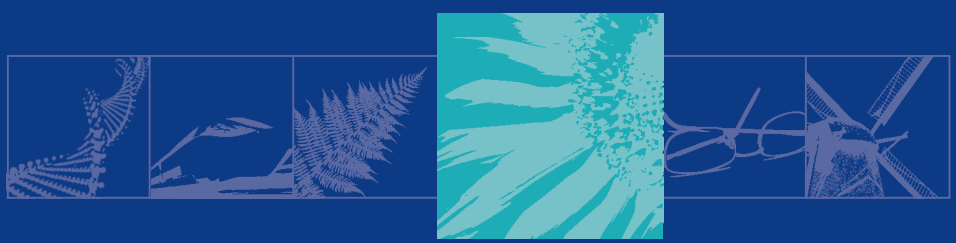
PORTRAITS

Project Stories from the CENTRAL EUROPE Programme

Energy Efficiency and Renewable Energies



CENTRAL EUROPE
COOPERATING FOR SUCCESS.

EUROPEAN UNION
EUROPEAN REGIONAL
DEVELOPMENT FUND

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Contents

Editorial

Nearly 40 percent of energy consumption in the European Union is taken up by households and services. Regions with poor energy efficiency levels among their building stock are therefore more likely to suffer negative impacts from rising energy prices. Improving the energy efficiency of new and existing buildings could significantly reduce energy consumption. This would enhance the security of the energy supply and reduce emissions of greenhouse gases and other pollutants. When it comes to housing, considerable energy savings can be achieved through the adoption of new heating systems, insulation and electrical appliances.

CENTRAL EUROPE projects like CEC5 (p.18) help urban areas to improve the energy efficiency of their building stock by setting the standard for sustainable buildings. Others, like GovernEE (p.38), rehabilitate buildings and upgrade their energy systems, or create thermal maps that show heat loss from buildings, such as EnergyCity (p.32).

Maintaining a secure energy supply is another important challenge facing central Europe. The regions have huge potential to diversify their energy sources, which would help ensure more secure supplies and bring benefits to their economies and the environment. As prices for oil and gas go ever higher, a timely shift in energy use is crucial to maintaining steady economic growth. The development of regional renewable energy capacity is also necessary if we hope to reduce CO2 emissions and mitigate climate change. In response, CENTRAL EUROPE supports regional energy planning and encourages the use of locally available renewable energy sources. Projects like 4Biomass (p.16) advise regions on the interregional use of biomass. COACH BioEnergy (p.24) develops management tools in the bioenergy field, while CEP-REC (p.20) focuses on regional energy concepts.

This booklet introduces you to the CENTRAL EUROPE story, showcasing 21 energy projects that were co-financed since 2007. We hope that it will serve as a valuable starting point for discussing achievements of our projects and that it will inspire you on what can be done further and what directions should be taken in view of the programming period 2014-2020.

Christiane Breznik,
City of Vienna,
CENTRAL EUROPE
Managing Authority

CENTRAL EUROPE

Cooperating across borders for the regions

The cities and rural regions of central Europe share a common history as well as similar social and cultural characteristics. The area covers more than one million square kilometres, stretching from the Baltic Sea in the north to the Mediterranean Sea in the south, with less clearly defined borders to the west and east. It is home to 150 million people – benefitting from transnational cooperation through the CENTRAL EUROPE Programme since 2007.

Despite their common characteristics, the regions of central Europe are marked by diverse features: Major differences are apparent in terms of climate conditions, land use, settlement and economic structures, accessibility, and ecological challenges. There are also big differences in central Europe's political and administrative structures, which are among the most heterogeneous in the European Union. The challenge is to use central Europe's diversity as an opportunity to promote more sustainable development of the area – by fostering increased cooperation among a wide range of actors from various countries and regions.

CENTRAL EUROPE 2007-2013

The CENTRAL EUROPE Programme has generated ample opportunities for closer cooperation among public authorities, institutions and private businesses from nine central European countries: Austria, the Czech Republic, Germany, Hungary, Italy, Poland, Slovakia, Slovenia and Ukraine. By co-financing 124 projects, the CENTRAL EUROPE Programme has helped to improve local and regional innovation, to increase accessibility, to preserve the environment and to enhance the competitiveness and attractiveness of regions within central Europe.
Since 2007 the CENTRAL EUROPE Programme has invested more than EUR 230 million on transnational projects supporting:

- Technology transfer and business innovation
- Sustainable public transport and logistics
- Environmental risk management and climate change
- Energy efficiency and renewable energies
- Demographic change and knowledge development
- Cultural heritage and creative resources

Programme: CENTRAL EUROPE
ERDF funding: € 231 million
Duration: 2007 - 2013 (2015)
Website: www.central2013.eu

498 000 000

Euros of investment being prepared by CENTRAL EUROPE projects

22

Euro cents spent per citizen per year on financing CENTRAL EUROPE projects

1331

Partners involved in CENTRAL EUROPE projects

Cooperating for citizens

CENTRAL EUROPE projects all involve joint efforts by stakeholders from different countries. This approach is designed to improve people's day-to-day lives by addressing problems that do not necessarily recognise national borders. Issues have been tackled at the territorial level where they occur, which is the regions in central Europe. Transnational cooperation allows partners to take advantage of the added value of doing things together, so they can prevent duplication and speed up developments with a higher impact.

More concretely, CENTRAL EUROPE projects:

- Carry out pilot investments and actions
- Leverage additional money and investment
- Come up with new economic strategies and involve local communities
- Increase efficiency on various levels
- Improve spending of public money
- Support the adaptation of EU directives to regional contexts
- Strengthen regional networks and involve local communities
- Influence the policy agenda on all political levels

> "We need to build on the rich and valuable experience gathered through transnational cooperation. There is much evidence that a series of challenges cannot be tackled solely at the level of a single Member State, or even at regional level, but only in a cross-border context."
>
> Johannes Hahn,
> European Commissioner for Regional Policy

Contributing to Europe 2020

Transnational cooperation driven by the CENTRAL EUROPE Programme is firmly embedded in the strategic policy frameworks on the European, national and regional levels. Many of CENTRAL EUROPE's projects have already been contributing to the Europe 2020 Strategy and its mutually reinforcing goals of smart, inclusive and sustainable growth in Europe. This approach to development is expected to help the EU and Member States deliver high levels of employment, productivity and social cohesion. Concrete actions of the 2020 Strategy are designed to reach ambitious targets in five areas: employment, innovation, education, social inclusion and climate and energy.
The CENTRAL EUROPE Programme, and the transnational cooperation between actors on the ground, plays an important role in meeting these targets on the regional level – even though the programme only used 0.07 percent of the total budget available for EU Cohesion Policy in 2007-2013.

CENTRAL EUROPE 2014-2020

In the programming period 2014-2020 the CENTRAL EUROPE Programme will continue to support regional cooperation among central European countries. Croatia is the latest country to join the programme, which also includes Austria, the Czech Republic, Hungary, Poland, Slovakia and Slovenia, as well as parts of Germany and Italy.

The overall objective of the CENTRAL EUROPE Programme is "to cooperate beyond borders to make central European cities and regions better places to live and work". Put more precisely, transnational cooperation should become the catalyst for implementing smart solutions that answer to regional challenges in the fields of:

- Innovation and knowledge development
- Low carbon cities and regions
- Environmental resources
- Cultural resources
- Transport and mobility

Topics like demographic change will be tackled horizontally. The focus of activities will be on policy-learning and implementation-oriented approaches at the transnational level. More concretely, actions will include the development and implementation of strategies and action plans, the development, testing and implementation of tools, the preparation of larger investment, the implementation of pilot actions – including pilot investments – as well as capacity building measures including training.

More detailed information on the new CENTRAL EUROPE Programme is available online at www.central2020.eu

Photo: © iStockphoto.com / ozyoo

COOPERATING ON ENERGY 2007-2013

CENTRAL EUROPE COOPERATING FOR SUCCESS.

EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND

CENTRAL EUROPE AT A GLANCE

COUNTRIES, REGIONS/CITIES, AND INHABITANTS COVERED

148 million citizens

80 cities & regions

9 countries

ENERGY PROJECTS CO-FINANCED

21 energy projects out of 124 in total

1 out of 6 themes

210 partners in energy projects out of 1331 partners in total

DURATION OF PROGRAMME

2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015

PUBLIC MONEY WELL INVESTED

BUDGET INVESTED

37 million euros = **16%** of the total programme budget of **231 million euros**

With roughly **0.03€** **spent per citizen per year,** the programme achieves:

Future investment prepared by projects **134** million euros

3.7 million euros Total **investment** carried out by projects

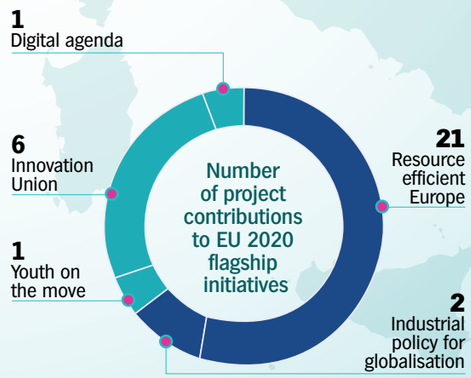
Permanent **cooperation networks** established **24**

Local **pilot activities** carried out by projects **371**

Jobs created **297**

CONTRIBUTING TO EUROPE 2020

CENTRAL EUROPE contributes to the European Union 2020 Strategy and reaching its goals of smart, inclusive and sustainable growth. Concrete targets for employment, innovation, education, social inclusion as well as climate change and energy were set on the European level and CENTRAL EUROPE project results help to meet them on the local and regional levels.



Number of project contributions to EU 2020 priorities

Data: April 2014

Design: studioQ.at

ANALYSIS

Cooperating to use less energy and shift toward renewable sources

> The CENTRAL EUROPE Programme and its funded projects have made substantial progress in assisting central European regions to adapt their regional policies and take advantage of the benefits of renewable energy and energy efficiency.
>
> Greenovate! Europe, Belgium

Reducing the amount of energy that we import is important for Europe's economy and the environment. By using less energy, and finding ways to produce clean energy at home, regions can increase their economic independence, while cutting greenhouse gas emissions. For these reasons, much EU policy focuses on the related goals of improving energy efficiency and greater use of renewable energy.
Some 21 projects within the CENTRAL EUROPE Programme target these types of activities as a way to promote more sustainable energy use. An analysis by Greenovate! Europe found that the projects had clear benefits, including impacts on policy and on increased awareness of an issue considered vital by the European Union.

EU actions to promote sustainable energy have included setting targets for greater efficiency and increased use of renewable energy by 2020. Meanwhile EU programmes like CENTRAL EUROPE help to support the work of improving the way Europeans use energy.
As the Greenovate! Europe analysis notes, many regions in central Europe are just beginning the process of developing plans and building a commitment to energy efficiency and renewable energy. The analysis found that these regions are still at the stage of creating the supply and demand for more sustainable energy. Projects in the CENTRAL EUROPE Programme were shown to support the regions in this work – by developing new tools and policies to facilitate better energy efficiency and greater use of renewable energy sources.

Different projects and how they helped

Of the 21 CENTRAL EUROPE projects that focus on sustainable energy and were analysed by Greenovate! Europe, eight were energy efficiency efforts and 11 sought to increase use of renewable energy.
The eight energy-efficiency projects all involved cooperation to reduce the carbon footprint of buildings – including public buildings, residential structures or buildings owned by small- to medium-sized enterprises. CENTRAL EUROPE projects created 15 energy plans and had a direct impact on policy in several cases. These projects also featured 17 demonstrations and pilot initiatives that tested useful methods for increasing the energy efficiency of buildings. Promising examples of outputs from these projects include a tool developed by the CEC5 project to standardise assessment of the sustainability of a building and a pilot action by the EnSURE project to test energy efficiency actions and put the best ones into a manual of energy efficient urban development.
The 13 projects involving cooperation to increase the proportion of renewable energy that we use were especially focused on bioenergy. These projects encouraged the uptake of renewable energy through activities like the creation of regional energy concepts, pilot tests of new technologies and the development of knowledge networks. These projects contributed directly to EU policy efforts. For example, TRANSENERGY mapped the potential for trans-boundary geothermal energy and supported international cooperation to manage this resource and DANUBENERGY demonstrated how storable biofuel production could become a source of cleaner energy. The project 4BIOMAS fostered usage of bioenergy throughout central Europe via turning know-how to show-how.
All told, the 21 sustainable energy projects surveyed by Greenovate! Europe provide tools and actions for: benchmarking, strategy setting and provision of ongoing financial and political support. These projects have also helped raise awareness to the issue, and are likely to help central Europe achieve its 2020 targets for obtaining smart and sustainable growth by changing the behaviour of citizens and municipalities.

To download the complete analysis visit
http://www.central2013.eu/thematic-studies

Energy efficiency and renewable energies

Cooperating to reduce the carbon footprint of buildings in our cities and regions

Cooperating to use renewable energy sources in the regions efficiently

PROJECT STORIES

Photo: © FNR

Local energy from local biomass

Know-how is good, but show-how is much better. When it comes to undertaking a bioenergy project, practical experience with a successful working model can be invaluable. That is where the project 4Biomass steps in. Its main goal is to promote truly sustainable use of bioenergy by facilitating exchange of information, supporting investments and providing decision makers with recommendations for sustainable policy measures.

One part of 4Biomass is the development of a favourable political network for using bioenergy. Biomass is organic material, such as wood scraps from the forest or the unused parts of plants after harvesting, which can be burned to produce energy. But biomass is only renewable up to a certain level, so it is necessary to ensure policies that encourage efficient use of this resource. 4Biomass analysed the potential to exploit biomass in central Europe – looking at aspects like biomass trade and its implications for other regions – and shared this information with interested parties. The project also sought to build political support for biomass exploitation by distributing information on the topic during national and regional events, and by maintaining a widespread network of stakeholders who were involved in project activities.

Exchange is the key

The project encouraged the exchange of good practices concerning technology, demonstration projects and management approaches. These exchanges helped ensure that partner regions have an equal level of knowledge regarding the operation of bioenergy systems as well as the investment possibilities for those systems. One example of a beneficial exchange was the biomass heating project for a kindergarten in Poland, which was set up following a visit to a facility in Austria.

> A study visit to Austria helped us deepen our knowledge about the energy use of biomass. We became familiar with the principles of operating several biomass heating systems. Afterwards, we initiated a biomass project for a kindergarten and school in the commune of Bucze in the Malopolska region.
>
> Pawel Majewski,
> Brzesko District Heat Company, Poland

Another effort to share information and increase overall knowledge involved a survey of national biomass action plans. The project collected more than 1 200 questionnaires from stakeholders in different regions of central Europe, in order to share their opinions and observations about these action plans.

Boost bioenergy investments

The project also involved creation of an online database, which consisted of a demo project map and a joint management tool. The database is available on the 4Biomass website and enables easy access to information about biomass technology, legislation and software tools – as well as contacts of pertinent state organisations and implementing agencies. This information helps stakeholders find tailor-made solutions for investment in bioenergy projects.

Local use of local biomass

Sustainability is a key objective of the project. Inspired by the results of the stakeholder dialogue, partners formulated basic sustainability recommendations for biomass use in a "Transnational Action Plan". Because sustainability is a broad term, it is important to analyse each utilisation process separately, and pick only the most suitable and the most effective of the solutions.

4
Pre-feasibility studies prepared for sustainable bioenergy investments

1 200
Responses received in the stakeholder dialogue on a bioenergy policy framework

60
Recommendations compiled for sustainable bioenergy development in central Europe

Photo: © FNR

Project: 4Biomass
ERDF funding: € 1 834 308
Duration: 2008 – 2012
Website: www.4biomass.eu

Photo: © Architekten Hermann Kaufmann

Setting the standard for sustainable buildings

As top energy consumers, buildings offer a big opportunity to cut waste. Authorities can encourage sustainable construction by building or retrofitting public facilities to make energy-efficient structures as examples for others. CEC5 promotes low-energy development, with a new approach to standardise assessments of each building's sustainability and pilots to create energy-efficient structures.

CEC5 applies energy efficiency and use of renewable energy sources in public buildings as examples for others to follow. CEC5 also developed an approach that allows for a harmonised assessment of making buildings more sustainable.
Demonstrating the benefits of low-emission buildings, energy efficiency and renewable energy sources is not the responsibility of the construction sector. Instead, the public sector needs to lead the way. Organisations engaged in developing sustainable buildings joined forces in CEC5 and formed a consortium uniting cities and regions that are the owners of buildings. The project strives to establish energy-efficient public buildings that serve as examples for others, to find a common framework for assessing sustainable buildings and to contribute to the European Union's ambitious climate targets.
To encourage the use of best practices in making buildings energy-efficient, CEC5 cooperated with a group of transnational projects supported by DG Environment in developing an approach called the Common European Sustainable Building Assessment (CESBA). Together these projects identified key indicators for assessing a building's energy

> Building quality in public constructions is a special concern of the government of Vorarlberg. The CEC5 project and the CESBA initiative will make an important contribution to the discussion.
>
> Erich Schwärzler, State Councillor and Regional Minister for Energy, Vorarlberg, Austria

efficiency, as well as best solutions for improving that efficiency. CESBA workshops were held to train professionals and others in using CESBA as a tool to make buildings more sustainable. With CESBA, CEC5 provides a standard that can be employed Europe-wide. CESBA is adaptable, open-source and provides one easy-to-use benchmark and assessment method. (see also www.cesba.eu)

Demonstration buildings

In tests of the CESBA benchmark and assessment method, public buildings are used as models. But CESBA is not just for assessing existing buildings: It is tailored to cover the planning phase as well, and it can be extremely useful during building design.
In order to show the usefulness of CESBA, and the benefits of using renewable energy and concentrating on efficiency, the project undertakes pilot initiatives in each partner country. Pilots involved constructing a new building or remodelling an old one to reduce emissions.
In Dornbirn Austria, LCT One, a wood hybrid office tower that reduces use of carbon dioxide, has already been constructed. Six more projects are planned in other central European regions. CEC5's demonstration buildings will be open to the public and feature visitor programmes to promote replication of ideas and solutions. Along with providing a best-practice example, the cleaner buildings provide immediate benefits for local communities.
The demonstration buildings are assessed and compared to buildings in other regions and countries with CESBA. Other assessment tools can be harmonised with CESBA, and their indicators are comparable.
CESBA can not only be used as a tool but is also an initiative that needs to keep growing. That is why CESBA partners are working on a joint European strategy on sustainable building with a group of transnational experts who can contribute to sustainability and improvement of the places we work and live in.

7

Energy-efficient demonstration buildings constructed or refitted within the CEC5 project

8

Number of days that it took to assemble the eight floors of the LCT, hybrid-wood office building in Dornbirn, Austria

23

Model assessments in the central Europe area carried out with the CESBA tool

Photo: © CREE

Project: CEC5
ERDF funding: € 3 609 749
Duration: 2011 – 2014
Website: www.projectcec5.eu

Photo: © Wildpoldsried

Changing energy use from the bottom up

When moving society toward use of renewable energy sources, the regional level is crucial. CEP-REC develops Regional Energy Concepts (RECs), tools that support development of renewable energy at the regional level, where change matters. CEP-REC undertook pilots that help individual regions create their own concepts and assisted regional actors in exchanging best practices.

The challenge of maintaining affordable energy in plentiful supply is one of the greatest tests Europe has to face. That is why the European Council in 2007 adopted ambitious energy and climate change objectives for 2020, including a 20 percent reduction in greenhouse gas emissions and 20 percent increases in energy efficiency and use of renewable energy. While some Member States are on the right path to achieve these targets, others lag far behind.
But the answers cannot come only from the state-level, especially because renewable energy is produced in small amounts for consumption in the immediate area, and energy efficiency is often achieved house-by-house. The CEP-REC project was created with the understanding that a regional approach is vital to meeting European energy targets.
The project's 15 partners – including ministries, energy agencies and regional development agencies from all CENTRAL EUROPE countries – elaborate tools supporting the development of renewable energy at the regional level. The partners worked in nine pilot regions, providing each with a regional energy concept that included an assessment of the current situation and a strategy for the future.

> "With CEP-REC, we not only received an energy measurement for the deep understanding of the situation in our region, we are now able to promote and control our region's switch to renewable energies."

Gebhard Kaiser,
District Administrator of Oberallgäu County and
Chairman of the Allgäu Corporation, Germany

Common standards for a transnational strategy

Because the energy produced by renewable resources varies widely in the pilot regions, and local experiences also differ, it was essential to define some common standards. Toward this end, in each region there is an analysis of the present energy demand and supplies, as well as potential analyses of energy savings and renewable energies.
With this basic knowledge, every region starts its own discussion of how to move towards a higher utilisation of renewable energy sources. The discussions include regional stakeholders and are supported by regional officials, and their goal is broad acceptance of renewable energies.
Competitions are held in the pilot regions to give awards to the most innovative initiatives aimed at changing energy usage.
All this work not only allows stakeholders to exchange best practices, it also produces a wealth of information on renewable energy that the partners use to develop a joint, transnational strategy for increasing use of renewable energy sources and energy efficiency.

Pilot regions become role models

CEP-REC is more than just a project undertaken by nine regions - the idea is to assist many regions on their path towards a better level of energy efficiency and a renewable energy supply. To make sure this happens, CEP-REC project partners are pairing off and working in tandem with other regions. The tools they develop and the standards they establish are offered via the internet to interested stakeholders. A conference in Munich in autumn 2014 will showcase the results, including those initiatives that won competitions in the pilot regions.

9
Regional Energy Concepts developed in pilot regions

20
Percentage of renewable energy sources listed under the EU's targets for the year 2020

1 703
Megatons of oil equivalent consumed in the EU in 2009

Photo: © Wildpoldsried

Project: CEP-REC
ERDF funding: € 1 732 299
Duration: 2012 – 2014
Website: www.cep-rec.eu

Tapping renewable energy to make our cities sustainable

Photo: © Photovoltaik_SalzburgCongress

With 75 percent of central European citizens living in urban areas, any meaningful shift toward sustainable energy sources must involve cities. The Cities on Power project is an initiative to increase the use of solar energy and other renewable sources, by involving a broad range of urban stakeholders in developing local action plans for renewable energy – and by running pilots.

All cities consume energy, but urban areas can also produce energy if they harness renewable sources, like solar and geothermal power. Five cities and regions cooperate in Cities in Power, a project that creates policy tools to encourage development of renewable energy and incorporates these tools into new strategies.

Online tool helps taking investment decisions

Project partners elaborate four local action plans, designed to cut carbon dioxide emissions by employing tools and support schemes that encourage use of renewable energy.
By developing solar and geothermal maps, project partners were able to determine the potential for renewable energy for the cities and regions involved. These maps will be integrated into an interactive, spatial decision support system, an online tool that helps stakeholders see if it is effective for them to install a solar panel on their roof or a heat pump in their household.
The tool uses available geographic information and location-specific data to provide assessments of the renewable energy potential of individual addresses. Local authorities and private property owners will receive an appraisal of the benefits of installing solar panels, photovoltaic systems and heat pumps – as well as an estimate of costs. With help of support schemes integrated in the tool citizens can turn into on-site investors in renewable energy, thereby improving their quality of life and increasing their energy independence. The spatial decision support system, and other measures adopted in local action plans, help encourage investment in sustainable energy in urban areas.

> Every year we spent a lot of money on the energy supply for our swimming pool. Thanks to detailed monitoring undertaken within Cities on Power, we know which investments to realise to decrease energy consumption and to supply renewable energy. This will help to decrease our energy bills.
>
> Jolanta Siebeneichen,
> Manager of Muszelka swimming pool in Warsaw, Poland

Renewable energy in public buildings

Along with encouraging private investment in renewable energy, Cities on Power uses public buildings to provide an example for others. The project investigates the potential to harness renewable energy in schools, hospitals, sport centres and other public buildings.
Pilots at eight public buildings, in Warsaw, Klagenfurt, Ravenna and Torino, determine optimal investment solutions for energy efficiency improvement and renewable energy technologies. For example, in Klagenfurt special photovoltaic (solar) modules were installed on the façade of the city-hall office. The energy that these modules produce is used in the building, and it is also measured, for others to see. Inhabitants of Klagenfurt can observe the city hall's actual energy production via the internet.
Along with inspiring others, the monitoring of the pilots provides managers of these public buildings with a detailed study to justify investment in renewable energy. Once full investments into energy improvements are realised, these buildings will have lower utility bills and an environmentally friendly image. Monitoring results from these pilots also serve as the basis for local action plans, because monitoring reveals the optimal energy investments for various types of public buildings.
The long-term result of Cities on Power will be innovative cities that invest in renewable energy and enjoy a sustainable power supply.

75
Percentage of central European energy demand coming from cities and conurbations

4
Local action plans developed by the project to promote renewable energy

60
Percentage of heat demand for hot water preparation that can be saved by solar panels

Photo: © Local Agenda 21 Dresden

Project: Cities on Power
ERDF funding: € 1 832 765
Duration: 2011 – 2014
Website: www.citiesonpower.eu

Photo: © COACH BioEnergy network

Sharing expertise to spread the use of bioenergy

Investors wishing to undertake intelligent and sustainable activities in the bioenergy sector need the advice of high-quality consultants. The expert network of COACH BioEnergy provides consultancy for private and public stakeholders in bioenergy planning and investment.

Central Europe provides excellent conditions for bioenergy production, which has the potential to significantly increase the region's share of renewable energy. To avoid mismanagement and ensure the best investment decisions, private investors and political decision makers need high-quality consultancy services. In general, key stakeholders lack practical knowledge in bioenergy planning and investment, and this problem is particularly pronounced in central Europe.

COACH BioEnergy was created to close the gap between scientific bioenergy research and its practical implementation on the regional level. To achieve this goal, the project established a transnational network of highly acknowledged researchers, multipliers and consultancy institutions. The project's first objective was to select and accumulate existing scientific knowledge in the participating countries and regions. Then the collected information was spread to a wide audience in an easy-to-understand way, via web-based and personalised consultancy services. In the first part of the work, the project faced the challenge of using its transnational network to include all available sources of information in the region, even though those sources existed under different country-specific circumstances. In this situation, preparation of adequate information for the consultancy level was quite ambitious. The challenge of the second half of the project was to establish and use the appropriate joint web-based platform for information storage and exchange.

Assisting practitioners

Within the three years of project implementation, COACH BioEnergy gathered a tremendous amount of information for practitioners working in the bioenergy field. A collection of high quality information and data sets adapted to the needs of bioenergy consultancy was developed and published on the COACH BioEnergy website.

The project provides the following instruments and services that are of particular use to consultants:

- Descriptions of specific technologies for the production, provision or conversion of biomass
- A collection of good practices in the field of bioenergy in Europe
- A collection of specific requests, and the answers to those requests
- A Renewable Energy Strategy Planning (RESP) scheme and related studies
- Policy assistance and market development services

> "We really appreciated the support of COACH BioEnergy when preparing our action plan for Biomass in the Czech Republic. The results of the project's policy analysis significantly helped to develop our future policy towards biomass energy utilisation in order to effectively fulfil the envisioned development goals by 2020."
>
> Marek Světlík,
> Head of Department of Renewable Energy Resources,
> Ministry of Agriculture, the Czech Republic

In addition to these benefits, the project also provides some easy calculation tools for:

- Assessing technical potential and biomass potential
- Calculating heating value and measurements
- Determining a value-benefit analysis and a cost-benefit analysis

What follows next

The results of the COACH BioEnergy project will remain publicly accessible beyond the end of the project and will continue to be used for consulting with the target groups on the local and regional level.

25

Percentage of potential increase in use of biomass in Austria by 2020

250

Hectares of corn fields needed to run a biogas power plant of 500 kW

35

Partners participating in the COACH BioEnergy best practice network

Project: COACH BioEnergy
ERDF funding: € 1 131 375
Duration: 2009 – 2011
Website: www.coach-bioenergy.eu

Photo: © FreeDigitalPhotos.net by ponsulak

Finding financing for investments that save energy

While we have the technology and desire to increase energy efficiency, most improvements require financing. Regions can pay for efficiency by applying instruments like energy performance contracting – where the contractor gives a financial guarantee of energy savings from a project. CombinES encourages transnational cooperation and policy changes to support such investments in energy efficiency.

Public authorities need to seek to improve the energy efficiency of publicly owned buildings, in order to enhance the value of the buildings, to comply with EU directives and national legislation and to provide a good example for citizens. Reducing energy consumption in a financially more efficient manner will also better safeguard EU natural resources and help reduce dependency on imported fuel. But such improvements cost money, and it is difficult to obtain sufficient public financing for them. CombinES helps authorities find the financing they need to improve public buildings – so that they reduce their environmental footprint and show owners of private buildings how to do the same.

One effective way to pay for energy efficiency measures in public buildings is through energy performance contracting, wherein contractors guarantee that the energy savings from energy-efficient construction or renovation will cover the cost of the work. If expected energy savings are not realised, construction contractors have to pay a penalty to the public authorities who hired them.

Although energy performance contracting could help pay for efficiency improvements in public buildings, this instrument is best for financing short- or medium-term efficiency measures, and additional subsidies are needed to cover projects with long-term paybacks. Most notable obstacles to using such combined financing instruments are problems with the structure of subsidy programmes, a difficult legal environment and insufficient competence among energy service companies.

> CombinES offers valuable knowledge support in bridging the financial gap between technical possibilities and practical realisation of energy efficiency measures in the public sector.
>
> Dr. Vladimir Prebilič, Mayor of the Municipality of Kočevje, Slovenia

2.5
Billion square metres of public buildings in the EU

2018
The year when all new public buildings in the EU are supposed to be a nearly zero-energy buildings

75
Number of individual consultations undertaken through the project to explore financing of energy efficiency actions in six central European countries

Creative financing for efficiency measures

CombinES offers solutions for broader utilisation of combined financing, which brings together public and private actors to find ways to fund energy-efficient construction and renovation in public buildings. The project addresses various target groups: Public and private energy users; private investors, including energy service companies; policy and decision makers; and utilities.

The project began with an evaluation that investigated existing rules for providing public support for energy savings in individual countries, as well as future options for realisation of savings. The research included an analysis of the market potential for energy performance contracting. Using the results of their studies and sharing their experiences, the partners then prepared a proposal for appropriate rules and recommendations to provide targeted financial support for energy efficiency.

CombinES strengthens regional and transnational cooperation of key players along the energy efficiency value chain. It also supports innovative design of specific national programmes by transferring knowledge and providing policy recommendations.

In their effort, the CombinES partners contribute to shape a new financing model and examine its possible modifications to suit individual national frameworks.

Photo: © Archive of the Municipality of Kočevje

Project: CombinES
ERDF funding: € 578 785
Duration: 2012 – 2014
Website: www.combines-ce.eu

Preserving grasslands while harvesting energy

It is important to preserve the grasslands along the Danube and in other flood plains, but these areas have little economic benefit: The grass there makes poor food for livestock and it burns badly when used as fuel. DANUBENERGY promotes new technology that permits sustainable grassland harvesting to enhance biodiversity while producing a storable biofuel that provides cleaner energy.

By turning precious natural habitats into sources of sustainable energy, DANUBENERGY enhances the economic feasibility of preserving these delicate ecosystems.
This work is important because extensive areas of uncultivated grasslands and agricultural land in the Danube basin, as well as in many protected areas around rivers and lakes in Europe, produce grass species that have low nutritional value for grazing animals. The grass in floodplain grasslands also makes a poor biofuel because it is not effective in production of methane from the farm animals that eat it, and when used in direct combustion it emits too much pollution.

More traditional uses of reeds or sedge-thickets, such as in making thatch for roofs, are no longer important in today's market.
Meanwhile, the habitats of the Danube floodplains and other protected riparian areas must be conserved and managed, even though this process is costly for public bodies that administer local parks, national parks and Natura 2000 areas. Farmers in protected areas also bear the expenses of preservation without remuneration. If these grasslands can provide a sustainable source of income, it can defray the cost of conservation.

Photo: © DANUBENERGY_foto archivio Parco del Mincio

> "The analysis of the biomass energy potential, together with the demo roadshow of the DANUBENERGY project, can provide a real incentive to create some local supply chains for bioenergy enhancement and to protect vulnerable riparian habitats, which currently present only preservation costs."
>
> Arch Leoni Giancarlo, Chief of Planning, Energy and Environment Sector, Province of Mantova, Italy

A more efficient biofuel

Using a model called Integrated generation of Fuel and Biogas from Biomass (IFBB), the DANUBENERGY project seeks a means for sustainably harvesting the energy potential of central Europe's riparian grasslands in a way that preserves these fragile habitats.
The IFBB process turns the grass from these areas into a much more efficient form of biogas for fuel. The process works through preliminary biomass separation in the solid and liquid phases. The liquid is put through a faster anaerobic fermentation phase and a drying solid phase with derived heat, producing compressed solid fuel for burners.
The project sought to investigate the possibility of increasing the biomass yield of grass from the grasslands while also promoting use of effective new processes for producing biomass for fuel. For the investigation, the partners used the IFBB process to produce biomass from the local species found in six European regions, and then compared the efficiency of the fuel produced with the energy produced through ordinary burning. To promote IFBB, the partners use a mobile plant, which they take to different regions to demonstrate the process to farmers, public bodies and managers of national parks. The plant shows these and other stakeholders the possibility for producing a more effective biofuel from biomass that is sustainably harvested from grasslands in floodplains.
The results of the pilots provide further evidence to support the use of the IFBB process for creating biomass, and the demonstrations with the mobile plant help to increase awareness of the benefits of the process. This in-turn encourages local co-operation to establish a supply chain for sustainable biofuels from grasslands, thereby providing economic support for efforts to conserve these habitats.

2000
Year in which fuel and biogas from biomass technology was developed

64 000
Square kilometres of floodplains are located in the partnership regions

10
Million euros to be stimulated by the project in public/private investments to create local bio-energy supply chains

Photo: © DANUBENERGY

Project: DANUBENERGY
ERDF funding: € 1 381 677
Duration: 2012 – 2014
Website: www.danubenergy.eu

Producing green energy and a fertiliser

Pyrolysis involves heating biomass in an oxygen-free furnace to produce clean energy. Instead of air pollutants, the process creates a solid residue, biochar, which can be buried to “sequester” carbon trapped during bioenergy production and may also be used as fertiliser. E2BEBIS unites clusters of businesses, researchers and officials in an effort to exploit the potential of pyrolysis and biochar.

Biochar, the waste product of energy produced through pyrolysis, is cleaner than smoke from burning, because carbons are trapped in biochar instead of being emitted into the atmosphere. But scientists are discovering that biochar can also be used to nourish agricultural fields or as a potting soil.
The E2BEBIS project is looking to promote the pyrolysis process for producing clean energy while at the same time promoting the use of the biochar that is left behind.
Pyrolysis, which involves a process that is like “burning” but with no oxygen, is an environmentally friendly way to produce heat without emissions of carbon dioxide, a gas that contributes to climate change. Pyrolysis can be adjusted for different conditions, and it can use different types of biomass – such as the waste-products of agriculture – from a number of regions in central Europe and beyond. The process is suitable for managing environmental approaches in both rural and urban communities.
Unfortunately, the legal environment has not yet caught up with advances in pyrolysis or the uses of biochar. Most laws still treat biochar as a waste product that must be disposed.

Photo: © E2BEBIS_Tereza Vorlova

> “Together with other possibilities in the field of renewable energy sources, biochar is a great opportunity for our region.”
>
> Danilo Breusa, Mayor of Pomaretto, Italy

Promoting use, addressing policy

E2BEBIS seeks to increase the use of this environmentally friendly technology by running pilots as a way to collect best practices related to the use of biochar, and by promoting change in pertinent legislation in central European countries.
The project involves “clusters”, which are groups of stakeholders involved in a related field. The members of clusters who have an interest in seeing wider use of pyrolysis and better use of biochar include: Biomass suppliers, energy suppliers or energy users seeking cleaner power, farmers or other biochar end users, scientists and investors. The project helps these stakeholders learn more about best practices involving pyrolysis and biochar by producing a feasibility study and by bringing involved parties together for seminars in Italy, Slovenia, Poland, Slovakia and the Czech Republic. In addition, the project uses seven pilot demonstration plants, to show regional stakeholders the effectiveness of a pyrolysis system.
When it comes to improving the legislative framework, the E2BEBIS project focuses on two challenges: One problem is that existing EC Regulation No. 2003/2003 does not recognise biochar as a fertiliser; the other problem is that the use of biochar is controlled by a range of different regulations – rules pertaining to waste, nature protection, air pollution, fertilisers, etc. Research from countries participating in E2BEBIS is being used to develop dossiers spelling out the legal limits for using biochar. Project partners want to use these dossiers, and the lobbying efforts of clusters created through the project, to encourage the development of more appropriate legislation. Ultimately, E2BEBIS partners are working to change the laws so that central Europeans can take full advantage of both pyrolysis and biochar.

0

Amount of oxygen used in producing energy and biochar through pyrolysis

7

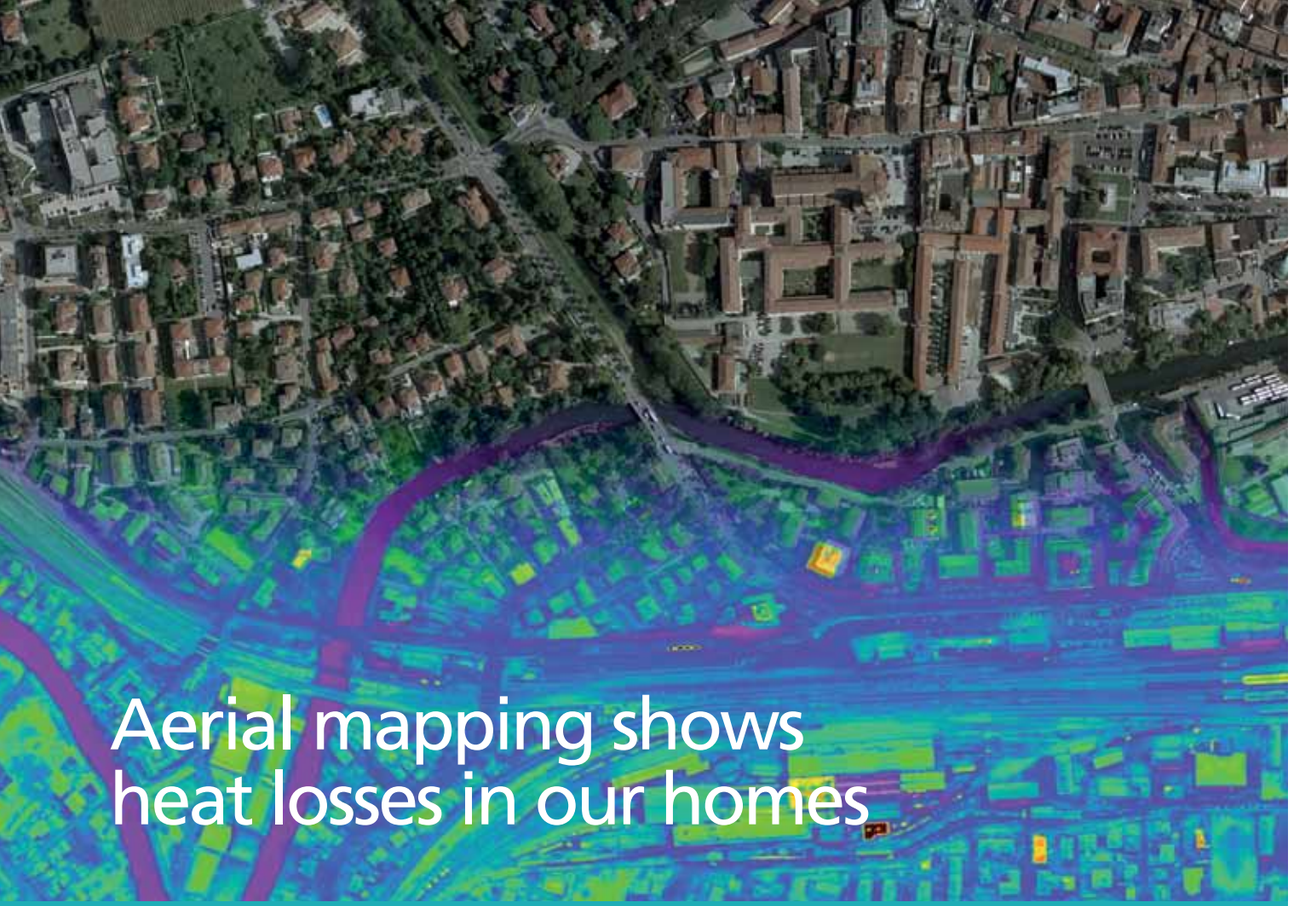
Biochar clusters established by the project and based in pyrolysis plants that use local biomass

23

On this day in April 2013 Switzerland became the first European country to officially approve the use of biochar in farming

Photo: © E2BEBIS

Project: E2BEBIS
ERDF funding: € 1 244 342
Duration: 2012 – 2014
Website: www.e2bebis.eu



Aerial mapping shows heat losses in our homes

While Europeans make efforts at conservation, many of us do not realise how much energy seeps out of our homes and offices. Big energy savings can be achieved at a relatively small cost through efficiency upgrades to the building stock, but doing so requires a map of where the problems are. Using aerial surveys and the latest technology, the EnergyCity project pinpoints heat loss in central European cities.

One of Europe's major challenges today is finding ways to reduce carbon dioxide emissions, which contribute to climate change. One of the easier and less-costly solutions to this challenge is improvement of energy efficiency in the building stock. To encourage uptake of this approach, and help reduce carbon dioxide emissions, EnergyCity is employing high-tech methods as it creates maps of heat loss in towns and cities across central Europe.
Using a modified Piper Seneca II airplane, the project is collecting an extensive set of aerial and ground thermal surveys of Budapest, Prague, Munich, Bologna, Treviso, Ludwigsburg and Velenje. Initiating this part of the project involved overcoming difficulties like getting permission to fly around busy airports and waiting for the right weather. The images taken show heat-energy loss from buildings, ground features and even objects below the ground. The heat loss is recorded using the latest thermal imaging technology.

Mapping with the collected data

The project produced a spatial decision support system (SDSS) to help visualise the results of the data gathering – and help in finding solutions to energy loss. The EnergyCity SDSS uses the most advanced open source and web-based geographic information system (GIS) components to deliver highly functional and superior cartographic output that supports a multitude of data formats. This output was used to produce hundreds of map projections, showing maps that can be scaled and searched via user queries. The SDSS is web-based to allow for wide access, so it can provide local planners and decision makers with a robust and flexible tool for carbon mapping, carbon dioxide reduction strategies and energy efficiency improvements. Users can gain information from district-wide heat and carbon dioxide maps and home heat maps. The software's home-energy analysis toolset also provides users with a comprehensive set of data on selected buildings.

> "The EnergyCity online visualisation tool is valuable in a twofold way: First it allows our engineers to evaluate and compare the results of heating energy demands of our buildings. But even more valuable is its convincing power when it comes to consulting building owners regarding insulation needs for roofs and structures. Such images speak a very explicit language."
>
> Roland Gräbel, Head of the Bauzentrum München Municipal Technical Exhibition and Information Center, Germany

Seeking solutions

Along with helping to identify and map energy loss, the tool can also assist in finding solutions to this problem. Planners can use the SDSS tool to envision different scenarios of carbon dioxide reduction strategies. The system is also useful for comparing the cost-effectiveness and potential of different renewable energy solutions in the project cities. To help users make the most of the tool, the project is supporting a series of pilot actions in the seven cities where it has been launched. These initiatives include airplane pilot training for carbon mapping, awareness raising campaigns and fuel poverty reduction plans.

245
Square kilometres surveyed by the project

1 000
Altitude in metres of airplane surveying buildings for heat loss

80
Percentage of possible energy savings through building renovation

Project: EnergyCity
ERDF funding: € 1 804 235
Duration: 2010 – 2013
Website: www.energycity2013.eu

Photo: © SXC.hu

Making Europe more self-sufficient with renewable energy

Wind, solar, biomass, hydropower and geothermal sources can provide renewable power, to reduce energy costs and make Europe more self-sufficient. The ENERGYREGION project seeks a strategy for sustainable development of renewable energy, and works with local authorities to see the strategy implemented. The project supports this effort by documenting regions' energy needs and potential energy sources.

In the past, discussion of the energy sector mostly focused on global or European-level concerns about the supply of fossil fuels. But a desire to shift away from using these fuels, which are rising in price and are known to worsen global warming, means that Europeans rely more on renewable energy sources. It also means that energy production is being decentralised and regional-level energy markets are becoming more important.
ENERGYREGION promotes a transition towards renewable energy supply and local energy infrastructure through efforts in the Czech Republic, Germany, Poland and Slovenia. As decentralised energy generation is a key challenge for all of Europe, other countries, especially in central Europe, can benefit from the project results.

Pilots promote renewables

Along with seeking to increase social awareness of sustainable energy systems, the ENERGYREGION project supports the implementation of several pilot initiatives to promote renewable energy from wind, biomass and solar power. For example, two wind-measuring systems deliver key inputs for a wind resource assessment study, which will be used as a first step in developing wind power for the study area. Meanwhile, activities exploring the potential of biomass include an effort to optimise the processing of biofuels through gasification, while measuring the economic efficiency of using these fuels. These activities have an educational character, and are intended to increase utilisation of biomass as a cheap and effective source of renewable energy. Solar and wind power come into play in a pilot hybrid power plant based on a photovoltaic panel, a vertical axis wind turbine and a fuel cell. This novel development in renewable energy technology can be considered for general application in many cities.

Photo: © SXC.hu

> As we look ahead to our future, we are facing the problem of rising energy bills and air pollution. ENERGYREGION is committed to educating local communities in order to save money on their energy costs and helping people find the best way to supply their own energy needs.
>
> Kazimiera Rusin, Deputy Mayor
> of Prusice Town and Municipality, Poland

Cooperating locally

To truly realise the benefits of locally produced, renewable energy, regions need to incorporate this energy into the power grid. That is why another important part of ENERGYREGION's work involves developing feasible regional and local strategies for integrating renewable energy into existing energy systems – and getting local authorities to adopt these strategies.
Because local governments can draw up development plans to achieve certain economic and social goals, they are also in a position to implement strategies for sustainable and secure energy. These strategies must weight factors such as the relationship between the energy demand and supply in a particular area, the availability of local energy resources, the needs of inhabitants and the nature of the local economy.
ENERGYREGION seeks to support local authorities in developing renewable energy strategies by sharing the project's achievements and demonstrating the benefits of investment in energy infrastructure and energy saving. ENERGYREGION makes it clear to authorities that rational energy planning and policy-making are the first step toward energy self-sufficiency, which has long-lasting benefits for local communities.

40
Approaches outlined in the online catalogue of measures to realise energy savings and use renewable energy sources

10
Energy efficiency concepts and renewable energy development concepts produced for municipalities by ENERGYREGION

600
Households powered by one megawatt turbine

Photo: © SXC.hu

Project: ENERGYREGION
ERDF funding: € 2 167 360
Duration: 2011 – 2014
Website: www.energy-region.eu

Toward energy-efficient urban development

Energy efficiency can be built in to our cities if we design less wasteful buildings and increase our use of renewable energy. To encourage new urban development that emphasises efficient use of energy from renewable sources, the EnSURE project undertakes a range of initiatives aimed at involving building owners, builders, policy makers and other stakeholders.

An important part of the EnSURE project is to establish a transnational concept for energy-efficient urban development. The project seeks to do this by providing practical support to help municipalities, housing companies, owners, energy providers and other relevant actors in realising efforts to achieve energy efficient urban development and to shift toward renewable energies. The project's approach integrates initiatives in several areas, including energy supply, building construction and environmental conservation.
In its effort to improve the design-quality of buildings, the project works to establish closer contacts between the construction industry and experts and organisations that are dedicated to sustainable development.

Developing policy recommendations

EnSURE outputs geared toward encouraging better development include a "Manual on Energy Efficient Urban Development", which will contain the lessons learned during the course of the project. The purpose of the manual is to transfer the best approaches for achieving energy efficiency in urban development, based on the scientific and practical experience of the project partners. Another project output built out of the partners' knowledge is a common policy paper, summarising policy recommendations to promote energy-efficient urban development.

Encouraging support for energy efficiency

In its effort to build support for urban energy efficiency, the project attempts to increase public knowledge of the issue and to encourage the necessary financing.
Energy efficiency info points, established in various participating countries, are intended to expand awareness about building rehabilitation to improve: Efficiency, wider use of renewable energy and sources of available funding to support this work. Six energy efficiency points were established by 2012, and they work together in a network to reach various target groups, including citizens, property owners, investors, politicians and representatives of public administrations and associations.

Finding the funds

The EnSURE project also develops financial schemes to implement public and private investments in energy projects. The schemes are intended to help fill gaps in funding. In a further effort to help make sure that there is funding for good projects, EnSURE is seeking to develop a transnational model for climate-energy funds. These public funds would support local and regional projects and would be implemented by stakeholders working in local and regional administrations. It is hoped that funds established on the EnSURE model will be able to support good projects that might not have been implemented without financial aid.

> "Energy rehabilitation is one of the biggest challenges of the future. With EnSURE we share experience and expertise on a European level. The developed integrated strategies give us a set of innovative methods to implement on the local level."

Tobias Großmann,
Urban Planner, City of Ludwigsburg,
Germany

169
Public-sector entities involved in the project

86
Private sector entities involved in the project

69
Percentage of overall energy used by cities alone

Project: EnSURE
ERDF funding: € 1 909 578
Duration: 2010 – 2013
Website: www.ensure-project.eu

Saving energy in public buildings

The city hall of Bologna is nearly 700 years old, a historic masterpiece that is easy to warm up to but difficult to heat. The Palazzo Comunale, like many historical sites, schools and other public buildings in central Europe, must be modernised for energy efficiency, while also being carefully preserved. GovernEE measures energy loss in these old structures and recommends potential solutions for increasing their energy efficiency.

When it comes to improving energy efficiency and increasing the use of renewable energy sources in old public buildings, many municipal authorities face similar challenges: From budgetary constraints and cumbersome administrative procedures to strict regulations on alterations to historical buildings. Local authorities also need technical assistance, so they can measure energy efficiency and better understand energy needs in their buildings. Transnational cooperation can give local governments the knowledge and tools necessary for overcoming these challenges and reducing energy costs.

Energy-saving initiatives

GovernEE's pilot activities are putting best practices to work around the regions. In Hódmezővásárhely in Hungary, the Burgenlandkreis in Germany as well as in Prague in the Czech Republic, the project launched an information and communication technology system to measure the energy consumption of municipal buildings – including hospitals, kindergartens and school buildings. This tool enables facility managers and decision-makers to compare consumption data.

In Bologna, Italy, the project investigated possible approaches for an energy retrofit of a 14th-century municipal building. Along with ensuring preservation of old frescos and the wooden frame, the energy efficiency measures taken here must respect cultural heritage regulations. In a similar project in Quedlinburg, Germany, a new type of photovoltaic panel was installed in the city centre, an area classified as UNESCO World Heritage. The panels are designed to contribute to significant energy savings while preserving the aesthetics of the city landscape.
The cities involved in the project are carrying out training on energy efficiency to show decision makers and managers of municipal facilities the best approaches for energy efficiency in older buildings. The staffs of public historic buildings are also included in these courses, as the daily behaviour of staff members can significantly influence energy savings and efficient use of energy.

Long-term benefits

Cities like Hódmezővásárhely, Prague and Burgenlandkreis achieve direct long-term benefits from the installation of a technological measuring system that will continue to contribute to important steps toward economising on energy. Quedlinburg and Bologna also get technical know-how from the project. Energy savings result in budgetary savings that benefit both the government and tax payers.
The outcomes of the project are continuously shared through GovernEE's online competence center, which provides useful information, both general and technical, for different audiences. Comprehensive technical documentation was prepared and includes a key project outcome: "Cross-Sectoral Strategic Toolkit", which compiles all important experiences and results of the project in a format tailored to the needs of decision-makers and energy experts.

> "In order to maintain the historic and artistic value of historic buildings any intervention in them has to be done on tiptoe."

Paola Gabellini, Councillor for Urban Planning, Environment, Urban Quality, Municipality of Bologna, Emilia Romagna Region, Italy

5
Cities collaborating for better use of energy and renewable energy sources

18
Meetings of local focus groups identifying local needs and best transnational ideas

150
SMEs active in renewable energy technology in central Europe

Project: GovernEE
ERDF funding: € 1 714 003
Duration: 2010 – 2013
Website: www.governeeproject.eu

Photo: © iStockphoto.com / Steven Allan

Taking urban transport on a green journey

Public transport can relieve pressure on the environment by reducing the use of individual automobiles – but not all public transport is equal: Some systems are more efficient than others. In European cities, where road traffic accounts for 40 percent of all CO2 emissions and 70 percent of other air pollution, GUTS undertakes initiatives to promote public transport that uses cleaner energy.

The GUTS partnership understands that developing cleaner public transport systems can play a direct role in creating an attractive environment in urban areas, while also contributing to the health and quality of life of inhabitants. The project therefore investigates green public transport solutions, especially for municipal bus fleets.
GUTS sees the need for cities to develop a shared view regarding the nature of transport policy objectives. The project analyses and compares state-of-the-art technologies based on partner cities' pilot feasibility studies to find the most adaptable solutions for their public transport, taking into account local development needs and the need to minimise the local carbon footprint.

Helping cities to form action plans

The project's focus is on hydrogen and biofuels, both proven means for powering energy-efficient buses, but GUTS also studies solutions using solar energy and compressed natural gas. When promoting public transport that uses alternative fuels, the project looks at everything from technical parameters to financing models for each suggested solution.

> The challenge is to remove cars and trucks from cities while at the same time improving mobility and reducing its total costs.

Domenico Casellato,
Department of Territorial Planning, Mobility and Energy,
Province of Ferrara, Italy

The results of the project's initiatives are gathered into a "Transnational Strategy on Clean Public Transport Systems". The goal of this output is to give policy makers knowledge that they can use when forming their own urban planning strategies. Partner cities develop specific action plans that are ready to be put to use immediately.
To ensure technical support for the strategy, the GUTS project produces two Master studies that give public authorities and transport operators guidance on concrete implementation of clean public transport systems. These studies cover the governance perspective, such as management and public procurement models – along with monetary and technological considerations, like financing models, return on investment, payback periods, a survey of available funding sources and more. In its analysis of possible investments in cleaner public transport, the project investigates the challenges of financing the high initial costs and maintenance, as well as seeking ways to reap the benefits of introducing alternative fuels in the short- and medium-term.

Jointly preparing investments

In order to prepare targeted future investments in green public transport, GUTS shares the knowledge it produces via the Public Transport Resource Centre (PTRC). This online platform reaches beyond the project partnership and lasts beyond the project's lifetime, offering a key tool for sustainable and institutionalised transnational cooperation. It assists all stakeholders with networking, exchanging expertise and disseminating results, and helps regions to share the findings of GUTS on a European level. Using PTRC, other stakeholders and municipalities around Europe should be able to develop their own action plans for cleaner public transport systems that are as efficient as possible.

31.7

Percentage of energy consumption used up by the transport sector in the EU27 in 2010

1 224

Millions of tonnes of CO2 emissions from transport in the EU27 in 2010

1

Transnational Strategy on Clean Public Transport Systems

Photo: © Municipality of Sopron

Project: GUTS
ERDF funding: € 1 671 860
Duration: 2010 – 2013
Website: www.gutscentral.eu

Photo: © Andrea Kunicz

Helping SMEs measure and reduce energy use

As major energy users, small- and medium-sized enterprises (SMEs) can realise big energy savings, if they know how. The LiCEA project develops a simplified energy audit that lets SMEs analyse their power usage and identify ways to save. The project's innovative and sustainable methodology also includes a smart tool to measure resources utilization and environmental performance during industrial production.

Reduction of energy use, and hence energy costs, helps SMEs to stay competitive. Cutting back on the use of fuel by improving energy efficiency in industrial production also helps to lower greenhouse gas emissions. For these reasons, European Commission Directive 2006/32/EC highlights the importance of energy efficiency audits. The directive outlines the need for Member States to ensure the availability of energy-audit schemes, which are designed to identify potential energy efficiency measures for all energy consumers, including SMEs.
The LiCEA project provides a system for energy auditing to its partners from Austria, Hungary, Italy, Poland and Slovakia. The aim of the project is to find a means for discovering unexploited opportunities for energy saving throughout the supply chain of SMEs, in central Europe and beyond. The involvement of energy efficiency experts ensures that the project produces an innovative and professional solution, and guarantees a widespread dissemination of the results to a range of stakeholders. The expectation is that the LiCEA project can provide a standardised tool that all SMEs can use to audit the energy efficiency of their production processes.

> Energy audit is often the very first step in making your company more efficient and cost-effective. The audit can help you to assess how much energy your company wastes and to evaluate what measures you can take to improve efficiency. But remember, audits alone don't save energy: You need to also implement the recommended improvements.

Maurizio Castelli, Council Member
of the Province of Mantova for Energy
and Innovation, Italy

Life-cycle perspective adds value

LiCEA improves the energy audits that have been used before by adding the life-cycle perspective. Typically, an energy audit is an inspection, survey and analysis of energy flows for energy conservation in a building, process or system – to help determine the best way to reduce the amount of energy input into the system without negatively affecting the output. The LiCEA tool also provides an exact energy flow measurements and generates recommendations on how to decrease energy consumption. Instead of simply auditing the current situation, the tool looks at the potential for long-term savings with the application of environmental supply chain management, a rather strategic, long-term focussed approach.
The LiCEA tool tested SMEs from six production-oriented industrial districts in five central European countries. The project also implemented a pilot action, using the LiCEA tool to give an energy audit to a total of 200 SMEs, involved in sectors as diverse as hosiery, food (baked goods and meat), plastics, wood, machinery and tourism. A major value of LiCEA is that it can be replicated. The tool proved to be ready for dissemination throughout central European regions and beyond.
Along with the businesses that benefit from the audits, the project involves other stakeholders, including 40 local energy agencies, six business development centres and about 300 energy managers, all of whom are now familiar with the LICEA tool. Participants in the project also seek to ensure the results of their work are included in regional and national energy policies, so that the LiCEA tool can set a new standard in the field of industrial energy auditing.

10
Percentage of long-term energy reduction for SMEs thanks to LiCEA audits

200
SMEs received an energy audit of their production processes with the LiCEA Smart Tool

100
European energy agencies working closely with the partners of the project

Photo: © iStockphoto.com / bereeta

Project: LiCEA
ERDF funding: €812 601
Duration: 2012 – 2014
Website: www.licea.eu

Photo: © iStockphoto.com / Sun Chan

Municipalities seek energy self-sufficiency

Because urban areas consume more than two-thirds of the EU's energy, municipalities are being urged to cut back on fossil fuels and use more renewables. MANERGY helps promote sustainable, efficient cities by defining and testing concepts that save energy, by elaborating tools for use around central Europe, and by laying groundwork for new agencies that support this work on a regional level.

Given that public buildings are responsible for a large part of the energy consumption of most municipalities, local governments are in a position to prevent waste and set a good example for others. MANERGY supports officials in doing this by helping them ensure that public sector buildings use energy efficiently – and take advantage of any opportunities to use renewable, local sources for heat and power.
During the project's three-year lifetime, a group of six partners with various competencies have been researching energy demand in more than 100 settlements – examining the heat and electric energy consumption of their public buildings, the consumer behaviour of public employees, and their public lighting. In looking at the supply side, the project investigates how these municipalities can take advantage of solar, water, geothermal, wind and biomass energy.
The potential of these municipalities to use renewable energy is visualised on digital maps that support decision making.
MANERGY highlights the importance of planning, through the elaboration of energy concepts and action plans, as a way to maximise the potential to reduce energy demand while increasing renewable supply. These strategic plans help ensure that any investment into sustainable energy will be efficient and effective.

> "The main problem is the lack and poor organisation of data on local energy consumption and energy production. A large part of the data comes from systems managed for different purposes. Without reliable base values it is impossible to discover the wastages and define the target consumption values for 2020."
>
> Antonio Zonta, Head of the Building and Housing Department at Province of Treviso, Italy

Common challenge

As they seek to define the directions of sustainable municipal energy management, EU regions face difficulties in collecting information. The data they need may be available, but only through diverse sources. For example, some information on energy is used to determine how electricity from power plants should be distributed to the power grid. Meanwhile data on use of renewable energy is collected for the purpose of determining tax deductions, and data on emissions is important for environmental control purposes. The challenge that public administrations face is finding ways to collect all the available data on power usage and to look at it for the purposes of reducing demand and increasing the local supply through sustainable measures.

Transnational cooperation for local benefits

MANERGY works transnationally to help mayors and other public officials in establishing their own action plans with three different tools: Regional energy concepts, a handbook and the digital maps of renewable energy supply.
The regional energy concepts, which recommend exploitable renewable sources for smaller areas by considering the geographical characteristics of the regions, are useful in creating local concepts on the municipal level. The handbook provides guidance on planning, and helps municipalities understand the diverse data that must be analysed and monitored in order to ensure that they are using energy efficiently and making the most out of available renewable resources. The online maps also support the planning process.
All of these tools provide assistance in the elaboration of sustainable energy action plans under the European Union's Covenant of Mayors initiative.

40
Percentage of final energy consumption used in buildings

112
Number of settlements where the energy consumption of public buildings was analysed

18
Local energy action plans produced for municipalities

Photo: MANERGY_ © iStockphoto.com / guenterguni

Project: MANERGY
ERDF funding: € 930 709
Duration: 2011 – 2014
Website: www.manergyproject.eu

Photo: © Lovro Rozina

Unearthing new gold in former mining regions

For decades, coal was black gold, and mining meant prosperity. In central Europe's peripheral areas, mining often became the backbone of local economic development, and entire regions were shaped to meet the needs of this sector. In the post-industrial era, the boom has become bust: Former mining regions suffer environmental damage and a loss of jobs. ReSource seeks solutions to this problem.

Mines can be found everywhere in central Europe, but only a few are still active. Some former mines were completely depleted; others were forced to close for political, economic or environmental reasons. The regions that contained these mines are now plagued by environmental and economic problems. Mining activity often causes damage to the soil and ground water, through pollution that can linger for years. Termination of mining also causes social problems, like out-migration, urban decay and economic stagnation. The ReSource project seeks to turn the unique features of seven former mining districts in central Europe into positive resources for fostering sustainable development. Scientific support for the project's activities is provided through well-known institutes specialising in ecological and regional development and urban planning. The lessons learned by efforts to help these mining areas can be transferred to similar sites around Europe.

Local actions

In some places, ReSource partners explored the idea of harnessing geothermal energy from mine water. In Lusatia, Germany, pilot plantations showed how degraded mining areas can successfully be recultivated with bioenergy crops. The human-made infrastructure of former mining areas also provides opportunities. For instance, in Sokolov, the Czech Republic, plans were prepared for converting mining machinery into a look-out tower. And in the centre of the Hungarian city of Salgótarján, the local mining heritage was turned into a public exhibition: An underground display is exposed to view beneath a public walkway. In the Slovene region of Zasavje, a pilot project under ReSource compiled a "mining dictionary", containing unique words from the dying mining dialect of the region.

> "With the ReSource study, we not only found out about the heat demand of local enterprises but we were also able to thouroughly investigate a technical solution."
>
> Jörg Hilbig,
> Deputy Mayor of the City of Aue, Germany

Cooperation and exchange

An international summer school carried out within the ReSource project allowed for cooperation and exchange on a European level to enhance the attractiveness of former mine regions. Young people from various fields of interest and different countries jointly explored these regions in central Europe. Together, they identified tourist mining routes and came up with ideas for attracting tourism. A select number of these ideas were prepared for investment.
One of the ReSource project's core outputs is an internet-based knowledge database, which includes 70 cases of good practice and lists centres of knowledge. The database presents inspiring post-mining development approaches for both practitioners and scientists.
Because of the complexity and scale of work involved in effective re-utilisation of former mining areas, any reclamation effort requires the support of the wider socio-political environment. To help build this support, the partnership of the ReSource project issued policy requests for post-mining development, and compiled the requests in a study. This initiative draws the attention of national- and European-level policy makers to the challenges and opportunities facing post-mining regions.

70
Good practices collected in the ReSource post-mining knowledge database

32
Recommendations given in a resolution for pro-active development of post-mining regions

147
Million tons of hard coal produced in 1962 in Germany

132
Million tons of hard coal produced in 2009 in the entire EU-27

Photo: © Radke LMBV

Project: ReSource
ERDF funding: € 2 337 902
Duration: 2009 – 2012
Website: www.resource-ce.eu

Driving into a cleaner future with e-vehicles

Automobiles are one of the primary producers of air pollution – including carbon dioxide, nitrogen oxides and fine dust – harmful emissions that could be reduced if more people used electric-powered vehicles (e-vehicles). Through pilots held in six central European regions, the REZIPE project encourages drivers to switch from internal combustion to e-vehicles.

In a transferability study, REZIPE established ways to best pass on knowledge and experience gained through the project and to provide support for decision makers. The study is a valuable tool for stakeholders who want to promote the use of environmentally friendly vehicles. Along with providing this kind of policy support, the project also showcases pilots to implement electric mobility (e-mobility) in the central European regions of Reggio Emilia, Bolzano, Ljubljana, Györ, Upper Austria and Carinthia. These efforts are meant to create momentum for zero-emission vehicles powered by renewable energy.

Raising awareness of e-vehicles

Because REZIPE is designed to expand the use of e-vehicles in the region, a key component of the work is to raise awareness, and the project does this in many ways. For instance, the high visibility of the photovoltaic charging stations for electric vehicles ensures that the concept of e-mobility is promoted in the areas hosting REZIPE pilots. The stations also establish the beginnings of an infrastructure that can be expanded to encourage the use of e-vehicles. Awareness of the benefits of e-mobility was also increased with three different "Solar Rally" traveling exhibitions. The rallies allowed people in various municipalities and rural areas to test-drive e-vehicles. The majority of the test drivers responded very positively, and many said they would consider buying a zero-emission vehicle in the near future, a reaction that indicates positive long-term impacts of the REZIPE project.

Through cooperation with municipalities, the public and various other stakeholders, the project is able to attract attention to the benefits of e-mobility. Well-coordinated public relations and media work help the project reach out to key target groups.

> I visited the Solar-Rally in Eferding (Austria) because I was interested in e-mobility. I was overwhelmed by the wide range of e-cars presented and the ability to test the vehicles – which I did. My opinion about the production stage of e-vehicles has changed!
>
> Melanie Gahleitner, Leonding, Austria

Cooperation and continuation

Along with the difficulty of establishing charging installations and purchasing e-vehicles, other challenges to completing project activities include bureaucratic obstacles that slow down the decision-making and implementation processes. Fortunately, the transnational nature of the project made it possible to exchange a range of experiences in addressing common problems.

When the project officially comes to a close, the work is expected to continue. The results and experiences of the REZIPE pilots should help to create a strategy for further promotion of the usage of e-vehicles and expansion of the network of charging stations that the vehicles require. REZIPE is also expected to increase the number of e-vehicles in the regions the project serves, so that use of those vehicles should continue. For example, the project has already established a sustainable model for a business that rents e-bicycles, so that activity is likely to carry on well past the project's lifetime.

7.54

Tons of CO2 emissions prevented from the start of the project pilots by 2011

67 822

Kilometres driven during the 2 300 trips made with electrical vehicles from the beginning of the project pilots until the end of 2011

95

Percentage of electric delivery vehicle test drivers who believe that the REZIPE project will influence their use of electrical vehicles

Project: REZIPE
ERDF funding: € 1 040 575
Duration: 2010 – 2013
Website: www.rezipe.eu

Photo: © Hermann Hansen

Seeking more energy from renewable sources

To address climate change, Europe will need to make better use of regionally available renewable energy resources. The RUBIRES project raised awareness on the biomass potential in selected central European regions and demonstrated how its exploitation can be linked to sustainable rural development.

RUBIRES was divided into three inter-related areas of work: The project analysed material flow management, regional land-use management and value-added partnerships. Its results are transferable to other European regions that jointly want to manage their biomass resources in a sustainable way.

Material flow management

When analysing the management of material flows, the focus lay on increasing awareness on regional biomass potential and improving methods for managing materials that can be used as biomass – i.e. all organic waste material that can be burned to produce energy. Taking account of varying regional conditions, the analyses looked at a variety of material flows ranging from viniculture and fruit production to unused biomass from required public services. To determine how material flows can be optimised, different instruments were tested, such as geo information systems, market analysis, feasibility analysis, etc. The project then produced a guidebook offering a theoretical introduction to material flow management, available on its website.

> With the support of RUBIRES we aim to build a sustainable energy and raw material centre so that companies and municipalities get access to energy produced by efficiently using renewable raw materials.

Erwin Stubenschrott,
CEO KWB – Kraft und Wärme aus Biomasse GmbH, Germany

Regional land-use management

Based on results of the study of material flow management, RUBIRES sought to contribute to optimised land-use management. Project partners looked at formal and informal instruments used for spatial planning, investigated the status of rural biological resources in planning systems and sought to demonstrate the potential of renewable energy sources in planning. After evaluating the participating regions, partners provided practical recommendations for future land-use planning. The final product was the "Catalogue of Recommendations", a summary of joint results containing the main recommendations that RUBIRES partners and experts considered useful for further implementation.

Regional value-added partnerships

In addition to environmental benefits, the use of biomass energy can also contribute to regional economic development. The production of green energy is a multi-player game with all actors (producers, processors, distributors, etc.) adding value to the final product. The whole system is called a value-added chain. While value-added chains are already well developed in some Member States, many regions of central Europe are still lagging behind. By using transnational tools of regional development and project management, RUBIRES helped to build up such chains and to use biomass in a more appropriate way.

Spreading the word

The diverse regions brought together by this transnational project were able to exchange unique experiences and find synergies for working together. The project started a dialogue among actors who had never collaborated before, making them realise how to benefit from cooperation. Several transnational conferences, qualification workshops and communication activities helped ensure that a wider range of people learned about and profited from the results of the RUBIRES project.

140
Million tonnes of oil equivalent (MTOE) produced by renewable energies in Europe in 2007

340
Million tonnes of oil equivalent (MTOE) to be produced by renewable energies in Europe under targets for 2020

10
Stops of the RUBIRES mobile exhibition

Photo: © iStockphoto.com / oxyoo

Project: RUBIRES
ERDF funding: € 1 689 412
Duration: 2009 – 2011
Website: www.rubires.de

Biogas: cleaner energy made in Europe

Dependence on oil and natural gas imports leave Europe vulnerable to price and supply fluctuations. More energy independence can be achieved by increasing production and use of biogas – fuel made from organic matter so it is "carbon neutral", renewable and, therefore, environmentally friendly. SEBE supports the use of biogas with initiatives that raise awareness and offer technical assistance.

The initiatives that SEBE undertook were designed to address barriers to greater use of biogas, including a lack of awareness, a shortage of qualified professionals, and regional differences in such areas as economic and legal frameworks and availability of resources.

Technical assistance

Among the project's most exciting pilot actions is the development of the "Mobile Laboratory", a kit the size of a suitcase which is equipped with technical devices to enable an examination of the biochemical composition of a biogas plant. The measurements taken by the mobile laboratory allow biogas plant operators to control whether their system is operating correctly and efficiently, so they can avoid breakdowns and increase biogas yield. The mobile laboratory can be rented out for on-site research and training at different biogas plants – and can be used to demonstrate best practices.
The project provides other tools for biogas plant operators, future biogas plant and system designers, gas grid operators, gas station operators, policy-makers and other stakeholders. These tools allow project participants to share their research and expertise with a range of people involved in biogas production.

Transnational knowledge sharing

Sharing expertise was an important part of the project. The transnational approach was especially useful in this regard, because it allowed SEBE experts to develop international guidelines, political concept papers and strategies and action plans that can be used to overcome the barriers of individual national systems. The experience of the partners is shared online through the transnational knowledge management tool, which is fully accessible by the public and allows for an efficient way to share knowledge. Beneficiaries include decision-makers, biogas companies, research facilities and the public in general as well as experts in the field of biogas.

Awareness raising

To help raise awareness and share information about biogas, SEBE established "Competence-Knowledge Centres" in its partner regions. Along with being hubs for information, these centres undertook pilot actions.
SEBE also raised awareness of the benefits of biogas at the "European-Ukrainian Energy Day", a well-attended event that received important media attention in a country with huge potential for biogas.
In Poland, SEBE organised various events in order to promote innovation, knowledge and education in the biogas sector. This pilot included an event that was tailored to students and was based on SEBE project findings. The students involved submitted studies on the state of the biogas sector in Poland. The study judged to be best is featured on the website of the Polish Competence-Knowledge Centre.
Other work to raise awareness about the potential of biogas to a larger audience include guided tours of the Bruck/Leitha biogas plant, to share practical expertise, and workshops for farmers in Poland.

> "Biogas cannot save the world, but it can contribute in a meaningful way to solving Europe's energy challenge."

Josef Pellmeyer,
President of the German Biogas Association, Germany

14

Days required for anaerobic digestion, the oxygen-free breakdown of organic materials that creates biogas

1200s

Century in which Marco Polo first made a reference to biogas

70 000

Number of vehicles running on biogas in Europe

Project: SEBE
ERDF funding: €2 382 758
Duration: 2010 – 2013
Website: www.sebe2013.eu

Sharing the clean energy of geothermal water

The Pannonian Basin in central Europe harbours a massive underground system of thermal water reservoirs, which can provide environmentally friendly, renewable energy if managed well. Because the water flows under the territories of four countries, it is essential to coordinate the use of this resource through the kind of transnational cooperation promoted by TRANSENERGY.

As Europe looks for alternatives to fossil fuels – which are growing ever scarcer and produce carbon emissions that can cause climate change – geothermal resources promise a clean, renewable alternative source of energy.
In central Europe's Pannonian Basin, the geothermal gradient (the increase in temperature per increase in depth below the ground) is about 45 degrees Celsius per kilometre, roughly 1.5 times the European average. Much of the Pannonian Basin is in Hungary, but the geothermal resources of the western part of the basin are also shared by Austria, Slovenia and Slovakia. If any single country unilaterally extracts thermal water on its own territory – without transnationally harmonised management – it can have negative effects for everyone.
TRANSENERGY provides recommendations for a joint, multinational management system of geothermal resources, so they can be shared fairly, in a sustainable way.

Taking stock

To understand the challenge it faces, TRANSENERGY conducted a survey of existing geothermal energy utilisation in the region covered by the project. The survey identified a total of 172 geothermal energy users, most of which were concentrated along some densely exploited areas, especially near state borders. TRANSENERGY found that there were 17 different types of utilisation among these users. Bathing and swimming was found to be the most common type of utilisation in all four countries, but use of this energy for heating is also significant, especially in Slovenia and Slovakia.

Providing tools for better planning

TRANSENERGY's ultimate goal is to provide a user friendly, web-based tool, supporting decision making. The tool is intended to show all relevant information on the potential, vulnerability and sustainability of the geothermal systems in certain transboundary regions. These regions were selected because they are already experiencing utilisation conflicts and are extremely sensitive to any further intervention by different management policies in the neighbouring countries. Recommendations for sustainable utilisation will be summarised in a White Paper.
One of the main challenges of this kind of work is handling heterogeneous data from different countries. Due to different national policies and standards, there are differences in the types of data available, as well as the quality. Harmonising and integrating data from the four countries is one of the main achievements of TRANSENERGY: The project provides a common platform for different geological, hydrogeological and geothermal models, making it possible to conduct evaluations of the whole transnational basin. Thanks to TRANSENERGY, development agencies, potential investors and thermal water users will be able to understand more deeply their own use of resources and gain more sensible information on possible future development of selected sites.

Photo: © iStockphoto.com / Yory Frenklakh

> By the systematic survey of thermal water users and establishment of geoscientific models based on harmonised data from four countries, TRANSENERGY's results will be highly beneficial for a large number of stakeholders in the central Europe region dealing with the sustainable utilisation of geothermal energy.

Ladislaus Rybach, Director,
International Geothermal Association, Switzerland

5
Transboundary pilot areas, where geological, hydrogeological and geothermal models are established

16
Geothermal maps that show geothermal potential of the entire project area

1 686
Number of boreholes in four participating countries

Photo: © iStockphoto.com / VEKWEK

Project: TRANSENERGY
ERDF funding: € 2 170 963
Duration: 2010 – 2013
Website: http://transenergy-eu.geologie.ac.at

Clean energy from rural regions

As energy prices increase, regions can make themselves more competitive and attractive by obtaining a secure energy supply and using it efficiently. The VIS NOVA project shares best practices and applies pilot measures to help rural regions produce their own energy sources and improve efficiency, so that 100 percent of their energy needs can be generated locally.

The challenge faced by VIS NOVA is to assist regions in taking an integrated approach to energy efficiency by addressing both the supply and demand for energy. Rural regions that handle their energy needs in a strategic way can greatly increase their energy independence, thereby improving territorial cohesion, competitiveness and employment. To help achieve this, the project partners seek to ensure
that regional development policies include systematic efforts to use renewable energy sources and reduce energy waste. Without sufficient knowledge and planning instruments, public authorities in rural regions may undertake isolated efforts that fail to realise the full benefits that can come from a secure local energy supply. Public authorities also need more information about cutting-edge innovations that are being used elsewhere in Europe and are easily transferable to other rural regions.
The medium-to-long-term goal of VIS NOVA is to help rural regions cover up to 100 percent of their energy supply using locally produced sources. A local supply of energy is secure and sustainable, and it helps rural regions to become more independent, so that they have more control over economic development. Locally produced energy can also be a new factor to attract businesses to an area, which can increase employment.

Photo: © energyCENTER

> Thanks to the VIS NOVA project, annual expenditures on heating and domestic hot water were decreased by more than 50 percent.

Balázs Csillag,
Director of Sports Centre, Szekszard, Hungary

Making plans, and acting on them

The project helps regions to develop new energy plans and implement them. The plans are designed to create added value in the renewable energy sector, to secure local energy supply and to improve energy efficiency performance. As a result of such actions, regions strengthen their economic competitiveness and promote territorial cohesion.
The benefits of this approach are demonstrated by the project's pilot investments, like the recently installed heat generation system in the spa and sports centre in Szekszard, Hungary. Heat generation at the centre used to come from burning natural gas, but it was replaced with a system that uses geothermal energy. By boring 350 metres into the ground under the centre, it was possible to tap into water with a temperature of 32 degrees centigrade. Two heat pumps, with 647.5 kW heat output each, were used to take advantage of the hot water, which was used to heat the bath and sports centre. The thermal water heating system was combined with a solar thermal system on the southern side of the spa. Solar panels covering an 80 square-metre area capture the heat of the sun and feed it into the central heating system.
Through this investment in renewable energy, the city of Szekszard has been able to reduce operating costs significantly, and the heating system of the spa and sports centre is sustainable. The system also works without burning fossil fuels, which contribute to global warming due to their CO_2 emissions. As a next step, the sports centre is planning a photovoltaic system, to supply electricity and complete the sustainability of the building.

56
Percentage of reduction in heating costs at the Szekszard Sports Centre

350
Depth of the well in metres for drawing up hot water heating the sports centre

18
Percentage of emissions reduction in the EU between 1990 and 2012

Photo: © VIS NOVA

Project: VIS NOVA
ERDF funding: €2 106 626
Duration: 2011 – 2014
Website: www.vis-nova.eu

The Joint Technical Secretariat (JTS) of the CENTRAL EUROPE Programme is based in Vienna (Austria) and can be contacted at any time for queries related to finance, project management, or communication.
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