Local Sustainable Energy Action Good Practices 2012
Energy saving is one of the most cost effective ways to enhance the security of our energy supply and the competitiveness of our industries while reducing emissions of greenhouse gases and other pollutants. This was once again recognised in the recent agreement on the new Energy Efficiency Directive.

ManagEnergy is one of the initiatives that play a key role in this effort by promoting energy efficiency and the use of renewables through practical actions both at the local and regional level across Europe. The projects described in this brochure show how well-designed activities undertaken by public and private organisations at the local and regional level can contribute to these goals.

ManagEnergy projects have already benefited households, businesses and public authorities across Europe. Wider subsequent application of the results of these actions will play an important part in the implementation of EU energy policy. This includes, among other things, capacity building for stakeholders on energy performance contracting, promoting the public sector as a role model for building refurbishment, improved efficiency of power and heat generation, and the adoption of smart grids and meters to help consumers optimise their energy consumption. In each of these areas, and more, ManagEnergy continues to show the way.

Meeting the energy challenge

Günther H. Oettinger
Commissioner for Energy, European Commission
Supporting local and regional sustainable energy actions

The ManagEnergy initiative was launched by the European Commission in 2002 to support local and regional energy agencies and other local actors in developing sustainable energy solutions. Today, ManagEnergy continues to facilitate strategic thinking on energy issues and support local actors in the capacity building process by helping make better use of available solutions for sustainable energy challenges.

As a technical support initiative of the European Commission’s Intelligent Energy Europe (IEE) programme, ManagEnergy assists actors from the public sector and their advisors, including:

- public authority energy specialists, urban planners, and elected officials (city, provincial and regional), especially signatories to the Covenant of Mayors;
- local and regional energy agencies with a public mission;
- other local and regional organisations (including NGOs) with a public mission, working on sustainable energy;
- political decision makers, including European (MEPs) and national parliamentarians;
- financial institutions and energy service companies;
- small and medium-sized businesses; and
- teachers, children and parents.

The role of local energy actors, and, in particular, municipalities and regions in Europe, has been emphasised in recent European energy policy. Local and regional authorities together with their stakeholders — energy professionals, energy producers, energy agencies and SMEs, as well as NGOs, consumer associations and local financial actors — have key roles to play in the implementation of EU policy. In particular, they contribute by promoting the use of renewable energies and improvements in energy efficiency.

Still, many local and regional authorities could benefit from external support; there are many municipalities and regions in Europe that have not yet prepared plans for their future energy use, for sustainable development, or for mitigation and adaptation to climate change. The ManagEnergy initiative is intended to provide active support to authorities in this area. One way it does so is through the collection and dissemination of good practice examples, which increasingly abound.

Indeed, many local and regional authorities have already designed comprehensive sustainable energy action plans and are now beginning to mobilise the investments needed to realise them. Many are also setting targets even more ambitious than those agreed upon at the national or European level — particularly within the framework of the Covenant of Mayors.

The ten cases that follow represent some of the best ongoing examples from across Europe. Each should offer inspiration to readers and help decision makers pick out what ideas are helpful in their own approach towards implementing sustainable energy solutions.

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Intelligent Energy Europe (IEE)
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In 1997, the Danish island of Samsø entered a renewable energy competition sponsored by the Danish Ministry of Environment and Energy. The challenge was for competing islands to present a convincing master plan for converting their entire energy systems to renewables within a period of 10 years. Samsø won by submitting the most feasible plan. It was also ambitious: today the island supplies more than enough energy to cover its entire electricity needs. Instead of importing energy, Samsø now exports enough wind-generated power that its overall CO$_2$ emissions represent a negative figure: - 3.7 tonnes per year. To achieve this, €60 million has been invested in the island, 70% of which has come from the private investment of Samsingers themselves.

In 2007, the island established the Samsø Energy Academy, part of whose mission is to draw attention to energy use on the island and help locate energy savings and reductions in CO$_2$.

Now, through a new initiative called Samsø 2.0 – Energy Education, the academy seeking to fulfil this mission and help the island set an example for Denmark’s ambition of reaching 100% fossil fuel independence by 2050. The academy believes they can do it faster — by 2030. And based on the island’s past success, the Danish government is now backing Samsø’s efforts through the national budget.

Results

While the island’s past success was based mostly on the production of energy, the new initiative takes an integrated approach, focusing more on consumption. As Søren Hermansen, director of the Samsø Energy Academy, pointed out, ‘You can’t always produce your way out of a problem.’ Indeed, since the island first started down the renewable energy path, electricity demand has risen.

The continued support and engagement of Samsingers themselves is not only key to the island becoming fossil free, but also forms part of the new initiative’s main objective: to develop new education and communication platforms that will inspire and energise the process anew.

Samsø 2.0’s goals reach far beyond the island itself, though; it also aims to develop the Samsø Energy Academy into a prime destination for sustainable energy planning and capacity building, and to help establish a wider international network of energy academies. The academy already hosts thousands of other researchers and policy makers each year who are interested in learning about the social impact and financial structure of local ownership of renewable energy systems.

Replicability

Today Samsø is the centre for local energy education. Every year, more than 5000 people visit Samsø to learn about sustainable energy planning and awareness. The Energy Academy offers programmes for everyone from schoolchildren to local politicians.

The network established is one of the strongest lessons learned. ‘We have learned from the previous process that part of success involves good planning, technological know-how, and expertise,’ said Hermansen. ‘But the other part is local understanding and local capacity building. Because if people are not aware of the possibilities and don’t understand the potential of certain measures, you reach a standstill.’

This knowledge is shared with satellite islands making similar plans and information initiatives. Samsø 2.0 – Energy Education represents a new paradigm in education. Involvement, ownership and active citizenship are core values here.

Islands have an opportunity to lead the process of meeting the EU 20-20-20 targets. In cooperation with EU partner islands the ambition is to reach 100% fossil independence in 2030. Islands are highly relevant and useful test communities. The lessons learned will enable cheaper and easier solutions to be replicated on a large scale.

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Fact file:

To become a fossil free community, the island aims to:

• renovate the existing building stock on Samsø (approximately 1,800 houses) to reduce energy consumption - by 30% for private users and 5% for industry by 2020
• develop a more flexible energy system to accommodate both solar and wind generation, and replace 21 old wind turbines with new and more effective turbines
• reduce fossil fuel use for home heating by replacing all oil-burning furnaces (758 houses on Samsø) with wood burners or heat pumps for buildings outside the district heating grid, and expand the existing coverage of the district heating grid, which runs on renewable energy
• establish a facility to produce biogas for transportation (buses and ferries) and agricultural use, preliminary estimations show that Samsø is capable of producing 5 million m³ of biogas per year
• replace all gasoline cars with electric cars, which can be charged using the island’s surplus electricity (the goal is that by 2020, 50% of the car fleet will consist of electric cars, and 40-50% of the heavy transport vehicles will use biofuel)
• provide new tools to allow Samsingers to monitor their energy use.
Samsø 2.0 – Energi uddannelse
(Samsø Energiakademi, Danmark)

Ø går efter at blive fossilfrit samfund


Den var også ambitiøs: I dag producerer øen mere end rigelig energi til at dække øens elforbrug. I stedet for at importere energi, eksporterer Samsø nu så meget elektricitet baseret på vindkraft, at øens CO₂udledning repræsenterer et negativt tal: -3.7 tonnes pr. år pr. indbygger. For at opnå dette er der blevet investeret 440 millioner kroner på øen, 70% er private investeringer foretaget af samsingerne selv.

I 2007 etablerede øen Samsø Energiakademi, hvis mission blandt andet er at øge opmærksomheden på energiforbruget på øen og hjælpe med at finde energibesparelser og CO₂ reduceringer.

Gennem et nyt initiativ kaldet “Samsø 2.0 – Energi uddannelser” søger Akademiet nu at opfylde denne mission og hjælpe øen ved at sætte et eksempel for Danmarks ambition om at nå 100% fossil brændsel uafhængighed i 2030. Akademiet mener at de kan gøre det hurtigere – nemlig i 2030. Og baseret på øens tidligere succes, støtter den danske regering Samsøs bestræbelser gennem finansloven.

Resultater


Den fortsatte støtte og engagement af samsingerne selv er ikke kun nøglen til at øen bliver fossil fri, men er også en del af det nye initiativs hovedmål: at udvikle nye uddannelses og kommunikations platforme der vil inspirere og på ny give energi til processen. Samsø 2.0s mål rækker dog langt ud over selve øen; der sigtes også efter at udvikle Samsø Energiakademi til en førsteklasses destination for bæredygtig energiplanlægning og kapacitetsopbygning og hjælpe med at etablere et vidtrækkende internationalt netværk af Energiakademier.

Akademiet besøges allerede af tusinder af forskellige forskere og politikere hvert år, der er interesseret i at lære om den sociale virkning og finansielle strukturer ved lokal ejerskab af vedvarende energisystemer.

Anvendelig


Øer har en mulighed for at lede processen med at nå EU’s 20-20-20 mål. I samarbejde med EU partner-øer er ambitionen at nå 100% fossil uafhængighed i 2030. Øer er meget relevante og brugbare test samfund. De erfaringer, der opnås, vil muliggøre billigere og lettere løsninger, der kan gentages i en større skala.

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For at blive et fossil frit samfund, har øen til hensigt at:
• renovere den eksisterende bygningsmasse på Samsø (ca. 1800 husstande) for at reducere energiforbruget – 30% for private forbrugere og 5% for erhverv i 2020
• udvikle et mere fleksibelt energisystem for at rumme både sol og vindenergi og erstatte 21 eksisterende vindmøller med nye og mere effektive møller
• reducere brugen af fossile brændsler til opvarmning i de private hjem ved at erstatte alle oliefyr (758 huse på Samsø) med træpillefyr eller varmepumper for bygninger, der er udenfor fjernvarmenettet, og udvide den eksisterende dækningsfjernvarmenettet, der kører på vedvarende energi
• etablere et biogasanlæg for at producere biogas til transport (busser og færger) og til brug i landbruget, foreløbige skøn viser at Samso er i stand til at producere 5 millioner m3 biogas om året
• erstatte alle benzindrevne biler med elbiler, som kan lades op ved at bruge øens overskud af strøm (målet i 2020 er at 50% af bilparken består af elbiler, og 40-50% af den tunge transport vil bruge biobrændsel)
• tilvejebringe nye værktøjer der giver samsingerne mulighed for at overvåge deres energiforbrug
Energy Efficiency Measures in Multi-Residential Buildings
(Zemgale Regional Energy Agency, Latvia)

Energy Efficiency Measures in Multi-Residential Buildings is an initiative of the Zemgale Regional Energy Agency (ZREA) in Latvia. The agency supports the national programme at the local level and enables the refurbishment of multi-residential buildings. Two out of every three Latvians live in multi-residential buildings, 90% of which were built between 1948 and 1989 — a period not marked by energy efficiency in buildings. These buildings account for more than 60% of total energy consumption. To address this issue, ZREA facilitated the improvement of energy efficiency in multi-residential buildings through a range of technical assistance measures, and ensured that information is available for residents and building owners.

**Results**

Several multi-residential buildings have already been fully refurbished under their activities: one in the city of Jelgava, two in Jekabpils, one in Iecava county, four in Ozolnieki, three in Auce and others across the region. And the process is ongoing: by autumn of 2012, renovations will be completed for six multi-residential houses in Ozolnieki County, and three other houses in the city of Jelgava. The agency’s target is to help refurbish as many multi-residential buildings as possible in each of the region’s 22 municipalities.

Co-financing provided by the government offers a significant incentive for owners to renovate. This funding comes from the National Operational Programme for Infrastructure and Services, which is supported by the European Regional Development Fund. ZREA provides technical assistance to residents by first convincing them of the necessity of the renovation, by highlighting the benefits after renovation, helping to organise the meeting of the apartment owners, helping to outline the technical details of the renovation, collecting the requested documentation, and by helping draft the funding application.

The co-financing rate offered by the programme is 50%, with a maximum support of €50 per m2 of heated floor area. The remaining 50% is contributed by the owners themselves and is commonly covered by bank loans. The loans typically have a payback period of 8 to 12 years.

The monthly loan payment of approximately €45 is almost entirely compensated for by the savings that result from the efficiency measures. Between 2009 and 2011, more than 50 refurbishment applications were approved by the Investment and Development Agency of Latvia, which manages the National Operational Programme for Infrastructure and Services.

**Replicability**

In line with the EU’s policy priorities on energy efficiency, ZREA aims to renovate half of the multi-residential buildings in the region by 2020. Such an action would generate energy savings of up to 40%, reduce CO$_2$ emissions by 12,800 tonnes, and help create new jobs in the building renovation and energy services sectors. The initiative provides a useful model for other EU countries where multi-residential buildings also represent a large part of the building stock and the CO$_2$ burden.

The most challenging step of the refurbishment process is convincing home owners of its need and benefits. For this reason, ZREA launched extensive communication and information campaigns. These include both seminars and one-on-one consultations with owners, emphasising the benefits of refurbishment, which include improved living environments, increased property values and energy savings.

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(Zemgales regionālā Enerģētikas aģentūra, Latvija)

Finanšu iniciatīvas un informatīvās kampanās dzīvojamo ēku renovācijai


66% Latvijas iedzīvotāju dzīvo daudzdzīvokļu ēkās, kas 90% gadījumu būvētas no 1948. līdz 1989. gadam - laikā, kad ēku energoefektivitāte netika uzskatīta par svarīgu. Šīs ēkas patērē vairāk nekā 60% no kopējā enerģijas patēriņa.

Lai uzlabotu situāciju šajā jomā, ZREA veica virkni tehniskās palīdzības pasākumu, lai uzlabotu energoefektivitāti daudzdzīvokļu ēkās, un nodrošināja, ka informācija ir pieejama iedzīvotājiem, kas ir šo ēku īpašnieki.

Rezultāti


Līdzfinansējums, ko piedāvā valdība, nodrošina ievērojamu stimulu īpašniekiem atjaunot viņu īpašumu. Līdzfinansējums, kas piedāvāts, ir saskaņots ar Eiropas Savienības naudas instrumentu direktīvu "Energoefektivitāte". Līdzfinansējuma daudzdzīvokļu ēkām ir noteikta 50% līdzfinansējuma. Atbalsta apjoms nevar būt lielāks, kā € 50 par m2 apkurinātā platības. Atlikušos 50% īpašnieki paši, parasti tiek ņemts bankas aizdevums. Aizdevums nāk no Nacionālās Rīcības programmas infrastruktūrai un pakalpojumiem, ko atbalsta Eiropas Savienības Investīciju un attīstības fonds. ZREA sniedz tehnisko palīdzību iedzīvotājiem, vizuāli pārliecinot īpašniekiem par renovācijas nepieciešamību un ieguvumiem pēc renovācijas.

Aktivitātes atkārtošanas iespējamība

Saskaņā ar ES politikas prioritātēm enerdoefektivitātes jomā, ZREA mērķis ir līdz 2020. gada beigām atjaunot puse no daudzdzīvokļu ēkām reģionā. Tas varētu ietaupīt enerģiju par 40% un samazināt CO₂ emisijas par 12 800 tonnām. Aktivitāte palīdzētu radīt jaunas darbavietas renovācijas darbos un enerģijas pakalpojumu nozarē. Iniciatīva sniedz noderīgu paramāri citām ES valstīm, kurās daudzdzīvokļu ēkas sastāda diezgan lielu daļu no dzīvojamā fonda un rada lielu CO₂ apjomu.

Vislielākais izaicinājums renovācijas procesā ir mājas dzīvokļu īpašnieku pārliecināšana par renovācijas nepieciešamību un ieguvumiem. Tādēļ ZREA veic plašu informatīvo kampaniju, kas ietvērā gan individuālas konsultācijas īpašniekiem, uzskatot ieguvumus pēc renovācijas - kā labāku dzīves vidi, augstāku īpašuma vērtību un enerģijas ietaupījumu.
Community Power Cornwall
(Community Energy Plus, United Kingdom)

Rural communities lead on local renewable energy investment

In the UK, awareness of climate change and its relation to energy supply is at an all-time high. The current technological and legislative context now offers significant financial incentive for the expansion of renewable energy systems, and this has created an attractive environment for shared investment in renewable energy technologies. Community Power Cornwall is a cooperative that enables local communities to own and benefit from these technologies.

The two most significant barriers facing communities that wish to install renewable energy facilities are a lack of options for raising finance and difficulties in securing planning permission for projects. Traditionally, banks and financiers are reluctant to back community-led projects, and planning applications for wind turbines are often met with opposition from local residents. Community Power Cornwall assists communities with both challenges.

Community Power Cornwall's initial development was supported through a partnership between Community Energy Plus, an accomplished fuel poverty charity, and Social Economy and Co-operative Development (Kabin), with finance from Cornwall Council.

Results

So far, Community Power Cornwall has successfully applied its financing model to the development of two new wind turbines in the Cornish village of Gorran, each with an installed capacity of 80kW. The local community has raised £80,000 (approx. €100,000) through their share issue, which is a considerable amount for such a small community. Combined, the turbines are expected to save 251 tonnes of CO₂ per year.

‘It’s going to benefit us in quite a direct way because we’ll get some of the money back from the electricity that’s being sold to grid, and we’ll be able to have a low carbon fund to get on with more projects like solar panels or insulating public buildings,’ said Ella Westland, Convener of Gorran Community Energy Group.

While the cooperative’s initial focus is on wind-generated electricity — for sale on the national grid — they are in the process of developing a portfolio of other renewable energy technologies including biomass, hydro and solar.

The cooperative currently takes advantage of the financial incentives offered by the UK’s feed-in tariff scheme, and expects to pay shareholders a return of 1% in year one rising to 7% in year five. Low carbon funds are also set up in each of the host communities, and surpluses made through the ventures can be allocated to reinvestment in future local renewable generation capacity and broader low carbon activities.

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Replicability

Community Power Cornwall was designed in such a way that it does not rely on grant funding and is able to raise its own capital, which ensures the continuity of the project in Cornwall and its potential replicability in different contexts.

Community Energy Plus, the cooperative’s promoter, is currently working with over 50 Cornish communities who are at various stages in the development of their projects. One of the key aspects of the charity’s work is delivering educational and training events to instil in residents an understanding of behaviours that reduce energy use before they consider renewable energy technologies.

Community Power Cornwall’s model, which has already proven valuable to local communities like Gorran, would be easily transferrable around the UK and more widely across Europe. The cooperative offers inspiration to other communities that share similar characteristics to Cornwall (are rural, not connected to a gas grid and have poorly insulated buildings), and who wish to reduce carbon emissions while securing their energy supply through investment in the local economy.
Energy Management in North Tipperary Local Authorities
(Tipperary Energy Agency, Ireland)

Cross-functional team ensures better energy management

North Tipperary Local Authorities administer an area with a population of 79,000 people in rural Ireland. The Local Authority (LA) was a founding member of the Tipperary Energy Agency (TEA), which manages energy use in the LA, and has done so since 1998. Under the Irish transposition of the Energy Services Directive, all LAs in Ireland must save 33% of their energy use by 2020 and be an exemplar for the rest of society as a whole. In addition, there is severe cost pressure in public bodies due to the economic downturn and the collapse of central government revenues. The TEA in conjunction with local authority management has setup a cross functional team supported by the technical experts in the TEA. This team has implemented an annual programme of energy savings initiatives over the last three years resulting in substantial savings. The Sustainable Energy Authority of Ireland has produced a report on public sector energy saving, providing independent verification of these savings.

Results

Over 37 separate energy saving or renewable energy initiatives have been completed within the past three years by the local authority and over 200 local authority houses have been upgraded (40+% energy savings). The main barrier to be overcome initially was the establishment of a coherent programme to analyse and carry out the proposed initiatives.

This was achieved by engaging with the senior management team in 2008, establishing a cross-functional team of senior engineers and staff in each section, and requiring each department to establish their own energy management plan per annum. All this work is technically supported by the TEA. The 37 energy initiatives include:

- replacement of 4 large pumps for more efficient, better sized, variable speed and advanced controls;
- a water conservation programme to reduce unaccounted for water by 14%;
- variable speed pumps with dissolved oxygen control in multiple waste water plants;
- installation of three large biomass boilers (1.5MW installed capacity, 3GWh per annum) saving 900 tonnes of CO$_2$, and almost €120,000 per annum in energy costs;
- re-commissioning a building management system in a large public building, lighting controls, server virtualisation, server ambient air cooling, air tightness, staff training and retrofit lighting installations with higher efficiency lighting reducing the energy consumption from 121kWh/m$^2$ to 80kWh/m$^2$ for 2010 and expected to be 70 kwh/m$^2$ by the end of 2012;
- comprehensive retrofits in 13 small buildings including 5 fire stations and several water treatment plants. These upgrades included wall and roof insulation, low energy lighting, lighting controls, heating controls, high efficiency boilers where appropriate and external lighting controls;
- green procurement of 6 vehicles, eco-driving training of drivers;
- public lighting upgrades in 4 areas, replacing 80W high-pressure sodium lamps with 55W compact florescent lamps.

In Ireland, the Sustainable Energy Authority of Ireland is tracking the performance of public bodies in improving their energy efficiency in line with the methodology established under the Energy Services Directive. This has shown to date an 18% improvement in energy efficiency over the 2006 to 2010 period.

Replicability

The reduction in energy consumption and CO$_2$ emissions since 2008 has been achieved by focusing on projects with large potential for energy savings. Success factors that could be replicated in any organisation include:

- A cross functional team to identify potential projects for further investigation in each section of the local authority.
- Thorough energy audits conducted at prioritised sites, with clear, concise recommendations made for management to act on.
- An initial focus on projects that offer good financial payback in order to ensure continued efforts.
- All elements of projects follow established best practices.

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Réunion Island is a French overseas department, with a population of more than 800,000 residents. Most (67%) of the island’s electricity is produced from imported fossil fuels. However, Réunion Island has great potential in renewable energy: in Europe it is second only to Cyprus in market penetration of solar installations, with more than 566 m² for every 1,000 residents. Solar-heated water represents a great potential for energy savings: an average of 1,500 kWh (about €150 worth) per year. The average solar water heater costs around €2,500. However, this investment is beyond the reach of many households; more than 50% of Réunion residents live below the poverty line and struggle to pay their energy bills. The Réunion Island Regional Energy Agency (ARER) is a non-profit association that promotes renewable energy and energy management. ARER offers free advice to residents on how to reduce energy and energy costs, and connects many local authorities and private partners.

Results

As a link between people and institutions, ARER raises funds for energy saving and helps Réunion residents acquire grants. ARER supports Réunion residents in applying for two types of grants for solar water heaters:

1. The Village Solaire (solar village) grant: a partial financing (about €500) by the local authorities of the solar water heater, intended as a top-up grant.

2. The E.Co.Solidaire grant: a partial or total financing (up to €3,000) of the solar water heater, funded by Régional Council, Electricity of France (EDF) and some social municipal action centres (CCAS). This is for families in a poverty situation identified by the CCAS, who cannot complete the financing of the solar water heater.

Since the start of the project, 310 families across several municipalities have installed water heaters using the Village Solaire grants. The E.Co.Solidaire operation has only recently begun (November 2011). So far, 349 families have applied for the grant, and 171 grants have been awarded by the Regional Council. 171 solar water heaters have been installed.

This has resulted in savings of 721,500 kWh and emissions of up to 590 tonnes of CO₂ per year. At the end of the ongoing Village Solaire operations, 822 solar water heaters will be installed, and 600 solar water heaters will be installed from the E.Co.Solidaire operation. Combined, the two operations should save 2,133,000 kWh of electricity and 1,747 tonnes of CO₂ per year.

Replicability

Similar actions to those of ARER’s on Réunion could be beneficial anywhere in Europe where the conditions below exist:

- Public authorities are committed to an energy/climate strategy;
- the local population is subject to energy and/or social poverty;
- and
- the solar sector is well established.

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**Un coup de pouce pour mon eau chaude solaire** *(ARER - Agence Régionale Energie Réunion, La Réunion, France)*

Des chauffe-eau solaires pour aider les ménages en précarité énergétique

L’île de La Réunion est une région française d’outre-mer, qui compte un peu plus de 800 000 habitants.

Plus de 67% de l’électricité de l’île est produite à partir de ressources fossiles importées… Cependant, l’île de La Réunion est dotée d’un fort potentiel en énergies renouvelables : elle est placée au second rang européen derrière Chypre en terme de pénétration de l’énergie solaire thermique, avec plus de 566 m² de capteurs thermiques pour 1000 habitants.

L’eau chaude solaire représente un fort potentiel d’économies d’énergie : en moyenne 1 500kWh (environ 150€) par an. Le coût moyen d’un chauffe-eau solaire est de 2 500€.

Cependant, cet investissement reste important pour une majeure partie de la population : plus de 50% de celle-ci vit en dessous du seuil de pauvreté et ont du mal à faire face à leurs factures d’énergie.

L’agence régionale énergie réunion (arer), est une association de type loi 1901 à but non lucratif, qui a pour objet social la promotion des énergies renouvelables et de la maîtrise de l’énergie. L’arer propose ainsi des conseils gratuits pour réduire sa consommation d’énergie et son coût, et fédère les collectivités locales et les partenaires privés.

**Résultats**

En sa qualité d’interface entre les institutions et la population, l’arer mobilise des financements pour la maîtrise de l’énergie et accompagne les Réunionnais pour les obtenir. L’arer aide ainsi la population à mobiliser deux types d’aides pour l’acquisition de chauffe-eau solaires :

1. Les primes “Villages Solaires” : un financement partiel du chauffe-eau solaire (environ 500€) par les collectivités locales (commune, intercommunalité)
2. La subvention E.Co.Solidaire : un financement partiel ou total (jusque 3 000€) du chauffe-eau solaire, par la Région Réunion, Electricité De France (EDF – île de La Réunion) et certains Centres Communaux d’Action Sociale (CCAS). Cette subvention s’adresse aux familles en situation précaire identifiées par les CCAS, qui ne peuvent compléter l’investissement dans un chauffe-eau solaire.

L’arer coordonne les aspects financiers et opérationnels avec les différents partenaires des opérations, fournit une information aux familles et mobilise les professionnels afin de fournir des solutions techniques et financières adaptées. L’arer vérifie tout au long des opérations la conformité technique des chauffe-eau solaires et des procédures administratives.

Depuis le début du projet, 310 familles des différentes communes ont installé des chauffe-eau solaires à travers les primes “Village Solaire”.

Le dispositif E.Co.Solidaire a débuté récemment (novembre 2011), mais 349 familles sont d’ores et déjà inscrites dans le dispositif et 171 chauffe-eau solaires ont été installés.

Cela a permis d’économiser 721 500kWh et d’éviter le rejet de plus de 590 tonnes de CO₂ par an.

Au terme des opérations « Villages Solaires », 822 chauffe-eau solaires seront installés, et 600 à travers le dispositif E.Co.Solidaire. Cela permettra d’économiser 2 133 000kWh et d’éviter le rejet de 1 747 tonnes de CO₂ chaque année.

**Duplicabilité**

Des actions similaires à celles menées par l’arer à La Réunion peuvent être menées dans les régions qui possèdent les caractéristiques ci-dessous :

- Des collectivités locales engagées dans une stratégie énergie/climat
- Une population concernée par des situations de précarité énergétique et/ou sociale
- Un marché de l’énergie solaire bien implanté
- Une équipe de communication de proximité sur les questions relatives à l’énergie.
Local employment from fossil free plans

To reduce CO₂ emissions, Kristianstad municipality is working on converting its oil and electricity heated houses to a district heating system. The municipal company, C4 Energy, which owns the heating system, has been working since the mid-1980s on replacing all oil with biofuel. Today large parts of the city are served by district heating and new areas are continually added. The project contributes significantly towards the municipal goal of becoming fossil fuel free while reducing dependency on imported oil.

The district heating system in Kristianstad was originally established in the early 1980s. At that time, it ran entirely on oil. Then, in 1995, a biofuel-powered combined heat and power (CHP) plant was built to feed the system called Allöverket. Since the start of its operation, Allöverket has reduced the municipality’s carbon dioxide emissions by more than 120,000 tonnes.

Results

The combined heat and power capacity of Allöverket’s main plant is 75 MW (60 MWth + 15 MWel), which simultaneously generates ‘green’ heat and electricity. In two villages, Fjälkinge and Åhus, small-scale district heating plants using biofuel were established between 2000 and 2003. In 2009, the locality of Åhus was then connected to the Kristianstad CHP plant.

To help power the plant, waste from forestry, which is used as a fuel, is taken from within a radius of 100 km. Biogas from the landfill and from a biogas production plant in Karpalund—which uses fermented organic waste and manure—is also used as fuel in Allöverket, together with biodiesel that comes from the local food industry (for example waste oil from pommes frites production). Since 1983 the amount of renewable fuel used has increased significantly—up to 99%.

To increase energy efficiency in Allöverket, flue gas condensers were installed in 2003 and 2008. While the flue gas is not itself a fuel, it does contribute to the plant’s heat production, capturing what would otherwise be lost. The heat that the condenser recycles is essentially free (the only costs being for the equipment).

The project has created local employment opportunities: 40 jobs in direct production and over 100 among entrepreneurs, transporters, and foresters. The project is ongoing and new buildings and areas are added to the district heating system every year. The project is financed by its customers.

Replicability

It is possible to replicate what has been achieved in Kristianstad in an economically viable manner. The approach followed here has been to establish small district heating systems in areas with sufficient heat demand. In addition, it is advantageous to tie the district heating systems together using larger boilers (similar to those found in Allöverket) to supply heat to the distribution network and to allow for electricity generation in combined heat and power mode. A key success factor in Kristianstad has also been the nearby forests, which provide easily available biomass fuel for the CHP plant.

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Fossilbränslefri fjärrvärme i Kristianstad
(Kristianstads kommun, Sverige)

Fossilbränslefri fjärrvärme skapar sysselsättning i Kristianstad


Projektet har skapat lokala arbetstillfällen: 40 jobb i direkt produktion och över 100 bland företagare, transportörer och skogsbrukare. Projektet pågår och nya byggnader och områden läggs till fjärrvärmenätet varje år. Projektet finansieras av sina kunder.

Replikering

For att upprepa vad som har uppnåtts i Kristianstad, och göra det ekonomiskt lönsamt, är det viktigt att börja med små fjärrvärmesystem i områden med tillräcklig värmebehov. Därefter, såsom görs i Kristianstad, är det fördelaktigt att binda samma fjärrvärmesystemen och använda stora pannor (liknande Allöverket) för att värma nätet. En viktig faktor i Kristianstad har också varit de närbelägna skogarna, som ger lätt tillgängliga biobränslen för kraftvärmeverket.
Green Vehicles (Reykjavik City, Department of Environment and Transport, Iceland)

Green procurement strategy for city fleet

Reykjavik’s long term goals regarding climate change are to achieve a 35% reduction in net emissions by 2020 and a 73% reduction by 2050 compared to 2007 levels. The main emissions are from road transport—close to 70%. Almost all electricity and space heating in the city is provided from renewable energy sources: hydro and geothermal. Therefore, the main opportunity to lower GHG emissions in Reykjavik city is by conserving energy in transportation. The main focus has been on replacing fossil fuel for transportation with biogas. Reykjavik has produced biomethane from its landfill since 1996. In the early years, the gas was flared to reduce GHG emissions. In 1999 a company was established to handle the production and marketing of energy made from methane. In 2000 a filling station was opened and the first 21 dual fuel cars were imported. In 2005 the City of Reykjavik bought its first methane powered cars, a waste collection truck and two buses. A further eight methane powered waste collection trucks were procured in the following two years.

Results

An important milestone in using methane as a vehicle fuel was in 2008 when a 10 km gas pipeline was laid from the production site to the filling station. The original station was fitted with an additional four pumps and a second station was opened. By 2008, 90% of the waste collection trucks in Reykjavik ran on biomethane.

In order to lower the environmental impact of the city car fleet, another important step was taken in 2011: green procurement procedures for cars were introduced. The move was very effective and Reykjavik added 49 methane powered city cars to their fleet replacing petrol cars. Today almost 50% of the car fleet is run on biomethane and there is an ongoing project to purchase more methane powered cars.

The biomethane consumption was approximately 32,603 Nm³ in 2007. By 2011, biomethane use was 127,470 Nm³; equivalent to 143,000 litres of petrol. The energy savings over the last 5 years total 4,610 MWh and 1,384 tonnes of CO₂. The total fuel savings equals 590,000 litres of petrol. Today fossil fuel use of municipal cars is about 100,000 litres, approximately 260 tonnes of CO₂ per year.

Replicability

The local authority is an important leader in a project like this. To get the ball rolling and investment in the necessary infrastructure, initial biogas use in the vehicle fleet has to be relatively high. Therefore, methane gas driven waste collection trucks and buses were an important part of the project.

Centralised green procurement of a large percentage of the city car fleet was also an important boost for the project. The methane gas technique is well developed. Raw materials for biomethane production are various, including biodegradable waste, sewage sludge, pig and poultry manure and seaweed. There are therefore many opportunities to start and grow production.

Today, more than 50% of the Reykjavik City fleet is methane driven and this number will increase with the additional procurement of methane driven light commercial vehicles in the near future. The key success factors of this project were the collaboration between the biomethane producer and the city, and ensuring high biomethane consumption during the first phase by procuring methane powered buses and waste collection trucks.

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Mayor of Reykjavik, Jón Gnarr (left) and his assistant, S. Björn Blandal
Vístvænir bílar (Reykjavíkurborg, Umhverfis- og skipulagssvið, Ísland)

Vístvæn innkaupasteftna við bílakaup borgarinnar


Árangur og áhrif

Mikilvægum áfanga metannotkunar var nág við lagningu 10 km pipeline frá framleiðslustað að afyllingarstoð árið 2008. Á afyllingarstoðinni voru 4 pumpur og önnur afyllingarstoð voru opnað skómmu síðar. Árið 2008 var 90% sorphirðubifreiða knúnar af metani.

Stórt skref var tekið árið 2011 í þá átt að lágraka umhverfisáhrif bílaflotans en þá fór fram opinbert útboð á vístvænum bílum. Útboðið var árangursrátt og Reykjavík bætti 49 metanbílum við flotann en þeir komu í staðinn fyrra bíla sem brennu jardæfnaeldsneyti. Í dag, árið 2012, er u.b.b. 50% bílaflotans knúinn metani.

Notkun á metani árið 2007 var 32,603 Nm³ og fær vaxandi meðal borgarbúa. Árið 2011 var notkunin komin upp í 127,470 Nm³ sem veittir orku sem er sambærileg við 143.000 litra af jardæfnaeldsneyti. Orkupamadurinn síðustu 5 ár er 4.510 Mwh og 1.384 tonn af CO₂-Aætla má að heildarþvermaður á jardæfnaeldsneyti sé um það bil 590.000 litrar. Bílafloti borgarinnar nýtir í dag um 100.000 litra af jardæfnaeldsneyti á hverju ári. Ef borgin myndi hættu notkun á jardæfnaeldsneyti gætu sparast árlega um 260 tonn af CO₂ igildum.

Endurtekningarmöguleikar


Í dag er númlega helmingur bílaflotas Reykjavíkurborgar metan bilar og mun hlutfall þeirra aukast enn frekar í kjölfari á útboðum á metan bílum á næstunni.

Árangur verkefnisins liggur í góðu samspili framleiðanda í þessum og borgarinnar en einnig að notkun metans í starfsemi borgarinnar, strætisvögunum og sorpbíllum, hefur farið sivaxandi frá upphafi verkefnisins.
Vocational school embraces environmental technology training

At the EUC Nordvest school for vocational training in the north western region of Denmark, training in energy-saving and environmental technologies is recognised as playing a vital role in the move to a low carbon future. This prompted students and local building professionals to construct a low emission building at the school’s grounds in Thisted, to enhance hands-on knowledge of low emission construction and energy efficiency in buildings.

The project began in March 2010 with a conference at EUC Nordvest where a competition for the architectural design of the house was launched. The students entered 28 proposals and a winning design by 1st year student Watjara Sakares was chosen. In May 2011 EUC Nordvest began the building process. Work continued uninterrupted, except by summer break, and in September 2011, the topping-out ceremony was held. The house was completed in March 2012.

The project is funded by three major contributors: Dansk Energi (a business association of Danish energy utilities), EUC Nordvest and local building professionals. Partners are Dansk Energi, EUC Nordvest, Thisted Municipality, local building professionals and contractors, an architect, and a civil engineer.

Results

The low emission house is 254 m² and fitted with 6kW solar panels. Energy consumption is estimated at 9.2 kWh/m² per year. All energy consumption, including lighting, is included in this calculation taking into account the output of the solar panels. This figure is far below what current and future Danish energy performance requirements dictate for ordinary houses.

EUC Nordvest is now widely known as a school with high emphasis on energy-saving and environmental technologies training. Furthermore the school is building a new low emission building which will house a technology centre to advance knowledge in robotics and welding technology for the benefit of local companies.

Students and construction professionals gain practical training and skills in new energy-saving technology including insulation, solar cells, lighting and under floor heating. They are now able to offer state of the art solutions in energy efficiency and renewable energy, triggering local investments and job creation in the green economy.

Replicability

To ensure a successful replication of the low emission building project, it is important to assemble partners who are knowledgeable in the field of energy efficiency. It is important that students and teachers take ownership of the project, for example by design competitions and study courses that involve the day to day activities at the building site.

It is vital that the project takes place on campus. Easy access facilitates both spontaneous and planned learning. It is also important to involve local businesses and associations. The building professionals that have worked on the project have gained new skills and knowledge. The process of constructing a low emission building has been a great learning experience for everyone involved. It has had a huge impact on how students, teachers and workers view the possibilities for energy saving and efficiency in modern low emission buildings and is highly recommended for other vocational training schools.

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Erhvervsskole sætter miljø- og klimateknologier på skemaet

På EUC Nordvest, Center for Uddannelse og Erhverv, er undervisning i energibesparelser og energiteknologier et vitalt skridt på vejen mod en fossiltfri fremtid. Dette fik studerende og lokale håndværkere til at igangsætte opførelsen af et såkaldt nulenerghus på skolens område i Thisted. Undervisningsprojektet gav de studerende og lokale håndværkere konkret viden om energirigtigt byggeri.


**Resultater**

Nulenerghuset er 254 m² og udstyret med et 6 KW solcelleanlæg. Energiforbruget er estimeret til 9,2 Kwh/m² pr. år. Hele husets energiforbrug, også belysning, er inkluderet i denne beregning, der også tager højde for solcelleanlæggets produktion. Dette energiforbrug er langt lavere end de krav, som de danske myndigheder stiller til huse i dag og i fremtiden.


De studerende og håndværkere, der deltog i projektet, tilegnede sig konkrete færdigheder i nye energiteknologier herunder isolering, solceller, belysning og gulvarme. De er nu i stand til at tilbyde de bedste og mest energieffektive løsninger. Dette fremmer lokale investeringer og grøn jobskabelse.

**Et eksempel til efterfølgelse**

For at sikre en succesfuld gentagelse af superlavenergibyggeriet er det vigtigt at samle partnere, der har viden og kompetence inden for feltet energieffektivitet. Det er vigtigt, at de studerende og lærerne tager ejerskab til projektet eksempelvis gennem designkonkurrencer samt inddragelse af byggeriet i den daglige undervisning.
The Educational Programme of the Cyprus Energy Agency
(Cyprus Energy Agency, Cyprus)

Teaching for a green future

One of the main objectives of the Cyprus Energy Agency is the education of school children in Cyprus. Since April 2009, when it first began its educational activities, the Cyprus Energy Agency has made study visits to more than 170 schools of all educational levels, reaching more than 27,000 students and 2,100 teachers on the topics of renewable energy, energy saving, sustainable transport and environmental protection. The agency has also provided five courses to more than 250 students in universities.

Results

The agency’s educational activities provide demonstration tools, posters on energy saving for kids, educational games, on-line monthly educational quizzes, organisation of the annual kids drawing competition (‘I draw for renewables, energy efficiency and sustainable transport’), educational leaflets for teachers, mouse pads (‘save energy, save the planet’), and weekly school timetables for students. Many of the educational materials are available online in Greek and English on the educational corner at: www.cea.org.cy. The rest are available at the premises of the Cyprus Energy Agency.

The Energy Agency set itself the following targets for its educational activities during the period of 2009-2012:

• To increase overall awareness through educational activities at schools
• Engage more than 30,000 pupils through educational presentations on RES, energy saving and environmental protection
• Involve over 2,000 teachers
• Distribute in excess of 70,000 pieces of material
• Encourage more than 1,500 6-12 year old pupils to participate in the Agency’s online quiz
• Carry out educational activities in over 150 schools.

Replicability

The Cyprus Energy Agency has gained a lot of experience through its educational activities that could be transferred to other European organisations. Many of its activities could be replicated, especially those related to demonstration activities, such as the educational table game and the organisation’s theatrical play that has had a considerable positive impact on young people. The text of the play was written by the Cyprus Energy Agency and can be easily translated into other languages. The educational presentations and the poster with energy saving tips can also be easily translated into other languages. The agency has found that students really enjoy the activities that they can get involved in, such as the annual drawing competition and the table game.

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Ένας από τους κύριους στόχους του Ενεργειακού Γραφείου της Κύπρου είναι η συστηματική εκπαίδευση των μαθητών. Από τον Απρίλιο του 2009, όταν ξεκίνησαν οι εκπαιδευτικές δραστηριότητες, το Ενεργειακό Γραφείο έχει πραγματοποιήσει εκπαιδευτικές επισκέψεις και παρουσιάσεις σε περισσότερα από 220 σχολεία όλων των εκπαιδευτικών βαθμίδων, με αποτέλεσμα περισσότεροι από 28.400 μαθητές και 2.220 εκπαιδευτικοί να παρακολουθούν παρουσιάσεις για τα θέματα των ανανεώσιμων πηγών ενέργειας, της εξοικονόμησης ενέργειας, των βιώσιμων μεταφορών και προστασίας του περιβάλλοντος. Το Ενεργειακό Γραφείο συμμετέχει επίσης στην εκπαίδευση φοιτητών, όπου περισσότεροι από 250 φοιτητές συμμετείχαν σε εκπαιδευτικές παρουσιάσεις.

Επιπλέον, το Ενεργειακό Γραφείο έχει δημιουργήσει τον διαγωνισμό εξοικονόμησης ενέργειας μεταξύ 5 επιλεγμένων δημοτικών σχολείων της Κύπρου.

Αποτελέσματα

Εκπαιδευτικές δραστηριότητες του Ενεργειακού Γραφείου περιλαμβάνουν εργαλεία επίδειξης, αφίσες για την εξοικονόμηση ενέργειας για τα παιδιά, διαγωνισμούς, εκπαιδευτικά επιτραπέζια παιχνίδια, φυλλάδια εργασίας, on-line μηνιαίο εκπαιδευτικό κουίζ, οργάνωση του ετήσιου διαγωνισμού ζωγραφικής «ζωγραφίζω για τις ανανεώσιμες πηγές ενέργειας», εκπαιδευτικά φυλλάδια για τους εκπαιδευτικούς, mouse pads «εξοικονομούμε ενέργεια, σώσουμε τον πλανήτη» και εβδομαδιαία σχολικά προγράμματα για τους μαθητές. Πολλά από τα εκπαιδευτικά υλικά είναι διαθέσιμα στον ιστόχωρο του Ενεργειακού Γραφείου στην ελληνική και αγγλική γλώσσα, στην εκπαιδευτική γωνιά: www.cea.org.cy. Τα υπόλοιπα είναι διαθέσιμα δωρεάν στα γραφεία του Ενεργειακού Γραφείου Κυπρίων Πολιτών.

Το ενεργειακό Γραφείο έθεσε τους ακόλουθους στόχους όσον αφορά τις εκπαιδευτικές του δραστηριότητες για την περίοδο 2009-2012, οι οποίοι στην πλειοψηφία τους έχουν επιτευχθεί:
• αύξηση της ευαισθητοποίησης των παιδιών μέσω εκπαιδευτικών δραστηριοτήτων στα σχολεία
• παρακολούθηση των εκπαιδευτικών παρουσιάσεων από περισσότερους από 30.000 μαθητές για τα θέματα των ανανεώσιμων πηγών ενέργειας και προστασίας του περιβάλλοντος
• συμμετοχή περίπου 2.000 εκπαιδευτικών στις δραστηριότητες επίδειξης
• διεξαγωγή εκπαιδευτικών δραστηριοτήτων σε περισσότερα από 150 σχολεία

Δυνατότητα μεταφοράς και επανάληψης

Το Ενεργειακό Γραφείο Κυπρίων Πολιτών έχει αποκτήσει μεγάλη εμπειρία μέσω των εκπαιδευτικών του δραστηριοτήτων, που θα μπορούσαν να μεταφερθούν σε άλλους ευρωπαϊκούς οργανισμούς. Πολλές από τις δραστηριότητές του θα μπορούσαν να επαναληφθούν και ιδιαίτερα εκείνες που σχετίζονταν με τις δραστηριότητες επίδειξης, όπως το εκπαιδευτικό επιτραπέζιο παιχνίδι και το θεατρικό έργο, που είχαν σημαντική θετική επίδραση στους νέους. Το κείμενο της παράστασης μπορεί εύκολα να μεταφραστεί και σε άλλες γλώσσες. Οι εκπαιδευτικές παρουσιάσεις, το έντυπο πρωτότυπο υλικό όπως για παράδειγμα η αφίσα με συμβουλές για εξοικονόμηση ενέργειας, το επιτραπέζιο παιχνίδι γνώσεων, μπορούν επίσης εύκολα να μεταφραστούν σε άλλες γλώσσες. Το Ενεργειακό Γραφείο διαπίστωσε ότι οι μαθητές απολαμβάνουν πραγματικά τις δραστηριότητες που θα μπορούσαν να απολαμβάνουν διαγωνισμοί, εκπαιδευτικά διαγωνισμοί για γνώσεις και εξοικονόμησης ενέργειας καθώς και τα φύλλα εργασίας.
Future-proofing homes against fuel poverty

Despite all previous efforts to lift low income households out of fuel poverty, due to energy costs rising faster than the general cost of living, fuel poverty is increasing. As a solution, the South East Wales Energy Agency set out to fully fund external wall insulation plus any other applicable measures to future proof homes against fuel poverty.

Two areas in the City of Newport were identified through a city-wide Affordable Warmth Survey as having a high proportion of solid wall properties and households with low incomes, thereby putting them at high risk of fuel poverty.

A total of €4.19 Million was secured, coming from the Welsh Government (36%), Scottish & Southern Energy (28%), Newport City Council (5%), private investment (27%), home owners (3%) and Scottish Power People Trust (1%). Scottish Energy People Trust covered part of the costs of the community coordinator who liaised with householders to ensure take-up of the scheme.

Results

The installation phase commenced in October 2010 and by the time it finished in March 2012 the agency had applied external insulation to 304 private homes, facilitated the fitting of over 100 solar pv systems, replaced 50 inefficient gas boilers, insulated 42 cavity walls and topped-up the insulation in over 100 lofts.

A typical three bedroom house able to take advantage of external wall insulation, loft insulation top-up, a replacement boiler and controls will have their annual space and water heating costs cut from €1,264 to only €608, a 52% reduction. With the inclusion of the solar pv there is a further €170 saving, bringing the carbon emissions down from 5.4 tonnes to just 1.3 tonnes a year. The lifetime carbon savings from the project are estimated to be 14,500 tonnes, which is calculated using DECC carbon scores for each measure and property type. The amount of renewable energy that will be produced, calculated using PVGIS, will be 199 MWh a year. Total household energy savings are estimated to be €150,000 a year.

The contractor installing the solar pv systems was able to open a new depot in Newport to serve this project and the demand generated in surrounding areas. The boiler replacements and particularly the external wall insulation enabled staff to be retained during a downturn in the building industry.

Replicability

The Welsh Government has announced a new round of Arbed funding. Current carbon reduction schemes are coming to an end, and will be replaced with the new Energy Company Obligation in October 2012. It is hoped that the new reduced rates of the Feed-in Tariff will still be sufficient for private investment to continue to install free solar pv systems and that the Renewable Heat Incentive will allow similar schemes for solar thermal, biomass and heat pumps.

The successful delivery formula adopted in the scheme has enabled the agency to secure further funding to improve another 200 Hard-to-Heat homes, which commenced in late August 2012. Funding came from the energy company SSE, Newport city Council and the Welsh Government. This shows that the formula has worked and that by delivering results that funders require—namely, carbon savings, affordable warmth and job creation—then funds will keep being made available.

With a new round of funding programmes due to commence in October 2012, such as the Energy Company Objective and Welsh Government Arbed, the Community Energy concept is expected to continue bringing benefits to fuel poor households in Newport and in other towns and cities that the agency works. The hope is that this approach will attract further funding associated with the Green Deal and the Renewable Heat Incentive to extend the range of measures the agency can install, as well as introducing more renewable technologies to low income homes.

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