agency wanted to educate local people about the potential of solar energy. It also aimed to increase awareness of 70% subsidies for PV installations that were available under a wider support programme 'Photovoltaic Roofs 2003', which covered the whole of the Abruzzo region.

### The partners

The main partners in the PV promotional campaign were the ALESA energy agency and the Administration of the Province of Chieti, Energy and Environment Department. The project was self-financed, with all tasks carried out by salaried staff within the energy agency and the local administration. The information service was additionally funded by a small administration fee. This was paid by householders for assistance with their applications for financial support under the 'Photovoltaic Roofs 2003' scheme. During various phases of the awareness raising campaign, the energy agency also actively engaged with local authorities and decision makers, architects and engineers, and teachers and students in local high schools.

### How it worked

The campaign in the Province of Chieti was carried out in four distinct phases. In Phase 1, preliminary meetings were arranged with local authorities and decision makers in each of the region's three main areas - Chieti, Lanciano and Vasto. The principle theme of the meetings was 'Financial tools for the installation of PV on new buildings and refurbishment of existing buildings'. Phase 2 involved the opening of an information service at the offices of the ALESA energy agency.

The service provided information and advice to householders who wanted to apply to the Abruzzo region for financial support for installation of PV systems in the range 1kW to 20 kW. Phase 3 was designed to raise awareness among local architects and engineers. This was focused on an information day where presentations were made on the potential for developing the efficient use of energy in the Province of Chieti, and possibilities for increasing the installation of solar electricity systems. The fourth and final phase was centred on a campaign called 'The Solar School', which aimed to reach all students of high schools in the province. Representatives of the ALESA energy agency visited numerous schools, where they made multimedia presentations focusing on the potential of photovoltaics. The presentation explained to the students the objectives and positive outcomes of the year-long promotional campaign on solar energy. It also discussed, in more general terms, the environmental impact of energy use and ways the students could help reduce this.

## Results

The initial meetings in Phase 1 of the ALESA PV promotion campaign were attended by 34 out of 104 local municipalities in the Province of Chieti. During Phase 2, the energy agency supported 20 public bodies and 25 private citizens to submit funding applications for small scale photovoltaic systems. Following this, PV arrays with a power output of 20 kW were installed on 6 schools in the province, for an investment of €120 000 for each school. The meetings with engineers and architects in Phase 3 helped to create a local network of professionals keen to participate in future initiatives in the fields of energy efficiency and renewable energy.

25 high schools participated in the final phase of the project, which directly involved 1400 students. These energy consumers and decision makers of the future gained a much greater awareness of the impact of energy on the environment. They were enthusiastic in their support for initiatives and actions that will help reduce fossil fuel use, emissions and reliance on energy imports in the future.



## Could it be repeated?

Simple awareness raising campaigns are a very cost-effective way of increasing local knowledge about renewable energy and energy efficiency. By using energy agency staff and local officials to present seminars, information days and visits, costs can be kept to a minimum, while reaching a large number of local authorities, citizens, companies and teachers. The launch of local promotional campaigns requires an enthusiastic and pro active energy agency, and support from the local municipality. This can be gained by initial meetings with key decision makers, where the objectives and benefits of the campaign are clearly explained. It always helps to have a specific focus for the campaign, such as the promotion of financial subsidies, which act as a strong incentive for participation.

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# Energy crops help cultivate rural development in Poland

## Cultivation of energy crops - A chance for development in the rural areas of Podlaskie Voivodship

### *Podlaska Agency for Energy, Poland*

**Energy crops provide a double opportunity for sustainable development in rural communities. They help reduce carbon emissions and dependence on fossil fuel imports. They also provide a new source of income for farmers in areas where traditional agriculture is in decline. However, farmers do not always have access to the knowledge or support needed to cultivate and sell novel crops. In North East Poland, the Podlaska Agency helped overcome this barrier by organising information days and step-by-step seminars. These taught 125 local growers how to finance, produce and supply crops in the 'green energy' market. Local energy entrepreneurs were also targeted. As a direct result of this education programme, 200 hectares of new energy crops were planted and an increased market was created for them.**

### The aims of the scheme

A principle aim of the Energy Crops promotion in the Podlaskie Voivodship region of Poland, was to demonstrate to farmers the economic potential of cultivating crops such as willow and Helianthus for the expanding green energy market. Most power plants and CHP units in the region currently use coal. However, the Polish Government aims to produce 7.5% of power from renewables by 2010. This has already led to the development of a 50 MW biomass energy CHP unit in the region, and increased opportunities for co-firing at existing power sites. The Energy Crops project, coordinated by Podlaska Agency for Energy, aimed to build on this development by using existing energy crop professionals as 'role models' for other local farmers. In particular, the scheme aimed to encourage planting of energy crops on wasteland, thus providing additional environmental benefits.

### The partners

The Podlaskie Voivodship seminar programme focused on growers who were actively involved in producing and selling energy crops. They gave talks to farmers in the region who were interested in diversifying their activities, but didn't have practical experience of producing crops for green energy markets. The project was coordinated by the Podlaska Agency for Energy, who led the presentations. Talks were also given by other professionals from organisations active in the production and use of energy crops. The seminar

venues were provided for free by local authorities, who assisted in promoting the events to farmers in outlying regions. Representatives of energy companies also attended the events, and their involvement will increase during a new series of seminars and site visits.

### How it worked

From November 2004 to March 2005, seminars were organised in nine towns across the Podlaskie Voivodship region. These were coordinated by the Podlaska Agency for Energy, in cooperation with the local authorities in each town. Speakers were invited from institutions with expertise in energy crops, as well as growers with practical experience of cultivating energy crops and selling them to energy companies. The seminars were targeted both at farmers and energy entrepreneurs who were interested in diversifying into biomass

The Podlaska Agency was then assisted by local authorities to contact key target groups in each area, and encourage them to attend the seminars. The local authorities also provided the venues for free, which enabled the organisers to keep costs low and maximise participation. All the events followed a similar format, with an introduction to energy crops, followed by more specific presentations and a discussion session, enabling prospective energy crop farmers to address their own issues. The presentations covered methods of energy plant cultivation, such as short rotation coppice of willow, and use of biomass in the energy sector.



## Results

During a 4 month period, 125 farmers and energy professionals participated in 9 seminars across the Podlaskie Voivodship region. The events greatly increased local knowledge about energy crop cultivation and distribution. This directly resulted in an additional 200 hectares being planted with energy crops, and five new farms using biomass energy. The crops grown included *Salix* sp. (willow), *Helianthus* sp. (thopinambur), cane and rape. Some of the area used for cultivation of these crops was previously wasteland. So the scheme offered improvements in land management and environmental benefits

The involvement of energy professionals in the seminar programme also helped to develop the regional bioenergy market across North East Poland. Now that a network of farmers and producers has been established, it is aimed to increase the supply of energy crops for use in biomass power plants. This will help the region to meet its targets on use of renewable energy resources and reduce its dependence on traditional fuels, such as coal and heating oil.

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They also covered energy policy implementation in Poland and the EU, and sources of financing for energy crops. More general presentations addressed energy conservation, environmental impacts and air quality, as well as the functioning of energy markets in Poland and other countries. It is planned to follow the first phase of seminars, with a second series of events. This will include site visits to existing energy crop producers and greater involvement from local energy companies, helping to tighten the links between local producers and buyers of biomass.

## Could it be repeated?

Changes in the markets for agricultural food products and the way these are supported, mean that many farmers across Europe need to diversify into other areas to maintain incomes. At the same time, the rising cost of fossil fuels, and the need to increase security of energy supply in Europe, is creating more favourable conditions for biomass energy production. In particular, opportunities exist in areas where energy crop production offers socioeconomic benefits to declining rural communities. Financial support is still essential in many regions to make energy crop cultivation commercially viable for farmers. However, as the Podlaska Agency project demonstrates, simply opening up the channels of communication between farmers and energy companies can also yield impressive results. Seminars can easily be organised in other regions. But the success of these will depend on good cooperation between bioenergy experts, local authorities, agricultural organisations, energy companies, and a pro active local energy agency!

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# Further Information

The ManagEnergy initiative website (<http://www.managenergy.net/>) includes:

- Details of EU energy policies and funding opportunities
- Full contact details for local energy agencies across the EU
- A range of case studies and good practice from across the network
- Information on events
- Partner search facility
- Links to information on other websites

ManagEnergy also provides internet broadcasts of energy events, and an archive of online video recordings at:  
<http://www.managenergy.tv>

More information on the Intelligent Energy – Europe programme is available at  
[http://europa.eu.int/comm/energy/intelligent/index\\_en.html](http://europa.eu.int/comm/energy/intelligent/index_en.html)

The European Commission's Energy and Transport DG has a website with a wealth of information on EU policies in these two related fields. In particular it covers:

Renewable energy sources:

[http://europa.eu.int/comm/energy/res/index\\_en.htm](http://europa.eu.int/comm/energy/res/index_en.htm)

Energy demand management:

[http://europa.eu.int/comm/energy/demand/index\\_en.htm](http://europa.eu.int/comm/energy/demand/index_en.htm)

The Commission's 2000 Green Paper on security of energy supply can be found at:

[http://europa.eu.int/comm/energy\\_transport/en/lpi\\_lv\\_en1.html](http://europa.eu.int/comm/energy_transport/en/lpi_lv_en1.html)

The Commission's 2001 White Paper on transport policy can be found at:

[http://europa.eu.int/comm/energy\\_transport/en/lb\\_en.html](http://europa.eu.int/comm/energy_transport/en/lb_en.html)