Compendium

Central Eastern European Study Tour
in the Framework of ECSE project supported by EuropeAid and SIDA.
"**E**ngaging **C**itizens in **S**ustainable **E**nergy to improve environment and local Economy"
August 25 (Sunday)– Sept 1 (Sunday), 2013
Participants are from 3 municipalities of Belarus (Marina Gorka, Braslav, and Shuchin), and national organisations, institutes from Minsk.

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COMPENDIUM

Study Tour to Central and Eastern Europe, August 2013
In the framework of "Engaging Citizens in Sustainable Energy to improve environment and local Economy" ECSE Project in 2012-14.

Organisers of the Study Tour:
Gunnar Boye Olesen, Judit Szoleczky INFORSE-Europe, Denmark
Dmitry Burenkin, CES, Belarus

More on the ECSE Project:
http://www.inforse.org/europe/ECSE.htm
http://www.inforse.org/europe/ECSE_RU.htm

Project partners and implementers:

INFORSE Europe
Klosterport 4E, 1s
8000 Aarhus C,
Denmark.
T: +45 86 22 7000
E: ove[at]inforse.org
www.inforse.org/europe

Skåne Energy Agency
Nordenskiöldsgatan 17
211 19 Malmö
Sweden
T: +46 709 71 99 68
E: cecilia.thapper[at]kfsk.se
www.kfsk.se

Centre of Environmental Solution
Masherova Ave. 9-317,
220029 Minsk,
Belarus
T.: +375172374070
E:info[at]ecoidea.by
burenkin[at]ecoidea.by
www.ecoidea.by

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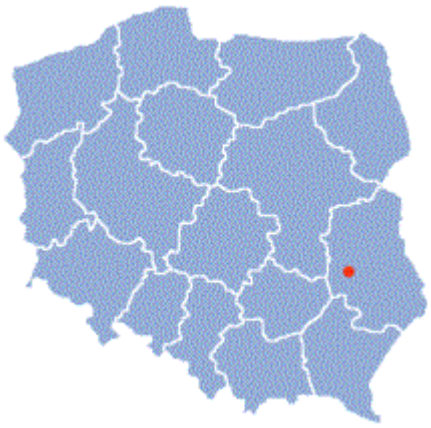
The contents of this document are the sole responsibility of the ECSE Project Partners: INFORSE-Europe, Denmark (Project Coordinator), Skåne Energy Agency (SEA) Sweden, and Centre of Environmental Solutions (CES), Belarus; and can under no circumstances be regarded as reflecting the position of the financial supporters i.e. European Union and SIDA.

Rejowiec Fabryczny Municipality, Poland

Major Changes in a Small Town, Natural Gas Heating Station, Thermal House Renovation



Rejowiec Fabryczny is a town with less than 5000 inhabitants located on a major Vistula railway route from Warsaw through Lublin to Chelm and then to the state border of Ukraine.

Rejowiec Factory is a relatively young town, (established in1962) and its existence and historical development has been influenced by the local cement plant, which was established in 1924. In addition to the cement plant, there are smaller construction companies and a sugar company which give jobs for the residents.

Today, Rejowiec Fabryczny builds its position as a local business, commerce and services center. The some small-business services include family textile and wood processing enterprises, and reactivating old professions. The municipality aims to expanding the municipal infrastructure, taking care of the environment, and a increasing standard of living.

Recent developments: Sport center, playgrounds, recreational parks, and environmental projects like a modern sewage treatment plant, waterworks station and natural gas heating plant. The sewerage and gas network was expanded, so they covered the entire town area. The town's broader environmental program includes environmental education of child, youth and adult residents. The municipality is listning to the residencts. It only implements ideas for the town's development, which are results of the identified needs of residents and from public consultations.

The aims are to reduce the impact of human activities on the environment and the climate change by
• implementation of innovative low-carbon technologies;
• optimization of energy consumption from renewable energy sources;
• creation of a safe living environment (green, with transport, heating, electricity, gas, information technology infrastructure and the organization of cultural activities and recreation);
• changes in the production of energy, food and waste disposal.

PRO: • People recognise the importance of reducing the airpollution in a town, which has health consequeces. The area has already high airpollution from the cement plant and coal burning. Combining areas are popular. An example is the transformation of a old coal plant building, which gives space both to a natural gas plant, and cultural activities.

Challenges:
• Achieving a low-carbon Poland in a cheap-coal dominated country;
• Reducing air pollution from inefficient home furnaces by promoting the efficient furnaces
• Reducing air pollution from burning lignite, and garbage by promoting to shift to district heating from the new natural gas plant, and use solar energy and more insolation and doble galzed windows.
• Fight against burning garbage in home furnaces, which releases hazardous *pollutants* like heavy metals and dioxin.
• Increase availability of loans for house renovations (themo- insolation, glased windows), which reduces the energy consumption.
• Resistance against a big biogas plant, which has a good economy, but people were afraid of the potential smell. Therefore promotion of micro scale agricultural biogas plants, and other renewables like solar farms).
• Change mentality. The development requires a change in the mentality of individual people, preparation of appropriate town management procedures, cooperation of the residents, local organizations, enterprises, industry and administration, as well as get to know and use of new technologies (solar cells, LED lights, lamps with sensor, smart metering). Promote the image of the "Smart Town", which is

friendly for its inhabitants.
• Long pay back peiods for some of the alternatives, because of the cheap coal prices.

Financing solutions:

The area is in Eastern Poland which belongs to the ”lower income” are where there is available co-financing from the EU. The municipality has beed successful to get financial support from EU for infrastucture development.

Some of the projects have beedn financed by the town itself, and some are financed by the residents or by the housing associations like the thermo renovation of the panel houses

Visit:

The building complex "Sunrise"
The old building of the coal fueled boiler is under construction to include a natural gas heating station and a conference center. The modernized building will have amunicipal library, conference room, café, rehabilitation massage, and fitness center, exhibition hall and office services to entrepreneurs.

The project is co-financed by the European Regional Development Fund and the state budget under the Regional Operational Programme 2007-2013 Lublin. The total cost of the project is 1 million Eoro, from which about 65% is EU support.

Thermo isolated panel house buidlings
The flats were originally built to workers at the cement plant. Now the flats are owned by the people, who lives in them, and the common areas are owned by the association of the owners.

More: http://www.rejowiec.pl/

Project JOIN IN "Social Participation in Local Energy Planning" – the Project is with Polish Institute for Sustainable Development and INFORSE

Rejowiec Fabryczny Participates in the Project:
JOIN IN! **Social Participation in Local Energy Planning**

The Project is implemented by the Institute for Sustainable Development, Field of Dialogue Foundation and the Danish partner INFORSE-Europe (September 2012 – September 2014) includes testing, implementation and promotion of consensus conferences – an innovative method of social participation. The main goal of the project is to increase social participation, using the example of local energy planning – a process in which the opinion of the local community is usually overlooked by the authorities and the community itself is often not interested in the issue.

Who is the project for?
The project is addressed to the inhabitants of four communes in Lublin voivodeship, where only a few local energy strategies exist. Also, when choosing energy supply for a commune, the influence on the development of local economy, costs, jobs, or air quality is rarely taken into account. What is more, the inhabitants of Lublin voivodeship are not very active when it comes to public participation. Still, they claim that if there was a partnership between the authorities and citizens concerning energy issues, they would get involved in the actions undertaken in their commune. The project is also aimed at strengthening local organisations, which will gain knowledge and competencies useful in their further activity.

Why should I join in?
Poland faces a great challenge of providing the citizens with secure energy supply for dozens of years to come. Nowadays, the decisions concerning the energy mix are taken with hardly social participation. The process of creating the assumptions to the communal plans of energy supply (heat, electricity and gas fuels) is a great opportunity to participate. Decisions made by local authorities are later reflected in energy bills, which is especially important in the situation of widely spread energy poverty. Social participation also increases the chance of securing stable energy supply for competitive prices, creating local jobs and improving environment and life quality.

What is the project structure?
The Project consists of two stages: pilot stage in Rejowiec Fabryczny and follow up in three municipalities, which will be chosen during the project. During the first stage of the project, local authorities and organisations from Lublin voivodeship will receive questionnaires where they will be able to express their interest and willingness to participate in the project. Having consulted the results with experts, the project Partners will choose three municipalities, where the *consensus conference method* will be implemented. Actions in each municipalities will follow the same pattern, and the experiences from the pilot stage will help to improve the cooperation with new communes.

Consensus Conference – how does it work?
Consensus Conferences give the citizens a possibility to participate in a debate concerning issues that are important for the future of their commune. In the project JOIN IN we will concentrate on energy issues but the participation techniques that will be presented can be used in discussions on other important issues.
In order to prepare for a Consensus Conference in their commune, representatives of local organisations and authorities will take part in practical workshops during which they will learn about the method and techniques useful in moderating debates and public meetings.
The main body of the Consensus Conference is the Civic Panel – a group of 15 people who will discuss the energy future of their commune. Recruitment of panel members will take place in a special

information/consultation point where all necessary information will be available. Those interested in participation will be able to fill in the recruitment form.
The members of the Civic Panel will meet four times to participate in workshops on integration, group work, communication and presentation and in discussions on local energy issues where they will prepare proposals concerning the best possible ways of energy development in their commune. The participants will be awarded with certificates confirming their involvement.
The position prepared during the Panel's meetings will be presented to a wider audience during a public hearing open to all inhabitants of the commune including the representatives of the local authorities, journalists and experts. The local community will have the opportunity to ask experts questions, present their doubts and comments to the proposals presented by the Panel.
The members of the Panel will prepare social recommendations concerning the local energy strategy, presenting the position that was shaped during the consensus conference. The recommendations will be then presented to the local authorities and the media.
The most active members of Civic Panels in all communes participating in the project will go on a study tour to Denmark. During the visit they will see how social participation in energy issues looks like in Denmark. They will share the conclusions with other members of Civic Panels in Poland in order to apply them in further actions and encourage local communities to participate.

What about teenagers?
In each municipality participating in the project there will be a competition for middle-school students to prepare a poster promoting efficient energy use. It will help students understand energy issues better, it will also present those issues to teachers and parents. The posters will be evaluated and awarded by a jury and in each municipality an exhibition of the best works will be organised. The prize-giving ceremony will take place during the public hearing where more people will be able to see the winning works. Moreover, the voivodeship conference concluding the project will include an exhibition of the best works from all four municipalities. The gallery of the best posters will be also available online – on the project's website and on Facebook.

How will we share our achievements?
The Project includes a publication combining the description of the method and the examples of its practical use in the pilot commune. The publication will be used for information and recruitment during the project implementation and will also help to disseminate the method in other communes and voivodeships.

The Project will conclude with a voivodeship conference, spreading the Project's results among the representatives of other communes of Lublin voivodeship. The speakers will include the Project's Partners, experts in social participation and energy issues, as well as the representatives of the communes participating in the project, who will share their experiences from consensus conferences. The conference will be accompanied by an exhibition of the best posters designed by the participants in the competition for students.

TAKE PART IN THE PROJECT!
If you think that your commune needs a consensus conference – talk to us.
Together we can do more. http://wlacz-sie.pl/en/o-projekcie

Consensus Conference on Energy Issues, Poland

Article After the Public Hearing in Rejowiec Fabryczny

On the 4th of June, 2013 the school in Rejowiec Fabryczny hosted a very special event: the public hearing organised as part of a consensus conference on energy issues. The main point on the agenda was the presentation of social recommendations concerning energy related issues, with special focus on low-stack emissions – the problem which during the meetings of the consensus conference was recognised as the most important for the town.

16 recommendations, including proposals on education and awareness raising, as well as planning and investments, were presented by the members of the civic panel. The presentation was followed by a discussion, which was also an opportunity to express opinions and ask questions related to each recommendation. During a coffee break the participants voted for the recommendations which in their opinion were the most important.
The results of the voting were presented at the end of the meeting, attracting a lot of attention and provoking a lively discussion. The results were as follows:
Recommendation no 14 “Installation of solar collectors” – 48
Recommendation no 13 “Thermo-modernisation of buildings” – 32
Recommendation no 5 “Introduction of highly efficient furnaces/stoves” – 24
Recommendation no 11 ‘Promotion of energy efficient / energy saving buildings” – 23
Recommendation no 1 “Education via doctors” – 21
Recommendation no 16 “Clean energy” – 21
Recommendation no 3 “Air pollution measurement” – 18
Recommendation no 4 “Awareness raising campaign for low stack emission reduction” – 17
Recommendation no 15 “Biogas from sewage treatment plants and dumping sites” – 17
Recommendation no 8 “Low stack emission reduction programme for Rejowiec Fabryczny” – 14
Recommendation no 2 “Control and education via chimney sweepers, fire brigades and city guards” – 14
Recommendation no 9 “Quarterly news bulletin” – 11
Recommendation no 6 “ Group orders for burning fuel” – 9
Recommendation no 12 “Awareness raising campaign for energy saving” – 8
Recommendation no 10 “Information point on energy matters for the citizens” 6
Recommendation no 7 “Airing / ventilating the city” 6

“I cannot promise that all the recommendations would be implemented, but those which obtained the highest number of votes will certainly be taken into account” said the Mayor of Rejowiec Fabryczny in his remarks on the voting results.

The recommendations presented at the public hearing were developed during a number of meetings of the civic panel, which were part of the Consensus Conference on energy issues, organised with the support of the project team represented by the Institute for Sustainable Developent, Field of Dialogue Foundation and the Danish partner INFORSE-Europe, it is also a part of the JOIN IN Project.

About a 100 people who gathered at the public hearing could also admire the exhibition of works prepared by the students from the complex of local authority schools in the competition “Energetycznie zakręceni” and attend the prize giving ceremony. In the following weeks the exhibition of the best drawings and posters will be open to visitors in the Municipal Culture Centre in Rejowiec Fabryczny.

The Project is supported by the Partnership Fund under the Block Grant for NGOs and the Polish Swiss Regional Partnership Projects of the Swiss-Polish Cooperation Programme.

Krakow AGH University and NGO KISE/PKE

AGH University of Science and Technology was established in 1913. In 2013 the total number of students is 39,000. Number of staff is 4,100. The University has signed over 400 direct collaboration agreements with foreign partners worldwide.

Presentations: "Straw, Biomass and Saving Energy in Poland"

- Biomass in Poland: "Environmentally friendly use of biomass for energy purposes focus on straw."
- Straw boilers for heating in Poland
- Low Cost Measues of Saving Energy in Buildings

Presentations by Adam Gula, Professor, AGH University of Science and Technology, faculty of Energy and Fuels, and Wojciech Goryl, Msc, PhD student, who is co-author of a research paper on biomass in Poland.

INFORSE – PKE- KISE

Adam Gula was one of the founders of the NGO network INFORSE in 1992 on behalf of the Polish Ecological Club (PKE). He co-founded the Polish Ecological Club in 1980, and co-organized the Polish Foundation for Energy Efficiency in 1990. In 2000 he co-founded the NGO Krakow Institute for Sustainable Energy – KISE - (INFORSE member), where he was also president until recently.

Presentations are available from the website of the ECSE Project.

Web: AGH University www.agh.edu.pl/, E: gula@agh.edu.pl, wgoryl@agh.edu.pl

PKE: http://www.pke-zg.home.pl/

Straw -fueled Test Boiler

The typical use of the boilers are:

- In the agriculture: heating greenhouses, chicken houses, and drying crops.

- In the residential areas: heating municipal buildings located in rural areas, such as rural schools, offices, hospitals.

The boilers are designed to burn straw. In addition to straw, it burns wood chips, energy willow and other biomass. The boiler reaches a very good economic results.

Facts on the Test Boiler at the University:
MetalERG EKOPAL RM 40 (180 kW)
Dimension of the combution chamber: 1,5m x 1,5m x 1,5m.
Max output: 180 kW, Max out put of heated space: 3000 m3

The straw boiler is produced in different sizes. Individual farms typically use the straw boilers size of RM 2 (25 kW) to RM 30 (100 kW), designed to burn small square bales measuring approximately 40x45x80 cm.
Straw-fired boilers size from RM 38 (120kW) to RM 03-2 (600 kW) are suitable mechanical equipment for loading round bales with a diameter of 125 - 170 cm.

The straw-fired boilers RM RM 03-2 and 03-3 can also burn large rectangular bales with high density. The size of the combustion chamber for the different models are between 0,6mx0,85mx0,95m and 2,9mx1,9mx1,5m.
More: http://klimasklep.pl/kociol-wodny-metalerg-ekopal-p-1332.html (in Polish)

ECSE Project Meeting:

Energy Assessment in the 3 regions in Belarus
Presentation by Dzianis Rymko, Energy Institute of Belarus Academy of Science.
See more at the ECSE project's web site.

The Danish Strategic Energy Plan 2030 of Randers, Denmark
Presentation by Judit Szoleczky, INFORSE-Europe, Denmark
Dowload the document in English and Russian from the ECSE project's web site.

EU Covenant of Mayors Sustainable Energy Action Plans (SEAP).
Presentation by Judit Szoleczky, INFORSE-Europe, Denmark
More at: http://www.eumayors.eu/actions/sustainable-energy-action-plans_en.html

More information: ECSE Project website: http://inforse.org/europe/ECSE.htm

Biomass Heating in Central Slovakia, Project financed by the EU Restructural Fund, Slovak NGO Friends of the Earth (CEPA) Involvement

Aims: - To replace old and obsolete heating systems in 32 public buildings (schools, kindergartens, municipal office buildings, post, library) in 8 rural villages with modern woodchips-based systems.
- To encourage other rural regions with similar renewable energy potential to use their local resources.

Region: Polana Region, Banska Bystrica.
P**opulation**: 10,300 people
Project initiator: NGO CEPA (FoE Slovakia)
Total costs of the project: 7 million EUR.
Financial Resources:
EU Structural Fund (95%). Co-financing by the communities from their own budgets or bank loans (5%).
Project Duration: Preparation start: 2003. Project Approval: 2009. Constructed: 2010.

Installations: 21 boilers (total 3.17 MW)
Old systems were fuelled by: hard coal, brown coal, coke and electricity. New systems are fuelled by: wood chips, waste fuel wood from 2 local saw mills
Other installations: better isolated and new pipelines (1 546 meters), 4 new storage facilities for wood chips and fuel wood and several temporary storage facilities near the heating plants. One truck, few containers and other devices.

Impacts:
- Sustainability: the project enhances economic self-sufficiency of rural areas through the use of local biomass potential for local energy needs.
- Savings: municipal expenses for heating of public buildings decreases and savings that becomes available for regional development.
Energy saving realised: 35,1 % (10,000 GJ/year) Fuel cost saving: 67 % (222, 000 EUR)
- Emissions: the total CO2 emissions reduced expected by about 8,500 tons in 10 years. (Realised annually: emission reduction of gaseous effluents: 51,9 tons of contaminants and 2643,4 tons of greenhouse gases).
- Modernization: Public buildings became equipped with efficient heating systems. Most of the boilers and heat distribution systems were required serious reconstruction anyway.
- Follow-up: the project will test opportunities for its broader introduction to other regions.

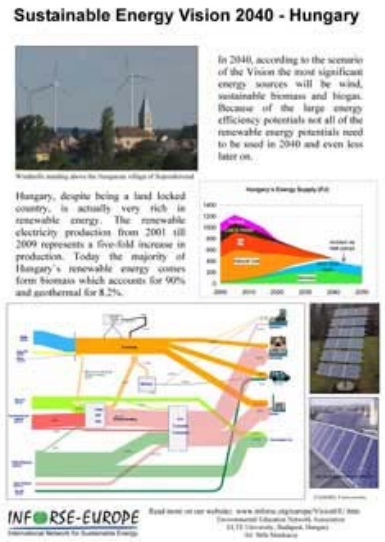
Problems: Long preparation time. It took more than 6 years of struggling to overcome the technical, administrative and legal problems related to this project. During this time even the EU and subsequently national rules of SF have changed (2007) so it was need to rewrite the project again according to the new guidelines despite the fact that the project was approved in previous programming period but no funding was allocated for it.
NGO involvement: The realised project showed that it is possible to utilise EU Structural Funds (SF) in environmentally friendly and energy sustainable way by the local NGO. The NGO involvement in projects financed by EU SF is not usual but should be encouraged in almost all regions of new EU member states. There is a real need for changing energy infrastructure towards more sustainable or renewable energy pathway, which is still not the case in Central and Eastern Europe.
More: http://www.inforse.org/europe/pdfs/S_09_A_Slovak_NGO_Biomass_project_Emil_Bedi.pdf
CEPA: http://www.priateliazeme.sk/cepa/en/o-nas, att. Juraj Zamkovsky, CEPA, Slovakia

ELTE University, Budapest & Environmental Educational Network (EEN), Hungary

The ELTE Univesity's Faculty of Science, Environment and Nature Geography Department together with the National Environmental Educational Network (member of INFORSE) made a 100% Renewable Energy Sceanrio 2040 for Hungary.

Contact: Mr. Bela Munkacsy adj. prof. of geography at ELTE University, environmental manager engineer, ELTE, and president of EEN.

100% Renewable Hungarian Sustainable Energy Scenario



Publication "This is the Way Forward – The Framework of a Sustainable Energy System in Hunagry Vision 2010 Hungary 1.0

ELTE University has 30,000 students and 1500 academic stuff. It was founded in the 17th century, and in the 18th-19th century it was among the 15 biggest universities in the word. Today it has formal agreements with 140 universities in the world at an institutional or a faculty level, and 361 Erasmus partner universities.

The Faculty of Science is one of the 8 faculties. Contact to the Research Group at the Geography Department is: http://ktf.elte.hu/index.php/erre-van-elore-fenntarthato-energiatervezo-kutatocsoport/

Address: Pázmány Péter sétány 1/C., H-1117 Budapest. W: http://ktf.elte.hu

EEN- Environmental Educational Network is an NGO, which is member of INFORSE. The Hungarian Sustainable Energy Scenario – "Vision 2040 Hungary 1.0" is available at the INFORSE's website with English summary: http://www.inforse.org/europe/VisionHU.htm

Low Carbon Societies Network is a network of researchers and NGOs active in making sustainable energy scenarios. The network is a result of an EU FP7 Project, Engaging Civil Society in Low Carbon Scenarios (ENCI). http://www.lowcarbon-societies.eu

Panel House Renovation at Uj Palota, district of Budapest

A good example of the renovation of the typical “panel houses” (in English: block of flats, in Russian also called “Khrushchyovka” or “Brezsnyevka”). The panel houses were built from prefabricated reinforced concrete blocks (panels). The panel house technology was a cheap and quick method to build houses, when there was a shortage of flats. The technology originally came from the Soviet Union in the 1960’s. It was the main housing type built in the Socialist era. In the period of 1960-90s, almost 800 thousands panel flats were built in Hungary. About 2 million people (20% of the country's population) live in these type of flats. There are similar numbers in the other Central Eastern European countries. In the 2000s, the municipalities started to make renovation programs, which included outside insulation, replacing the old doors and windows with multi-layer thermo glass, renewed the heating system and improved the outside look by coloring the buildings.
The panel houses at Uj Palota were built in the 1970’s. At the site you can compare the renovated and un-renovated panel house beside each other.

First phase: of the renovation: (constructed in 2011- June-August)
Facade insulation: 2.692 m2, thickness: 16 cm (originally only 6 cm)
Replacing windows: 262 pieces; triple glazed (3-layers) windows with plastic frames
Waterproofing work of the Roof: 412 m2
Reconstruction of the ventilation system
Planned cost: 117 million Ft, final cost: 114,6 Million Ft. (400,000 EUR)
Financial support: 70 %; 80,22 Million Ft (280,000 EUR)
Own contribution of the municipality: 34,38 Million Ft (120,000 EUR)

Second Phase: Energy recovery ventilation and other developments have planned, but not implemented. In the final stage (picture below) factor 10 energy efficiency index could be reached, which means that only 10% of the present use of energy will be enough to heat the house.
The municipality had 2 aims with the investment: to increase comfort feeling for the people who live in the flats and to reduce heating bills for those renting the flats.

Address: Zsókavár utca 2, XV District, Budapest, Hungary.
Contact: Attila Ertsey, architect, and vice-president of the Chamber of Hungarian Architects (CHA). Attila Ertsey is also author and co-author of several publications on passive houses, on small region and town development to reach 100% renewable supply and on energy economics in buildings (in Hungarian). Some of these publications were published by the Independent Ecological Center (FÖK).

Web: Attila Ertsey: www.ertseyattila.eoldal.hu, FÖK: www.foek.hu, CHA: www.mek.hu/index.php?lang=EN,

Regional Environmental Center (REC) in Szentendre

(North from Budapest, west side)

Conference Center - Aiming Zero CO2 Emission.

The existing conference building was redesigned to reduce the fossil-fuel-based energy consumption emission substantially. The building aims to promote existing know-how in the area of sustainability, and to serve as a training and demonstration facility for sustainability solutions.

The energy balance of the building can be followed on the web site. http://archive.rec.org/conferencecenter/index.php

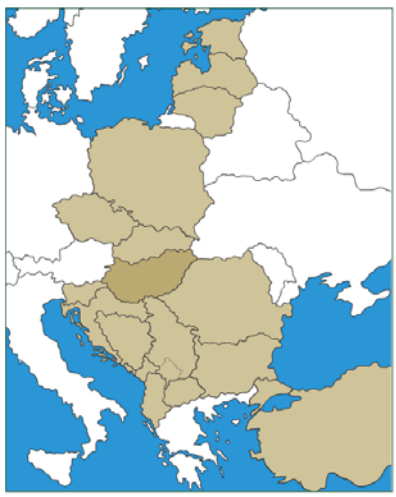
Insulation, and new building enevelop: The existing building was reconstructed: new insulation and a new building envelope were added to minimise the heat loss in winter, to prevent heat absorption in summer, and to maximise the use of natural light.

Solar cells: 140 photovoltaic solar panels are on the roof. It provides electricity for all heating, cooling, lighting and appliances .The power generation capacity is up to 29 kilowatts. Extra energy is drawn from the grid when the power generated proves insufficient, for example when the sky is overcast or at night. In exchange, energy is delivered back to the grid during times of surplus production, such as sunny days or at the weekends.

Heating and Cooling: Ground source heat pumps installed in the building take advantage of the relatively constant year-round temperature deep below the ground, as compared with the ground surface. This temperature difference can be converted into useable energy via heat exchange loops installed in shafts drilled into the ground. This technology is a highly energy efficient means of providing heating or cooling according to seasonal needs.
The interior air temperature is regulated by a dual system, comprising an air-circulating unit and radiant ceiling heating/cooling. The air flow in the interior is automatically adjusted according to the number of people inside the meeting rooms at any given time, ensuring a pleasant atmosphere for visitors to the building.

Use Natural light: Installation of a continuous glass ribbon along the upper part of the walls. The ribbon sits on a horizontal overhang that extends towards the inside of the room, creating a “light shelf” that diffuses natural light throughout the interior. This shelf also provides shade in the summer, along with movable and fixed screens and Venetian blinds that protect against the glare produced when the sun is low.

Efficient light with sensors: High-efficiency lighting, controlled by illumination sensors connected to a control system, ensures appropriate dimming according to the available natural light. The system has been devised to minimise the use of artificial lighting.



Promote Green Architecture:
The building is open for guided tours for school groups, engineering students and other interested professionals, with the goal of promoting and supporting the proliferation of green architecture in the region.

Facts: Renovation year: 2005-2008. Budget: 1.9 million EUR. Size: 700 m2. Functions: Conferences, library, offices.

REC – Environmental Mission

The Regional Environmental Center for Central and Eastern Europe (REC) is an international organisation with a mission to assist in addressing environmental issues.

REC is promoting cooperation among governments, non-governmental organisations, businesses and other environmental stakeholders, and by supporting the free exchange of information and public participation in environmental decision making.

REC was established in 1990 by USA, EC and Hungary. Now, REC is legally based on a charter signed by the governments of 29 countries and the EC.
REC operates through a network of regional offices, with a history going back to the time of political changes in Eastern Europe. Its main goal is to set the rapid social and economic development of the region on a solid environmentally friendly foundation by providing help and financial support to specific projects.

The REC has an office network in 17 countries: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, the former Yugoslav Republic of Macedonia, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia, Turkey. The head office is located in Szentendre, Hungary. REC has about 200 employees, working in 17 countries.
The headquarter is located in Szentendre, Hungary.

REC's Projects in Belarus

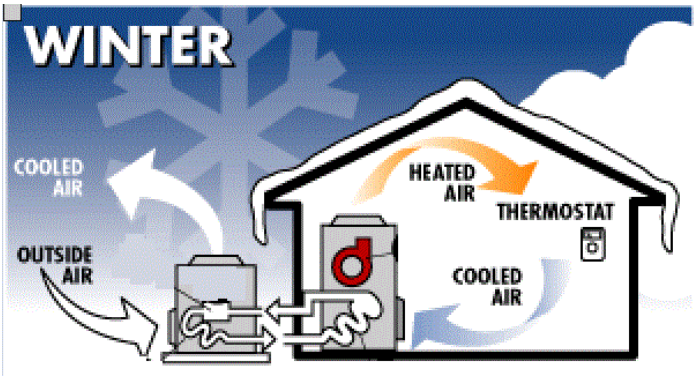
REC is implementing in Belarus a project called "Strengthening Local Environmental Planning and Environmental Civil Society (STREAM) in Belarus and Moldova during 2012-2014" funded by SIDA.

The project has 2 main components:
- Local Environmental Action Planning (LEAP)
- "Supporting Environmental Civil Society Organizations (SECTOR).

Center for Environmental Solutions is one of the receivers of a grant. The topic of the project is on chemicals in products: the availability of information to the public. The grants were announced in July 2013.

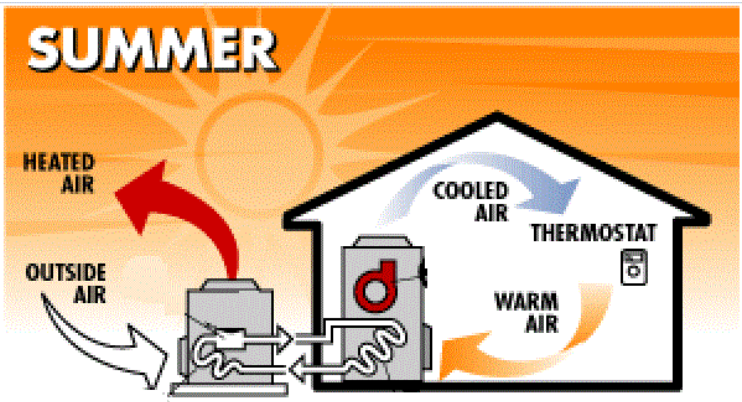
More on REC: http://www.rec.org/ and the SECTOR Project: www.sector.rec.org

Air Heat Pump, Budapest



Air Source Heat Pump (ASHP) Principle:
Air, at any temperature above absolute zero contains some heat. An ASHP transfers some of this heat from one place to another – for example between the outside and inside of a building. This can provide space heating and/or hot water.

The technology is similar to a refrigerator or freezer or air conditioning unit: the different effect is due to the physical location of the different system components. Just as the pipes on the back of a refrigerator become warm as the interior cools, so an ASHP warms the inside of a building whilst cooling the outside air.
A high efficiency heat pump can provide up to four times as much heat as an electric heater using the same energy. As the ambient temperature goes down, the system efficiency also decreases. A "standard" domestic ASHP can extract useful heat down to about -18 °C, but an ASHP designed specifically for very cold climates can extract useful heat from ambient air as cold as -30 °C. Their main disadvantage is the significant electricity consumption – as the eletricity is the most valuable secondary energy source. Due to their built-in heat storage capacity in the future they can contribute to the balanced energy production and consumption.



ASHPsof good quality can last for over 20 years with low maintenance requirements.
In the summer some systems (air to air) can work as an air condition system.

Example:
Old brick building, College of a Monestry. District heating changed to air-source heat pump.
Built in 2009.
Area: 2500 m2.
Repayment period: 4 years.
Heat Source: Outside Air.
Installation: 4 x 33 kW type LW 330 outside air heat pump.

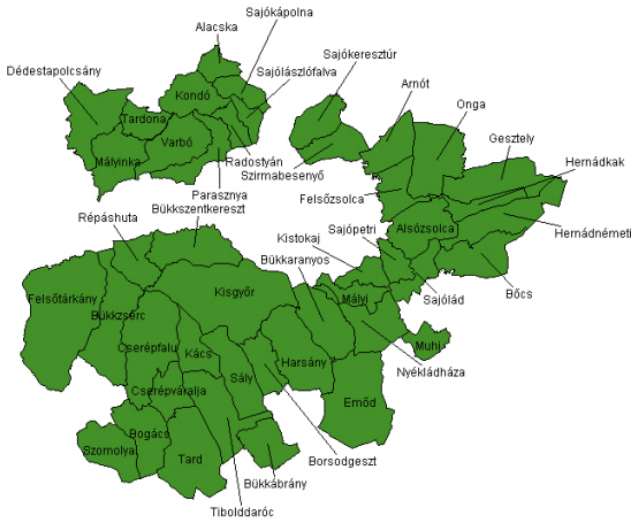
Contact: dr. András Léderer, engineer, the representative of the main Hungarian distributor of the air heat pumps: Thermo Ltd. http://www.thermo.hu/en/, E:andras@thermo.hu,

Bükk Regional LEADER Project: "1 village - 1 MW project"

Area: North East Hungary Region, Bükk hill & Miskolc

Aim: 100% sustainable energy self sufficient concept for this region.

The initiative officially started its work in 2008, when the LEADER-program of the EU has been introduced in Hungary (the LEADER-program provides financial support for bottom-up initiatives in rural areas).



In 2013, this LEADER group has 145 members, mainly local governments (42), NGOs, civil associations (61) and small enterprises (42). In 2011 the group established an association. Bükk Region LEADER Association.

The basic idea is to establish a kind of energy independence in the region, involving 42 settlements and their ~95000 inhabitants around the city Miskolc.

The project title is called „1 village – 1 MW", which means a long term goal, with creation of an energy production-storage-distribution system, based on efficient and sustainable methods.

Main elements of the Program:

The 1st phase: More than 20 small, sustainable based "energy producing - courtyards" were created with the capacity of 3-5 kWp each. To compensate the intermittent nature of the solar and wind energy (dependence on weather conditions), two biomass based *micro power stations were also built, (fuelled by vegetable oil)*.

The 2nd phase: The main goal is to improve the flexible and non-intermittent biomass based production capacity with *6 small biogas cogeneration plant*, fuelled by local biomass (gathered from forests and agricultural plantations and chopped locally, kitchen waste, dung, streams by local inhabitants and small enterprises).
Another goal is to create a *„hydrogen-village"* with 33 households and their small farms (with 6-7000 m2 territory respectively). It also means that the bio-waste would be one of the main fuels of this subsystem.
The other main energy source would be the *wind, as a 225-kW wind turbine* is working nearby, it can produce the secondary energy source, hydrogen.

The 3rd phase: Some parts of the third phase have already been realised. There are 6 sun-tracking PV systems (5-10 kW each, with about 40-80 m2 solar PV surface respectively) existing, together with Li-ion accumulators and chargers for electric cars and bikes. There is financial support for 17 more system.

The 4th phase would be a „network of electric roads and chargers" between the LEADER-groups throughout the country.

The final result will be a 100% self-sufficient sustainable energy system based on the smart grid concept.

Contacts: Mr József Nagy, Mr. Lajos Vass. Address: Nagy-Ferenczi farm, Bükkaranyos, H-3354 Hungary.
http://www.bukkleader.hu

Energy Yard, Bükkaranyos municipality

3-5 kWp PV plants with solar tracker and windmill.

Lecture by Lajos Vass on the LEADER Project and the Energy Yard.
Meeting of the Mayor of the Bükkaranyos, Mr Lajos Nagy
The Handout of the presentation can be downloaded from the ECSE web site.

Energy Yard, Bükkábrány municipality

6- kWp PV plants with solar tracker and an electric tank station. Established in September 2012 in the yard of the municipality's building. It is planed that it will cover the electricity use of the municipality (8500 kWh). The full investment was 53 thousands EUR including the solar plan (40 thousands EUR), 2 inverters, 1 accumulator and an electrical car tank station.
Meeting the Mayor of Bükkábrány, Mr Szabolcs Szalai.

Green House, Böcs municipality (passive solar, biodiesel, straw)

The center is a flower pre-plantation, where the sun's heat is captured under a *glass covered passive solar architecture.* In January-March a bio-diesel fuelled motor provides electricity and heat. In case of extreme cold in February a small straw-fired boiler is used as a supplement.

The biodiesel CHP motor is 4.5 kWh, and uses 2 liter oil/hour. It is using used vegetable oil, which is collected by the school children from their homes. The vibration is decreased by a rubber basement, and double-layer windows are decreasing the noise.
The green house gives jobs for 6-8 people working with the flower plantations. The flowers are partly sold in a market, and partly used by the municipality at the different municipal buildings.
The center gives place to art exhibitions of local painters and it is situated in a rose-park where an old tradition continues growing different type of roses.
Meeting the Mayor of Bőcs, Mr. László Nagy.



Straw-Fuelled Local District Heating, Böcs

The 600-kW boiler provides heat for the nearby buildings including the primary school and kindergarten, which has 500 children.
Two round shaped straw bales can be placed in the boiler. On the top of the boiler there is a 60m3 hot water tank, which provides the heat at night. The straw is coming from the 40 ha wheat field owned by the municipality. The field is rented out, but the straw is asked to be delivered to fuel the boiler. The ash from the boiler is distributed in the fields.
Previously natural gas was used and compared to that the investment pay back period was 4 years.
More on the straw boiler from the producer: http://www.altherm.hu/ (photos are from Altherm.hu)