

SUSTAINABLE ENERGY COMMUNITIES



N° 1 - June 2007 Summary

[Sustainable Energy Communities
SEC-Toolbox](#)

Successful projects

- ◆ [Building rehabilitation and thermo-modernisation activities in Ustka \(PL\)](#)
- ◆ [Success story of district heating in Iecava \(LV\)](#)
- ◆ [The Energy Planning in the City of Milevsko \(CZ\)](#)
- ◆ [Municipal Energy Planning in Trakai \(LT\)](#)
- ◆ [Schraden became a part of the bigger framework "Innovative Energy Region" \(D\)](#)
- ◆ [The pilot ESCO operation in kindergartens in Karlovo \(BG\)](#)

[Intelligent Energy - Europe](#)

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Sustainable Energy Communities

The Rio summit established the concept of local sustainable development plans known as AGENDA 21. In conjunction with EU Energy policy and legal initiatives these local energy communities can pioneer the application of integrated measures required to reach our global commitments and can become showcases for the dissemination of those concepts around Europe. Given their showcase character, sustainable energy communities must aim to reach objectives much beyond the global EU objectives. They are briefly defined as "local communities in which politicians, planners, developers, market actors and citizens actively cooperate to demonstrate and develop high degrees of decentralised energy supply, favouring renewable energies as sources, together with a conscientious application of energy efficiency measures in all end-use sectors".

Communities in new Member States and Candidate Countries are facing a large need for energy efficiency improvement & further use of renewable energy. Even if the context varies from a region to another, you will notice the strong will and involvement of local organisations and institutions in the promotion and implementation of the Sustainable Energy Communities process.

The project which is coordinated by Energy Consulting Network - ECNet and is supported by the programme 'Intelligent Energy - Europe' of the European Commission.



SEC-Toolbox - guidance and tools to support development of sustainable energy communities

The SEC-Toolbox aims at guiding and supporting various stakeholders along the process of planning and developing a sustainable energy community.

The tools can consist in:

- an overview and guides to Best Available Technologies,
- an overview and guides to Best Way of Practises,
- an analysis tool,
- other types of guidelines,
- and various concepts (concepts for energy performance contracting for example).

The project identifies the needs for various kinds of tools and on this background identifies, evaluates and possibly modifies existing tools. To some extent, it also aims at developing new tools. The tools are described in an on-line toolbox structured according to the Sustainable Energy Communities process.

The Context category tools aim at creating incentives to develop SECs and in this context providing overall guidance on the overall Sustainable Energy Communities process.

The Status and Potential category includes tools to analyse characteristics of the market conditions and to identify development towards a sustainable energy community.

Planning tools category deals with analysis and prioritization of the identified development options.

The Instruments category deals with how to create incentives at the various stakeholders to implement the prioritised development options.

The Action Plan tools deals with needed actions to implement SEC development plans with due involvement of the various stakeholders.

Finally, Monitoring and Evaluation Tools aim at monitoring and evaluating the overall Sustainable Energy Communities process and the development options implemented.



Building rehabilitation and thermo-modernisation activities in Ustka (PL)

The town of Ustka enjoys the status of a seaside resort. This status obliges the town to have a special concern for environmental issues, including energy conservation. Many actions of rehabilitation of the housing stock are being conducted with the support of various available financing schemes. The most common funding tool is the thermo-modernisation credit. Over the years 2005 and 2006, seven buildings owned by condominiums, with a total usable floor area of 15,000 m², were retrofitted. The retrofitting consists in the insulation of walls and floors and in the renovation of the central heating system. As a result, the demand for heat is expected to drop by 30%-40%. The investment was financed at 25% through the thermo-modernisation credit. Eight more buildings, with a total floor area of 10,500 m² are planned to be renovated this year. Three other condominiums (HOAs) conducted energy retrofitting on their own funds, covering 100% of the investment costs.

A worthwhile initiative was undertaken jointly by the municipality of Ustka and Ustka Public Building Society (called "UTBS" in Polish). The municipality handed over to the Society two communal residential buildings, located at 13 Kosynierów Street (207 m²) and at 5 Findera Street (284 m²). The buildings required general refurbishment due to poor technical condition. The investment was carried out by the Society in 2006.



13, Kosynierów Street before rehabilitation




13, Kosynierów Street after rehabilitation

The buildings underwent renovation with the use of the latest technologies (insulation with foamed polystyrene) while their former character was kept by letting the half-timbered construction exposed.

The buildings were connected to the municipal district heating network. The reconstruction process consisted in the construction of the building to the rough-in stage including framing, connection of utilities and exterior finishes. Activities such as interior finishes with internal wiring and plumbing, as well as internal decoration, are to be carried out by future owners of the houses.

The houses that have been refurbished are then sold to private owners. The refurbishment of seven more buildings is planned for 2007. In total, the retrofitting process is to cover about thirty buildings.

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picture: © Ustka Public Building Society



Success story of district heating in Iecava (LV)

Iecava parish is located in the central part of Latvia. Its total area is 312 km², population about 10,000 inhabitants. The administrative centre – village Iecava – is located 45 km far from Riga; this geographical position attracts new inhabitants and employers.


One of the responsibilities of the Iecava municipality is to provide district heating services to the village. The District heating system consists in 2 natural gas fuelled boiler houses and their networks. The total heat load capacity in both systems is 11.4 MW; the yearly heat production is 15,000 MWh, and the heat tariff of 35 EUR/MWh.

The Administration of Iecava municipality decided to start the reconstruction of the district heating system at the end of 90's due to the emergency situation in the heating networks and plant. For instance, heat losses in the networks were 33%.

The first step of reconstruction consisted in the elaboration of a heating system development plan (Strasa Konsultanti SIA). The plan has 3 priorities: the improvement of district heating system efficiency, the reduction of the costs and the share of municipal subsidies to the heating sector.

The heating system development plan was implemented in 4 stages. The most efficient activities, like switching from 4 to 2 pipe networks and installation of individual heat substations, were done during the first stage, in 2001. Other activities, including the complete rebuilding and optimisation of networks and the reconstruction of the main heating plant were implemented during the following 4 years, between 2002 and 2005. The investment was covered by the municipal budget, loans and state grants.

The most important results of the reconstruction were the reduction by 6 of heat losses, the reduction of natural gas consumption by 30% and a general improvement of service quality.

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picture: © Ineta Bramane



The Energy Planning in the City of Milevsko (CZ)

The city of Milevsko has participated in the SEC-Tools project on behalf of Czech Republic. The partnership has been managed by the company SEVEN, the Energy Efficiency Center. Milevsko is a city of 9,500 inhabitants, located in the Southern part of Czech Republic.


The city of Milevsko is active in energy savings in municipal buildings, and in energy management of the city region. The city initiated the development of the energy policy for the city of Milevsko and neighbouring villages.



The city of Milevsko ordered the development of energy audits of selected municipal facilities. Energy audits were made for ice hockey stadium, schools, nurseries, healthcare center, multi-apartment buildings and social assistance building. A special energy audit has been carried out for municipal district heating utility.

The energy policy was approved by the municipal authorities. The city has identified energy policy priorities and specific needs, enabling to achieve the City Energy Plan objectives.

One of the significant municipal bodies is the "Energy Commission" set-up thanks to the SEC-tools project. The members of this Commission are: the city power engineer, the city councillor responsible for operating and financing, the representative of the company operating district heating system, the power engineer of main heat supplier, local energy specialists and a representative of the SEVEN. The aim of this Commission is being the expert body for decisions of the city management in the field of municipal energy policy and municipal energy management. From the analyse of the energy situation in the city, its members have suggested improvements in the field of energy production, distribution and consumption, trying to support balanced production of heat energy from two main energy sources in the city (municipal and private) and have impulse energy audits.

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picture: © SEVEN



Municipal Energy Planning in Trakai (LT)

Almost 50% of dwellings in Lithuania heat their homes using district heating, which has been widespread since Soviet times. District heating offers a great number of advantages, the most important ones being:

- A possibility to use various fuels as well as surplus of heat produced by industrial companies, which otherwise would simply be lost;
- A possibility to employ a highly efficient combined heat and power production technology which produces electricity and efficiently uses a by-product – heat. This allows to reach very high overall efficiencies of 90% and more;
- Avoidance of pollution in densely populated areas ensuring urban population to live in a clean and healthy environment.

Despite these advantages, operating district heating systems require good technical and economical knowledge. Municipalities often lack this kind of knowledge.

Thanks to extensive Danish government support, the Heat Law was enforced in the Environment Lithuanian Legislation in 2003. The Heat Law introduces heat supply planning as an obligatory task for municipalities. The principal objective of heat planning is to ensure reliable and environmentally-friendly heat supply to consumers at the lowest cost.




"Public discussion on the heat planning concept at Rudiskes town in early spring 2007"

In accordance with the activities of the project "SEC-Tools", the municipality of Trakai recently launched a public bid for making heat planning in 3 small towns of the district: Aukstadvaris (1,000 inhabitants), Senieji Trakai (1,500 inhabitants) and Rudiskes (2,500 inhabitants). For this purpose, the municipality has earmarked 60,000 Lt (17,400 EUR) in its budget.

The 3 heat supply plans will be ready by the end of this year. The most important results are reflected in a detailed map, which depicts the so called consumer zones. Each zone embraces heat consumers that are supposed to be supplied through a unique heating mode, e.g. district heating or decentralised natural gas heating in buildings. This allows to bring overall heating costs down to a minimum level.

It may happen that some consumers will not want to stick to a prescribed heating mode for a particular zone. For example, there might be consumers in a district heating zone who want to disconnect from the district heating network and install individual gas boilers instead. This may create inefficiencies in the system due to fewer consumers sharing the same fixed costs. For this reason, the consumer disconnection procedure may be somewhat complicated. It requires appraisal of consequences for the remaining consumers and in some cases the implementation of measures that will protect the remaining consumers from heat price increases. The Heat Law stipulates that a municipality may postpone the permission for disconnection up to 2 years.

Main findings of the heat supply planning will be presented to the municipal board consideration by the end of this year.

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picture © Municipality of Trakai



Schraden became a part of the bigger framework "Innovative Energy Region" (D)




Energy, vital topic for the southern region of Brandenburg, is often used as a synonym for electricity production from Lusatian lignite. After reunification, Lusatian power plants became among the most efficient in the world and contributed by more than 20% to the total German CO₂ reduction.

In recent years Lusatia has also become a kind of laboratory to pave the way for other sustainable energy use. Schraden is one of the areas where people are concerned by energy conservation, the use of solar energy and the development of all kind of bioenergy form on the basis of economic development. Among others, a cooperative for biomass production was founded.

On March 15th, all the Mayors of Lusatian cities and municipalities, and the presidents of the four counties declared their region as the "Innovative Energy Region". They constitute an expert energy forum led by a small strategy committee organising further project work in the area of energy management, land use for biomass production or education in schools. Renewable energies now contribute to 647 MW in the whole area where fossil resources deliver 4,400 MW. The SEC-Tools project will play a crucial role in the further development of municipal activities.

An important driving force behind that development has been the German priority law for renewables with fixed feed-in-tariffs. However the management of suitable areas for wind energy plants within a legal framework of Brandenburg was a crucial factor as well. The regional planning office of the Lusatian counties was responsible to evaluate all pros and cons for defining suitable legally declared sites. Now 580 MW has been installed and there is still more space to develop. The other plants contributing to green electricity are photovoltaic panels (1.3 MW), small hydropower (2.8 MW), biogasplants (12.9 MW) and biomass CHP plants (39 MW). All sites have been displayed in an atlas by the regional planning office.

Schraden municipalities are also a part of the accompanying programme "Energy Land Lusatia" that is led by the Int. building exhibition (www.iba-see.de) and CEBra as the main advising expert. It was a success of SEC Tool's activities that Schraden members agreed to concentrate their future activities in the framework of the new LEADER programme where the strategic concept with one focus on sustainable energy has now been delivered to the Brandenburg ministry of rural development.

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picture © CEBra



The pilot ESCO operation in kindergartens in the town of Karlovo (BG)

Karlovo is a Bulgarian city of 29,000 inhabitants, located in a semi-mountainous area in the Rose Valley. The community is highly committed to the prepared pilot actions, including defining the community's sustainable-energy vision and planned scope of activity. The key aims of the pilot actions are to promote renewable energy solutions, to accomplish energy renovation of public buildings, and to undertake campaigns for raising awareness of sustainable energy. Within the SEC-

Tools project, pilot SEC actions are carried out in close interaction with the development of the SEC toolbox.

During the autumn of 2006, Karlovo undertook to improve energy performance at all five nursery schools. The ESCO contract has been the main tool for guaranteed results. It is recognised as a specific commercial contract, regulated by article 21 of the Energy Efficiency Act. The energy efficiency service provider made an energy audit that became a business plan for the entire operation. The plan calculates and guarantees the economy of energy-saving measures realised, and provides financing of the project, but its reward depends on economies attained during the payback term.

The following energy-efficiency measures were implemented: thermo-modernisation of the building envelopes and roofs, which now are insulated with modern materials, installation of new window-systems in place of the old windows and increasing the efficiency of the boilers in two kindergartens, by changing the old burners with new and more effective ones and insulating the main pipes.

In preparing the energy audits, it was calculated that all the nursery schools spend 177,948 EUR annually for an energy consumption of 2,503 MWh.

The agreed-upon investments of 855,747 EUR were provided by the ESCO company for all the nursery schools. Their payback period was calculated to be 5,8 years. The annual energy consumption for the five buildings, after the energy-efficiency measures are implemented, is projected to 900 MWh per year - 36% lower than it was before the implementation of the measures. Thus foreseen energy savings are expected to be 64% of the baseline energy consumption. Specific energy consumption of the buildings will decrease dramatically from 388 to 119 KWh/m²/y.




nursery school "Purvi Juni" before rehabilitation



nursery school "Purvi Juni" after rehabilitation

Over the entire period of five years and ten months, the Municipality of Karlovo will pay to the ESCO company the value of guaranteed annual economy of financial resources energy at the rate of 107,763 EUR. During that period, the Municipality will pay to the ESCO company equal monthly instalments of 8,980 EUR for energy-efficiency measures implementation and 3,244 EUR for repair work. Following the energy audits recommendations another 5 school buildings will be renovated in the summer.

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picture © Municipality of Karlovo



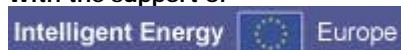
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"Intelligent Energy - Europe" (IEE) is the Community's support programme for non-technological actions in the field of energy, precisely in the field of energy efficiency and renewable energy sources.

From 2003-2006, IEE has supported the European Union's policies in the field of energy as laid down in the Green Paper on Security of Energy Supply, the White Paper on Transport and other related Community legislation. Its aim was to support sustainable development in the energy context, making a balanced contribution to achieving the general objectives of security of energy supply, competitiveness, and environmental protection.

2007 will be the starting point of the IEE II programme as part of the Competitiveness and Innovation Framework Programme. €730 million will be available to fund projects for the promotion of energy efficiency and renewable energy. The new programme will build on the strengths of IEE I whilst giving greater emphasis to addressing the needs of small and medium-size enterprises, as well as improved competitiveness and innovation. The programme will cover three main areas – energy efficiency, renewable energy sources and transport – and within these areas many of the themes from previous years have been repeated, including buildings, industry, consumer products, renewable electricity, heating and cooling and biofuels.

