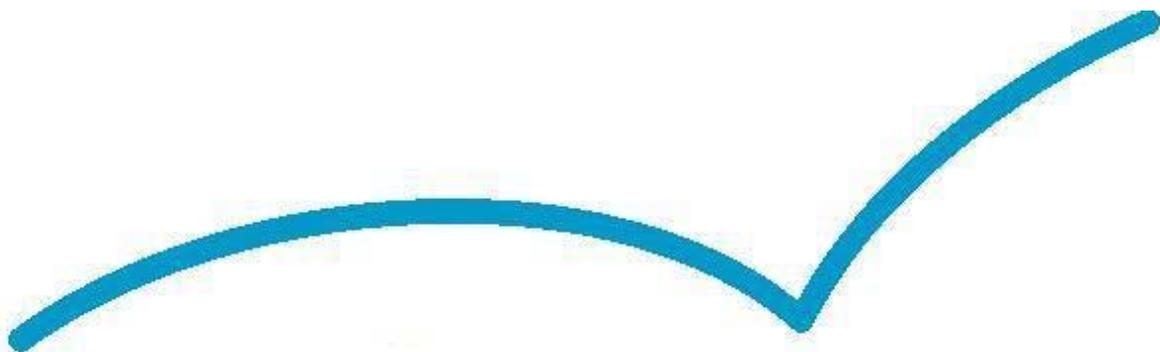




REPORT - STUDY VISIT

"ENERGY-EFFICIENT HOUSING ESTATE PLANNING - BEST PRACTICE EXAMPLES"



September 28 - October 2, 2009
Hannover, Münster, Freiburg / Germany

Intelligent Energy



Europe

Authors:

Irena Brnada, *REC CO Croatia*
Nikica Viličić, *REC CO Croatia*
Christiane von Knorre, *Auraplan Architects*

Contributors:

Ingrida Bremere, *BEF Latvia*
Justinas Kilpys, *BEF Lithuania*
Filip Čejka, *REC CO Czech Republic*

INTENSE

Intelligent energy saving measures for municipal housing in Central and Eastern European countries



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1) INTRODUCTION

Recently, there has been increasing demand for energy supplies in order to keep residential, commercial and/or public buildings and their overall inner-living environment comfortable. According to studies, the building sector is emerging as the biggest potential for energy savings. Therefore, reaching the maximum energy performance of buildings, while maintaining the lowest energy consumption level, requires a combination of various technical measures with holistic **energy efficient housing estate planning**. This means implementation of comprehensive planning measures for the future residential quarter that includes important aspects such as: location of the buildings, space saving construction, energy and water supply, use of renewable energy sources, transport, waste and wastewater management, etc. Study visit is organised within the framework of the INTENSE project to present sound urban planning instruments which are already being applied in Germany.

Visiting of sites will demonstrate the following best practices:

- Planning of new districts (energy supply, standards for passive houses);
- Transport aspects (car free projects)
- 100% CO₂ free village;
- Urban planning instruments in Münster and Freiburg;
- Social aspects (social balance in a district, joint living, etc.) and much more.

The **study visit *Energy efficient housing estate planning - best practice examples*** offers a unique opportunity for experts to meet and learn together, from the best practices, and exchange information on urban planning instruments.

2) STUDY VISIT FRAMEWORK AND MAIN OBJECTIVES

This study tour was held in the framework of the project "From Estonia till Croatia: Intelligent Energy Saving Measures for Municipal housing in Central and Eastern European Countries" (INTENSE), that is implemented in 11 Central and Eastern European countries and Germany, by a consortium of 28 partners - multiplier organizations, municipalities and expert groups, aimed at influencing building developments at local level, in terms of legislation, technical and planning issues as well as consumer behavior.

It was the second study tour to Germany organized under the project, focusing this time on the activities from the work package 4 (WP4 - Energy Efficient Housing Estate Planning), and gathering 45 participants from 12 countries. Out of this number, there were 36 municipal representatives, not only representing INTENSE partner municipalities but also several other municipalities from the CEE project countries.

Goals of the study visit:

- Visit the cities of Hannover, Freiburg and Münster, with the aim to introduce examples of the best practice in urban planning with regard to the concepts of energy efficiency on local level.
- To improve understanding the usage of ecological friendly materials and the best practice in urban planning through dialogue and experience exchange within municipalities, architects and urban planners.
- To prepare municipalities on developing the concept for energy-optimised housing estate planning (mini-project) in their territory, including an implementation and a financing plan.
- To view and evaluate examples of the best practice in urban planning at local level, and discuss their usefulness across INTENSE project countries.

The following pages represent the description of the study visit day by day, outlining the main points of interest visited and shown to participants, as well as reflections of most important discussion points during the event.

3) EXPERIENCE FROM GERMANY - day by day report

MONDAY, 28.09.2009

Kronsberg-Hannover – new districts// Salzhemmendorf – 100% CO₂-free village

After introductory to study visit program, participants were split into two groups. The first group went to Kronsberg and the second went to Salzhemmendorf.

1. GROUP

Kronsberg district Hanover

Mr. Rumming from Department of environment, City of Hanover, presented the entirely new district Hanover-Kronsberg. She stressed the important parts of the Kronsberg that will be displayed to participants:

- Passive house settlement;
- CHP inside multistory house – cellar CHP for district heating;
- Solar houses – solar architecture;
- Big water tank for district heating – connected with solar thermal.



Krokus - district center

In construction of the center were used in eco-materials. The building is made out of wood without the conservation of resources. Aluminum is used for protection from the wind. Are set and the solar panels that supply electricity offices during good weather. In the building there are a lot of content, such as kindergarten, theatre room, library, meeting place for seniors, Protestant church and primary school.

Heat supply - Combined heat and power plant (CHP)

There is block power plant, electronically supervised and run by municipal service that provides 80% of energy for Kronsberg district.

Energy concept is based on 3 principles:

- everybody is obliged to connect to CHP supply (compulsory)
- 3 components (district heating, low energy consumption, electric energy savings)
- goal is 60% CO₂ reduction, 20% reduction from wind generation. (in total app. 80% reduction)

Technology used is block power plant, that supply 12 MW of energy from Apr-Oct and 2 additional cattles during winter, and 2 buffers to store energy during summer. When buffers are full, CHP stops working. There are 115 substations in residential houses that redistribute energy. Energy supply suffices for more then 2700 flats (3.000-4.000 people) and there is reserve for another settlement.

Kronsberg communal agency raised the awareness of people to use the house in energy efficient way. The flat of app. 80 m² pays 80-130 EUR/month for water and heating. The unit price is higher because of CHP. The bill contains fixed amount and variable amount that depends on the oil price. Instead of connecting to CHP, individual private owners have contracts with restriction that the houses should use pellet heating and heat pumps, as well as solar collectors as energy sources.

Electricity

There are two windmills of 2.1-2.2 MW capacity, and additional one of 500 kW. Excess electricity from photo voltaics is bought by electric grid, and the compensation fee outstrips the operational costs.

Pilot solar city

On roofs, solar cells are installed, surface 45 m², 5 kW power. The energy is used for heating and warming water. Usually, the houses are oriented east to west, but in this settlement they are planned to south. In summer, the energy is stored 4/5 below ground in concrete storage, while 1/5 beneath ground, and adapted as the playground hill.

Passive houses

There are 32 passive houses in a row, today being sold for the price 1200-1400 EUR/m², and passive house are only 10% more expensive than standard houses. There are no radiators in the house, and no floor heating but heat exchanger in the attic. Used air is sucked from the kitchen and the bathroom and heat given back to colder rooms. Cold old air leaves the house. During Dec and Jan (the coldest months), the outside cold air cannot be only heated by inside air, but also needs preheating. Also, each person brings the energy of 75-100 W to the house. Ceilings and walls are made of prefabricated concrete and assembled at place. The construction of the house takes 3 months. There is 45 cm wall insulation with wooden frame basic construction, through the windows heat of the sun goes in, not out, window frames have high energy insulation, and 3 window layers. There are 150 m³/hour air exchange.



Green gardens/climate zones

There is a special green garden project for numerous buildings that contains indoor watered area with humid microclimate, appropriate for raising plants. On top of the garden, there are 3 foils, differently charged. Depending on the outside temperature, the foil structure that protects from sun or warms the interior, moves apart. Inside the structure it is 5 C warmer than outside. Rainwater does not go to sewerage but recovers to outdoor ponds or to the storage near garages and is further used for watering or for waterfalls. This cuts the water costs for 30%.



Waste management

Today's waste concept in Kronsberg is standard, but 10 years ago it was beyond standard. Waste separation at the storage facility in front of the house is compulsory (e.g. bio waste, paper, etc.) and is collected once or twice a week. Glass is collected in public selection points.

Presentation

Mr. Gerhard Kier (Planning and Urban development, City of Hannover)

"Space saving constructions in Kronsberg"

Mr. Kier gave a presentation about urban planning and general lifestyle in Kronsberg.

History of Kronsberg

Politicians of social-democratic orientation thought of low energy houses in nineties. Hannover City administration and environmental departments gave the idea of energy efficient buildings when for

EXPO 2000, 1000 flats were needed rapidly. Urban planning competition was conducted already between 90 and 94 and EXPO Society granted 4 mil EUR for building the houses. Contract (Staedtebauliche Vertrag) was made between the city and investors. The settlement was designed by several architects and 3.000 flats were completed by 30 investors already by EXPO exhibition. New planning concept was introduced, such as cooperative planning, roundtables for stakeholders (social, urban, green area, environmental planners), etc. Investors had to comply with higher energy efficiency standards, that are 25-30% below today's standards, still every investor achieved it.

Quality assurance program was introduced for new buildings (and implemented by 9-10 officers) and it is still conducted nowadays. The price of the quality assurance was 50% subsidized by the city, in the amount of 10 EUR/m². In total, around 6000 flats were built for 12-15.000 inhabitants until today in Kronsberg.

Social issues

Kronsberg is the mirror of society, where old and young, rich and poor, disabled and not disabled live together. Approximately 1/3 of houses are social (2.700 flats), 1/3 private, 1/3 rented. There is mixture of flat sizes. Flats are available for rent at the price 4-8 EUR/m². Estates are sold by the city, and there is 10% discount for every child under age 16, and up to 4 children - the rule applied only in Hannover. People with low income are eligible, but in order to avoid extreme problems, the standard income limit was doubled, so it is "middle" social class.

Kronsberg financial cycle means that income from selling estates was instantly used for building the infrastructure needed for the settlement, so everything is built at the same time. There are many foreigners with high education, but also high unemployment and lower income. There is a small settlement part called "Habitat" where 30 nations are selected to live here, out of which 10% are Muslim. Habitat contains sauna, Turkish bath, party room, prayer room, etc. Conceptually named "Better together than alone" there are buildings designed for living of elderly people. Each individual has a single flat, but there are also premises for common activities. Approximately 30% of inhabitants is younger than 18, and 80 new babies are registered every year, and there is generally low fluctuation of inhabitants. Kronsberg is settlement with high level of voluntary activities, public participation and citizen responsibility, with community horizontally involved in solving problematic issues, instead of top down approach.

Enforcing energy efficient housing in planning process

Tender information for investors contains certain rules that prefer energy efficient housing, e.g. passive house investors are preferred to others. There are supporting programs for private passive houses (e.g. KfW gives loans). Building of passive houses requires certain skills and references, and quality assurance is performed (building shell, ventilation, etc.). If the standard is not met, the investor should pay back, or pay fine that amount to 10% of the building value. Passive houses consume approximately 15 kWh/m³/year, while standard houses in Kronsberg consume app. 55 kWh/m³/year, which was 50% below standard when constructed, and today is app. 30% below.

In Germany, there is already energy saving ordinance for construction and reconstruction of buildings. In 2007. the Kronsberg example was introduced to the whole area of City of Hannover, that accepted Agenda 21, as the city concept of sustainable development.

Certain planning instruments, like development plan (Bebauungsplan) impose the requirements like orientation of buildings to the sun. In Hannover today, the average living surface is app. 40 m² per person, while in 90's it was 30 m². Mainly single households are increasing the average.

Traffic concept says "do not go with the car unless necessary", and if you use the car, drive slowly. The idea of car free space and parking further from Kronsberg center, was however rejected. Transport is also arranged by tram, pedestrian and bike line. There are 8 km of tram lines, that takes you in 20 minutes from the city center to EXPO region. In Kronsberg, there are stops every 500-600 m, while in Hannover, there are stops every 1200-1500 m. Detailed plan for open space (Freiraumplanung) developed the concept of 1000 inhabitants per quarter, where approximately 3 roads (stripes) bring the fresh air to quarter.

2. GROUP

Salzhemmendorf

Mr Kempe, Mayor of Salzhemmendorf introduced 100% CO₂ free village Salzhemmendorf to participants.

The small municipality of Salzhemmendorf is one of villages that joined the 100% movement, to get rid of fossil energy. Within two years Salzhemmendorf managed to produce more electricity made of renewables as the inhabitants demanded. The calculated demand of all inhabitants is 15 mil kWh/year. The windmills and biogas power plants produces ca 36 mil kWh/year. That means there is a rest of cca 21 mil kWh/year for industry and external use. For this engagement the municipality won the German Solar Award 2008.

Summary:

- one of the CO₂ free villages in Germany
- the energy production of heat and power is twice the village energy demand (36 TWh in 2008) – the energy sources are windmills and 4 biogas power plants
- the model for this village came from the **Model Region Güssing (AT)** – more info see at http://www.nachhaltigwirtschaften.at/nw_pdf/fofo/fofo1_07_en.pdf
- there are some conflicts occurring with the big power supply companies – the windmill power plants have to be shut down in the wintertime due to the energy surplus in the grid

Biogas power plant I.

- produces heat and power
- the heat is mostly used for the light industry, school and spa (Ith Sole Therme) located in the region
- the material for silage for the whole year operation (ca. 20000 tons) is collected during the weeks in the harvest time.
- for fermentation mostly the sugar-beet and corn is used
- the power plant has been established by the association of local farmers, inhabitants and public services
- part of the harvest is used for the biogas production – the amount is on the farmer's decision
- building costs – ca. 5 mil. €



Biogas power plant II.

- output: 750 kW of CHP
- the heat is used for heating of the nearby piggery and cosmetics factory – to the factory leads 1,5 km long biogas duct – the water is heated directly in the factory (Lagona) – the savings related to this solution are ca. 650000 kWh
- building costs – ca. 2 mil. €



Wind power plants in the region of Salzhemmendorf

- 5 windmill power plants in Salzhemmendorf

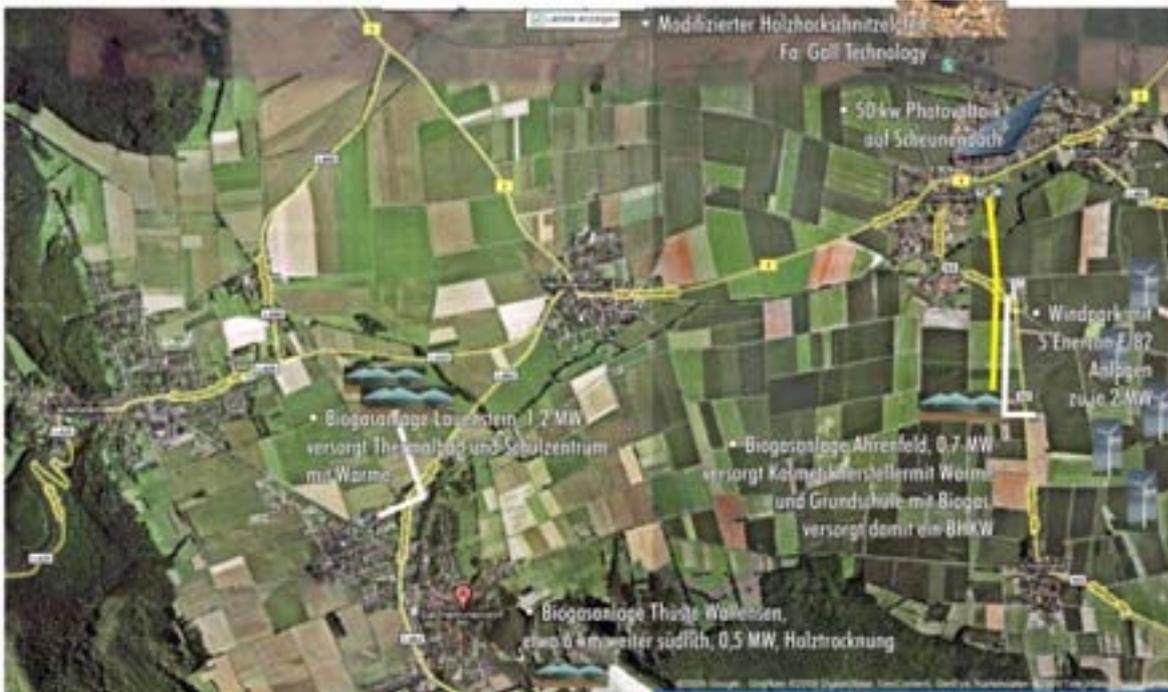
- nominal output of one power plant – 2 MW
- the power plants are established and controlled by the company Landwind Ltd., inhabitants and farmers
- building costs – ca. 3 mil. €

Gall technology

- local company conversant in the renewable energy systems
- the focal point of the company are the hybrid solar panels – photo-thermal collectors – used to absorb wider part of the sun spectrum to produce both the heat and the electricity
- another product of the company are the control systems for the “intelligent energy” houses
- www.gall-technology.com
- The technology of the hybrid solar panel are used on the roofs of some local farmers – nevertheless in this case the main reason are probably the very generous conditions of the solar energy buy-out



Rainer Sagawe, president of BUND-NGO coordinating energy efficiency activities for Salzhemmendorf.



Solar laureate - installations of renewable energy in Salzhemmendorf (Author of illustration: Rainer Sagawe, BUND)

TUESDAY, 29.09.09

Münster – urban planning instruments and practical results

Workshop on urban planning instruments

Ms. Irena Brnada (REC Croatia) opened the workshop and welcomed the participants on behalf of the organizer. Ms. Brnada presented the study visit as well as project's programme which is divided in 8 work packages. She specifically focused on presenting the goals of Work Package 4, in the framework of which this workshop was organised. Ms. Christiane von Cknorre (Auraplan Architekten) then took over the moderation of the workshop, presented speakers and led the discussion.

1. Presentation.

Mr. H. Bruns (Head of Department of green space and environment)

“City of Münster standard practice in energy optimized urban planning”

The main points of his presentation:

- For decades now, the city of Münster (population: 270,000 inhabitants) has actively participated in climate protection through a broad spectrum of activities and measures: the restoration of old building concept, the innovative residential estate planning, a contemporary traffic concept and efficient energy production forms. Numerous campaigns are implemented to keep climate protection alive in the citizens` thoughts as the involvement of public is very important aspect for the city. In 2004, Münster was awarded as “The World’s Most Liveable City”. Apart from that Münster has received an European Energy gold award as a good example of energy optimized urban planning.
- Setting ambitious targets for CO₂ reduction – in 2008, the city council has adopted the climate protection concept until 2020, where the CO₂ emissions should be reduced by at least 40% (compared to 1990). The target on RES states that 20% of energy should be produced by renewable sources by 2020.
- Renovation of old buildings:
 - Old building rehabilitation concept includes measures that allowed to reduce the energy consumption from 214 kWh/m²/a to 67 kWh/m²/a by heat insulation of facades, windows and roofs resulting in 68% savings for energy consumption. The city council actively supports this program (up to now more than 5 million Euros) in the promotion of private investments.
 - A good example in renovation of old buildings is the city administration building *Stadthous2* (built in 1964) as one of the first high-rises in the city. The energetic goal of the renovation was to achieve a heat consumption value below 50 kWh/m²/a. Based on a thermal simulation, an overall energy concept for saving heat and electricity was developed. The renovation included all building elements (a new façade with 80 mm of heat insulation, 200 mm of roof insulation and windows replaced), replacement of technical equipment (completely new heating system, ventilation and air conditioning systems, and electrical systems) and instalment of the control and regulation system. The heat energy consumption was reduced from 125 kWh/m²/a to 41 kWh/m²/a (70% savings) and electricity consumption from 57 kWh/m²/a to 39 kWh/m²/a (30% savings).



- Energy efficiency criteria for new houses – when a building principal acquires a piece of land from the city council, he obliges himself to adhering to the low-energy house standard. The municipal specifications are even 30% lower than the national legal requirements. Around 5600 flats and 85 commercial objects have been built according to this standard since 1997.



- Münster is the city of bicycles – an innovative integrated planning concept for the city and environmentally friendly management of traffic in cooperation with the transport companies has proven to be very successful. Approximately 60% of citizens use environmentally sound means of transport, like train, bus, bicycle or walk. Münster has developed exemplary solutions for bicycle transport for several decades and currently possesses the impressive bicycle infrastructure including special lines or roads for bicycles, a city-wide bicycle signposting system and the large underground bicycle park at the main station with 3500 parking spaces.
- Energy-conforming general development planning – the network of building structures and open spaces has been retained and further developed within the city districts. The concept of being “the city of short path” represents a model, where development of the city districts is implemented in accordance with the centres concept while the city suburbs and residential areas are connected very well.

2. Presentation

Ms. D. Vogel (Department of real estate management)

“Low-energy house standard in land sale contracts”

The main points of her presentation:

- Self-commitment of the municipality to the low-energy standard houses requesting 30% better performance than the national standard. The municipality has created an estate pool policy already in 1977. Three possible options for buying of estates include payment of price, exchange and compensation.
- Land sale contracts state that contractors are obliged to build houses according to low-energy guidelines. Energy audits by certified experts have to be performed and results sent to the City department of environment at least 3 years after obtaining of the contract. If this condition is not met, there is a 6500 Euro penalty foreseen. Practical results show that within 15 years there was no penalty procedure applied indicating successful practice of implementation.
- Providing affordable, environmentally friendly, socially compatible housing

Afterwards, there was a discussion about the low income aspect: are the low energy houses affordable for people having low income? It was stated that house owners think that all houses in Münster had to be low energy houses, so all new dwellings are built under this standard and is available to different social groups.

3. Presentation. Mr. Wilsmann/Mr. Krause (Department of urban planning City of Munster)
“Energy-conforming general development planning”

The main points of his presentation:

- There are three levels of development planning (general plans, special plans, detailed plans)
- When planning new areas it is important to ensure the most effective location for all houses to get the biggest gains of solar energy and etc.

During the presentation municipal planners and municipality representatives from the CEE countries were asked if similar planning levels and plans are prepared:

1. General plans for whole municipality like the mentioned "preparatory land use plan" (all agreed that they have).
2. Detailed plans like the German "binding land use plan" – plot to plot (all agreed that they have)



The most important question in discussion was the relation between public and private interests. And it was stated that money in Germany can not influence the planning process. Also there was the question, if the municipalities have to by land to have the green corridors. And it was argued that it does not really matters what kind of land use it is, municipalities can buy it if it is needed for city development. In the afternoon the participants went on a guided tour through the centre of Münster.

WEDNESDAY, 30.09.2009.

Münster - New buildings & refurbishment

Site visit in Munster: Passive houses Wismarweg

Visiting building site of passive houses in Munster.

During the 3rd day of study visit group of participants visited Wismarweg - a small quarter of new passive houses (3 buildings). The area is former market garden and is located between to railways. In total 39 flats are planned, ranging from 47 to 110 m². Participants could get know with the passive house standard and how to integrate the aspects of sustainable lifestyle and social integration into the design of dwellings.



The main technical and planning aspects which interested the participants:

- All buildings are orientated to the south to gain as much sun energy as it is possible. South façade will have the balconies and solar collectors on the roofs.
- Design of the building and shape of the roof let a lot of sun in the first floor. Roof is from to parts – terrace and slope roof.
- To reach the passive house standard the thick insulation is used and good ventilation system with heat recovery. If needed ventilation system can be used for heating the house – there are no radiators or floor heating.
- Extra heat is gained from wood pellet stove located in basement. In basement also there will be a system for collecting of warm water heated by solar panels.
- To insulate windows special tapes will be used to reach the required air-tightness of the building.
- Insulation is made from 20 cm of special insulating material and heavy brick (limestone) wall. Insulation does not have any interception, it goes everywhere.
- The houses do not need very thick ground insulation or special insulation from humidity, because the basement will be only under one section.
 - North façade will be made from traditional red, white and yellow bricks.
 - Because railway is near, the houses need a good noise protection. To minimize the noise the thick concrete wall was build, which lead to the whole concept of passive houses.
 - In area the rainwater will be collected and stored in the special tank in old bunker near by. Afterwards water will be used for toilets and for watering the gardens. If water reservoir is too full the water is let out to the ground.
 - Between all houses gardens are planned. Every flat will have an access to garden, even living in the upper floors.



Insulation of walls.

- Each flat in the houses has different entrance. The ground floor is barrier free most suitable for older people, first floor is designed for family with children and penthouse with terrace – for young people.
- In this new housing area only small parking areas near the houses are planned and there is special places left for bicycle shelters.

Munster town has well-established principles of energy efficiency in the way of living and public transportation. “Energiegerechte Bauleitplanung in Münster” is standard practice of energy efficient urban development. That means to optimise the use of solar energy, active and passive, the fixation of energy standards, better than national requirements and environmental friendly supply of warm water and heating in all stages of planning. Since 1995 intensive considerations in the city council about energy efficient urban planning took place, expertise was applied in 1998, and decision to practice “energy efficient urban planning” took place in 2000.

Some aspects of energy saving urban planning should be proved during the planning process for generating energy savings with low efforts, only by optimising the form and orientation of buildings. The potentials of measures in Münster can be estimated as follows:

1. compactness:
difference of energy consumption between multi storey house and 5 row houses, both with similar energy standard: 20%
2. orientation:
Difference of energy gains between 5 houses with bad orientation compared with optimized orientation: 15%
3. passive solar gains, no shadows
Difference between solar gains of a row of 5 houses without any shadow at the facade and the same row with shadow at the facade: 10 %
4. optimized roofs for active solar use:
Difference between solar gains of optimized orientation of a roof and a bad oriented roof for the use of solar panels for hot water supply: 10 – 15%.20

Site visit of the residential sector refurbished by the Wohn + Stadtbau

- old houses refurbished in the way of standard insulation (20 cm of the insulation material) and as well the insulation with the brick lining (13 cm of the insulation material) – on the west facing walls due to the easier upkeep of the brick wall
- the roofs are equipped with the solar collectors for the hot domestic water
- heating – gas – 500 litres storage for each 6 flats
- cellar insulation – 12 cm of Styrofoam
- refurbishment costs – ca. 40000 €/flat (app. 80 m²)



Demonstration centre for craftsmen

Ms. S. Diekmann & Mr. A. Müller

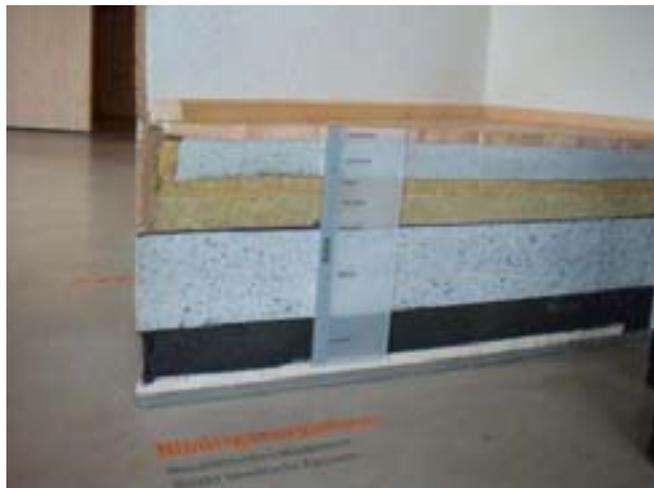
Demonstrationszentrum Bau & Energie

(<http://www.demozentrum-bau.de/>)

- an organisation aimed at the presentation and dissemination of the innovative and energy efficient technologies, also used as the training centre for craftsmen
- for details see Annex 1 – possible building procedures for the low-energy and passive standard



In the main building there is constant exhibition which illustrate various energy technologies and construction methods. The building material is mostly built made of renewable materials. Within a single exhibition all the building designs are presented and explained and understandable.



The Center's objective is to draw the attention of the Construction Parties to the building as a whole, as well as new construction techniques and building materials. Only then, the quality of energy saving regulation (En EV) for the construction of houses can be achieved.



THURSDAY, 01.10.2009.*Freiburg - site recycling*

Freiburg, Germany's Environmental Capital of 1992, one of the first to establish Environmental Protection Office and home to many pioneering environmental achievements, is characterised by the following:

- Focus on environmental sustainability and climate protection, high level of citizen environmental awareness and engagement in decision-making
- Solar architecture concepts – centre of research on renewable technologies (Fraunhofer Solar Technology Institute; Solar Factory, etc.)
- Integrated transport policy – sustainable mobility.

Freiburg is a university town with 205.000 inhabitants, at least 10% of which are students, attractive also for tourists due its proximity to France and Switzerland, its spider-net structure of travel routes, wine roads in surrounding villages, wine festivities etc., and without heavy industry due to historical regulations that forbade construction at 25km from the Rhein river, which is still complied with. Due to most sunshine hours annually in the entire region (German Toscana), solar panels can be found everywhere on private and public buildings. Opportunities of solar energy were recognised early, facilitated by high level of citizen's environmental awareness, green political priorities and targeted economic and urban development. Climate protection concept was developed in 1997 and ambitious CO2 reduction targets set by 2010 (25%) and 2030 (40%), coupled with targeted investments in transport and construction sectors. Climate protection policy of Freiburg includes, among other things, energy savings through consolidation of administration offices and preference towards natural-gas powered vehicles; the solar tower on the central station was also built up a symbol of importance of saving energy.

Mr. Daseking, Head of Freiburg's Department for Urban Development, presented in detail the **Freiburg planning concept** and the principles of integrated urban development applied. He reminded that continuity in planning is crucial, as well as strategic approach, as political reasons are short-lived and one has to "look behind the mountain". Comparative analysis of physical plans and physical distribution of towns in the world shows that unsustainable approach to resource management is predominant, and that only 2.5% of cities in the world are made in the mentality of planning (influenced by physical planning) - Freiburg being one of them, while the rest of them are random, based on individual investor/political interests. Energy savings and solar optimisation in Freiburg's city planning are merged into early physical planning stages (orientation and positioning of buildings, compulsory low energy construction requirements in contracts, etc.). No building is allowed on the foothills of the mountain (cca 15.000ha land out of which 60% is protected, and the following principles are applied to new settlements:

- small plots, people close together (high density), but individual approach to house design
- integrated open public transport system
- green belts reducing noise by 40-50%
- reduced parking spaces, making streets narrower by planting trees.

A group initiative of architects introduced in 1980-ies the first passive house in the area, in order to create opportunities to escape from the oil crisis (vacuum pipes for warm water, box for storing house waste and composting for gas to heat kitchen). A lot of passive houses/buildings in Freiburg built since were awarded all over Europe. However, a big challenge is renovation of houses from 1960-ies and 1970-ies and their integration into the city. "*Take care about the old; introduce the new*" principle is visible in many places, like e.g. the system of water channels in the old town, restored from medieval times, when it was used for regular water supply to houses, and now also to separate pedestrian from car areas.

Freiburg is fortunate because of a favourable wind system in the area - evening wind from mountains takes all pollution out of the city. Building height limit is set at 120m; otherwise there is no sufficient energy to operate the city. 46% of city territory is covered with forest and green spaces for recreation, nature conservation and sustainable resource management (even tram rails ‘rest’ in grassy beds). It creates ‘green lungs’ of the city, as well as creates jobs and income from timber management. The city bought a gravel ground area to cultivate it and integrate different functions (sports, living areas, lake for recreation, community hall, restaurant, panoramic view of Schwarzwald). Owners sold the land to recultivate it, under the condition that they would be able to buy it again when finished, under favourable financial terms. The Land Use Plan 2020 will greatly address the climate conditions as well (retainment of cool air flow areas and urban ventilation lines within and outside the city).

He then informed the participants about the **transport planning approach** of Freiburg – principle of sustainable mobility is implemented by one-point integrated transport at central station, connecting busses, trains and tramway lines (“city of short ways”). Public transport is integrated into the city to bring density, and stop private parking places (long process to get political support). Integrated bicycle garage, combined with a lot of ancillary services - bicycle repair, travel agency, cafes and restaurants - brings more users and guarantees more safety. There are 400.000 km of bicycle tracks. Between 1982 and 1999, cycling share increased from 15 to 28%, public transport use increased from 11 to 18%, while distances travelled by motor vehicles decreased from 38 to 30%. Ninety percent of Freiburg residents live in 30 km/h zones, 65% people are covered by tram lines, and the city implements financial incentives for car avoidance, as well as parking guidance systems. Freiburg has achieved 88%-rate of public transport cost coverage (avg. for Germany is 63%). In a few years the tram will be completely redirected out of pedestrian zones, in order to revive the pedestrian circle around the city from the 1970-ies.



All these aspects are reflected in the Aalborg Charter of Sustainable Cities, that Freiburg committed itself to in 2006, and Mr. Daseking presented the two most illustrative examples of the above principles:

1) Rieselfeld - formerly agricultural area outside city boundaries, now creating a settlement of passive high-rise buildings and social housing for people who cannot afford expensive living. According to Mayor’s decision, no municipal budget funds would be spent for the investment, but construction should be financed from selling of plots to private persons (future inhabitants). Plans and investigative studies, as well as consultations with citizens on "How do I want to live" brought up the following main aspects of the new quarter:

- from the highest point in the house you should be able to call your children in the park
- integrate green, public transport
- all precipitation must go underwater, and create an enclosed water system
- low energy houses (40% less energy consumption)
- car-free areas, public areas & shopping area
- protected area, where school, market and church could be placed
- wind system to be further supported, by building streets in East-West direction
- plots not sold to developers, but only to private individuals
- integration of sporting places and green areas
- not too many families in one residential building, few places for garages (2 per plot)
- solar panels installed not only for creating energy, but also to form shadow

The area also includes a plot with 40 passive houses, water-groundwater system, with no cars allowed.

2) Vauban Quarter - example of sustainable urban development through creation of a new concept of living in a former French military barrack area, located in the southern part of town, close to Schönberg hill countryside and only 3km from the town centre. Participants visited this ambitious project on the spot, guided by Mr. Fabian, from the same municipal department. Mr. Fabian informed about the many different aspects considered during planning and executing of this renovation project:

- design for a new master plan for site renovation put to public competition in 1994 - the selected physical plan for Vauban approved in 1997, and first buildings and inhabitants already in 1998
- combination of transport/commercial/social infrastructure, and 3 types of housing: private, rented (15%) and social housing
- nature conservation: designs in the competition had to take into account 70-year old trees as natural monuments, as old as the entire military area

Transport concept:

- choice available between entirely car-free areas, including car-sharing, or parking-free areas (cars allowed to stay for maximum 30 minutes, for delivery etc.)
- narrow streets, no private/public parkings, speed limit set at 50 km/h , with public bus and tram lines set at the outside borders of the district, and two public garages (18.000 EUR for a parking space, plus monthly fee for cleaning, is hardly affordable)
- public space has to stay minimum 4 m wide, including ditches and tree zones, to allow enough safe space for children
- bicycle tracks (German average is 500 cars per 1.000 people, Freiburg average is lowest in Germany with 423 vehicles per 1.000 people, while Vauban reduced it to 200)

Energy concept:

- solar energy use supported by subsidies
- energy consumption standard 65 kWh/m² in any building (for passive houses 15 kWh/m²)
- "solar village" of 50 plus energy houses (producing more energy than they use)
- woodchip CHP powerplant as main energy source (electricity only for 10% of inhabitants)
- solar garage - energy from solar panels on the roof

Physical planning concept:

- district designed in public consultation
- reuse of existing building stock
- 5 public green spaces to divide density of town and provide recreation possibilities; max height of buildings is 15 meters and 4 storeys
- green rooftops as planning requirement
- affordable flats with green plots for young people (smallest plot 100 m²)
- 15-16% more expensive houses with solar roofs (smallest house has 65 m²)
- most passive houses in Freiburg
- individuality: eco-aspects put in housing contracts, but there is no regulation on colours and other design aspects (70-80 different architectural designs exist at the moment)
- integrating small shops instead of big shopping malls



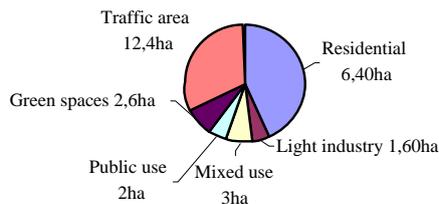
- rainwater collection and watering of green areas through ditches system
- finalisation of Vauban settlement and Rieselfeld planned until 2020

Socio-ecological model district:

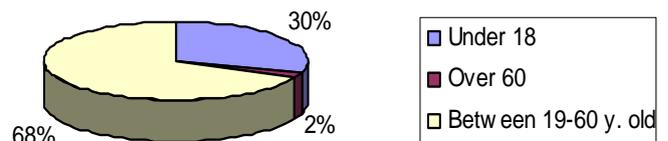
- projects of joint living - only few commercial developments allowed in the district, given to cooperatives (self-organised associations of several families, to build more energy efficient and cheaper apartment buildings – e.g. Genova, S.U.S.I.)
- very "young" district with 3 kindergartens, 30% of people under 18 years old; many community rooms, halls, joint living centres, children infrastructure
- mobility made easy - all infrastructure available within the district
- public participation in physical planning via Forum Vauban from 1995-'99; which later concentrated more on social integration, and in 2005 was replaced by District Association Vauban that organises public discussions and workshops, serves as representation and liaison to municipal decision-makers

VAUBAN FACTS:

38ha of total surface area



5.000 inhabitants - Generation mix



FRIDAY, 02.10.2009 (FREIBURG)**Workshop - Developing concepts for energy efficient housing planning****Workshop framework and main objectives**

The workshop was designed at the end of the study visit as an exercise to prepare partner municipalities for the activity of preparation of mini projects on developing concepts for energy efficient housing planning as a part of the work on INTENSE project (WP4).

The workshop was opened by emphasizing the importance of using positive examples that were the part of the study visit in Germany, including examples from Kronsberg, Salzhemmendorf, Münster and Freiburg - Vauban. During work in groups participants should use good examples from the study visit and from their country and/or municipality, and make a reflection on study visit.

MAIN TASK:

- Create a plan for an imaginary new or renovated city or region in Central and Eastern Europe, with the following targets to be achieved by year 2020:

- 20% energy supplied by renewable sources
- 40% reduction of CO₂ emissions
- 30% reduction of pollution from transport

Proposal should be represented in the mixed visual-textual format:

1. **Visual presentation (drawing) of a general physical plan** of imaginary new or renovated city or district.
2. **Textual explanation** of the drawing - most important **keywords** (bullets) to answer the following questions:
 - location of imaginary city/district ?
 - how the city/district will reach the 3 targets that were set until 2020?
 - proposal for financing the costs of building/renovation (Financing Plan)?

Seven groups were formed of about five participants from different countries. Below is the presentation of the projects resulting from the work in small groups

Project 1:

Name of the project: Biointense

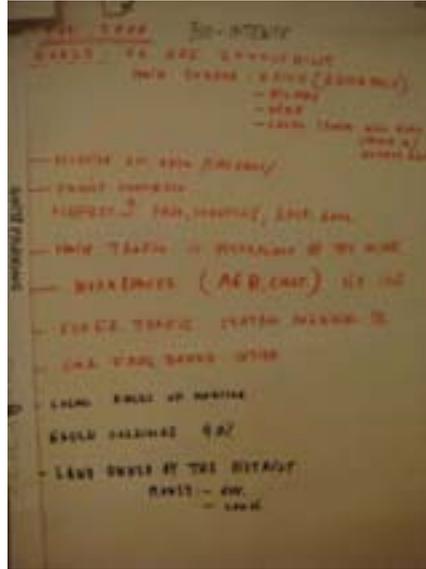
- Population: 5000
- district of northern Munster surrounded by green areas
- windy city - wind blows from the north

Utopia? Completely new no-fossil town energy supply with renewables connected to train lines.

Around the center is a traffic zone with tram and two parking zone. In the center there is a green corridor and business zone. Away from the center residential buildings are located, oriented towards the sun. Between the business and living zone there is educational center.

Energetic "ring" is agriculture zone situated around the city and wind power plant that provide energy supply for buildings.

- Finance:
- district owns the land
 - district rents the land
 - private investors invest



Scheme 1: Project Biointense

Project 2

Name of the project: Sunny

- realistic situation of one region in Hungary
- old city

Revitalization of a former industrial area, connected to public transport. City of short ways

City has no connection with the intersection so intersection will be constructed. In that way Hungary will have better connected with two countries.

Main tram station (like in Freiburg) - one for intercity and one for the city.

Green area near river Tisa - green tram.

Living spaces

- row houses - exchange experience with Vauban.
- low car space - one car per person
- garage

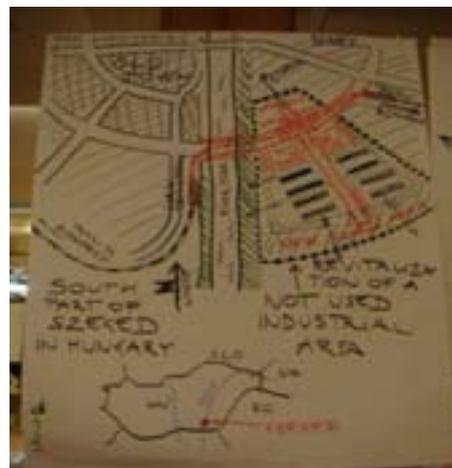
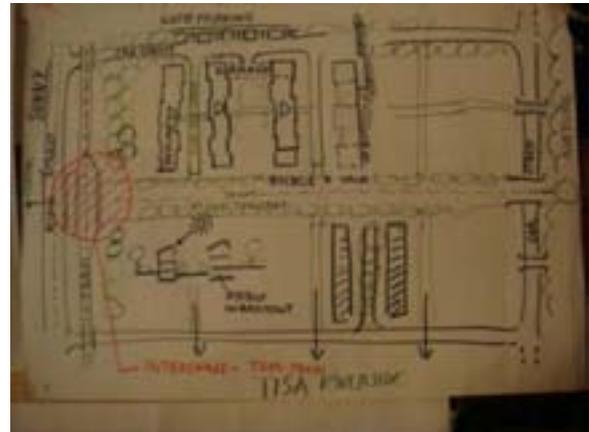
Solar energy - water

Thermal energy - source mainly for heating system

Electro mobiles for tourists and visitors in green area

Finance:

- EU (infrastructure - bridge, train line, tram line)
- selling areas for investors (like in Vauban).



Scheme 2: Project Sunny

Project 3

Name of the project: Eco-city

One city from Central Europe, 20 km from Bratislava

- Population: 400 000 inhabitants

Concepts for energy supply with renewables for whole municipality.

The city is divided to three areas: down town, central part and surrounded area. There is also a river which passes through downtown. Biogas plants are located around the city - corn fields. Windmills - wind corridor. fresh air from the above. Reduction of the CO₂ emission is achieved by buildings orientation to the sun.

Energy supplied

1. Biogas plants - at city border to supply heat for inhabitants
- to produce an electricity for selling to the grid
2. Wind mill park- to produce an electricity,
3. Photovoltaic panels - to produce electricity
4. Solar collectors- to prepare hot water and for support of heating system
5. Heat pump - to cover the heat loss.



Scheme 3: Project Eco-city

1. Reduction of the pollution from transport
2. Bike lines - construction of bicycle lines during reconstruction of the city
3. Tram and train combination system - integrated system of public transportation
4. Park and ride system - parking mostly outside of the city
5. Zone of the city - each city level with different entrance fees

Reduction of CO₂ emissions

1. South orientation of buildings
2. More green areas in downtown

Plan for the transport zone:

- combination of train and tram
- for eliminating the heavy traffic, four parking zone will be set on the main roads.
- one bike per each inhabitant, bicycle path.

Finance:

- 30% through EU projects
- government support
- city and county support
- private sources (private companies will invest into biomass industry).

Project 4

Name of the project: Green valley

Location: Outside of the centre of Budapest, bellow of the mountains of Buda.

Concept of the project:

- planning houses with passive standards and low energy consumption.
 - protection of the whole area with trees.
- New passive house settlement. District garages to minimise car traffic, energy supply with renewables. Private investments.*

The traffic is adapted to residents who travel to the city center. It includes train and tram stations which are near one to another. The city center is a car free area. There is intention to purchase electric cars for the use in the center of the city concerning elderly who can't drive bicycles.

Four new buildings will be constructed in 4000 m² building area with 100 flats, public spaces and green spaces (25% green spaces). Near flats there will be biking parks.

Solar energy - electricity

District heating.

Green roof.

Finance: - very optimistic access.
- investors will seek to invest funds in the project.



Scheme 4: Project Green valley

Project 5

Name of the project: Dream city

Population: 2000 inhabitants

Location: Central Europe

Reconstruction of the existing city.

More than retrofitting with low energy standard:

- livable places near old town;
- addition of new passive houses.

In the city there is a family hotel, buildings, houses and kindergarten. There are three roads.

This group was set up higher goals than the default, including 100% usage of renewable energy. Outside of the urban area there is a rural area and agricultural fields. Existing buildings are not very well oriented. Plan is to renovate existing buildings to passive and low energy houses. Also, there will be set solar panels for electricity production. Heating will be provided by biomass, taking into account the proximity of the agricultural fields.



Scheme 5: Project Dream city

Goals: - insulate municipal houses ~ 40 kW/m² (new windows, very good insulation)
- subsidized loans for private owners
- replacement of public lights

Reduction of CO₂ - reduction of transport (cars 50%) and integration of public transport, walking and bicycle).

Financing:

- energy contracting (loans)
- slightly higher rate
- possibly PPP (public-private partnership)

Project 6

Name of the project: SLALITCRO

Location: Central Europe

Population: 30000 inhabitants in region

Concepts for energy supply with renewable for whole municipality.

The current situation is bad, there is no renewable energy. Nearby is the river, tram and forest on the north.

Heating system was only district heating. New heating system will be with wood or chips. Also, new solar panels will be installed.

The water treatment plant will be built (biogas).

Cars were used only, and there will be space for walkers and bicycles built. Time sharing car will be set.

New houses will be passive houses with heating pumps. Also inhabitants should be convinced to put new insulation

Finance: - structural funds



Scheme 6: Project SLALITCRO

Project 7

Name of the project: Free Zone

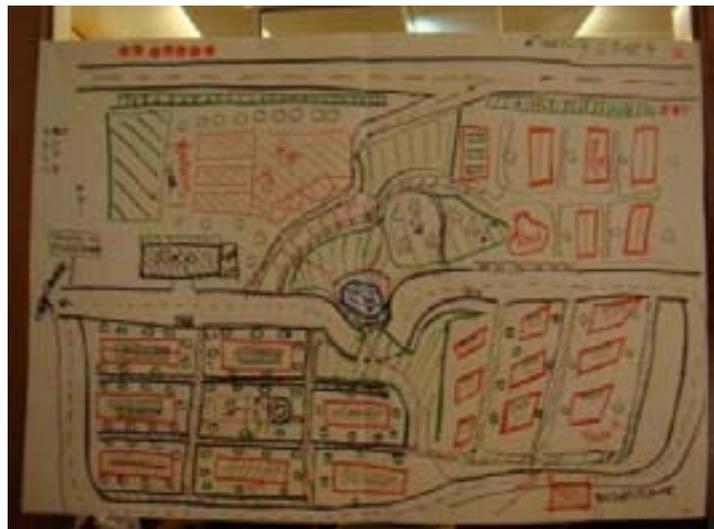
Location: Samobor, Croatia

Reuse of a former military area. Mixed structure, car free zones. Orientation of roofs for optimised solar applicaton.

Former military building will be renovated and get new insulation. Roofs will be oriented towards the south and will have solar panels. The main building will be destroyed at on that area the artificial lake will be built. Around the lake there will be a green zone with lot of trees.

In the city center will be a sub-center with small stores, playground, bicycle path and this will be free car zone.

- public garage
- bicycle garage
- kindergarten, school
- business zone - banks, restaurants,...



Scheme 7: Project Free Zone

THE BEST PROJECT SELECTION

With anonymous voting the 3 best projects were chosen and awarded.

4) CONCLUSIONS

It is emphasized at the end that although this workshop looked like game, those examples can be easily applied in every-day life. That is why this workshop is important for mini project preparation.

The steps for preparation of mini-projects in municipalities should start with brainstorm about mini-projects in each municipality led by inspiration of the best practice examples learned at the study visit in Germany. Next steps should be an identification of mini project teams for concept development, with the assistance of country coordinators. The third step should include selection of three proposals. In this step guidelines and recommendations will help to decide which projects are the most suitable for implementation. At the end, a joint partners' workshop will be held to present and discuss ideas implementation. German experts - supervisors will monitor and help municipalities in this process, if necessary.

In the end, all participants shared their first impressions on the study visit - one most important thing they have learnt, and they will bring home:

- Sustainable model city
- Countryside - source of energy
- Names of all participants
- Impressions from Freiburg
- Solar panels
- Planning system from Münster and Freiburg
- The entire study visit
- It is possible to implement new technologies on the old one
- Biogas, Salzhemmendorf
- Lot of work that is waiting at home
- Streets are mirror of the city
- Politics should follow urban planners
- Passive houses, low energy
- City planners
- Presentation on planning concepts from Freiburg
- How we could change people's mind
- How to build green areas - model
- Complex urban and countryside
- Salzhemmendorf - initiative goes from bottom to top
- Changing system in countries to produce energy
- Construction of passive houses
- Holistic planning is very important in urban planning
- Best practice - cities should have the courage to make changes
- Münster - refurbishment on the old fashion stuff (Germany)
- Good feeling

After official closure of the workshop and the study visit, participants were invited again to use the knowledge and experiences learned in Germany in their mini-project preparation.

5) STUDY VISIT EVALUATION BY PARTICIPANTS

Below is the summary of all received evaluations from participants, representing a number of municipalities from the 11 CEE project countries, which reflect the overall level of satisfaction of the study visit:

Useful things observed:

- Useful visit in terms of getting many good ideas to transfer to municipal planners (rainwater collection, space-saving construction, good public transport solutions reducing private car use – bicycle parks and tracks, green areas management; high standards of building design; RES usage possibilities for energy efficiency and job creation)
- Vauban more attractive to live in than Kronnsberg, although planning ideas are very similar, Vauban leaves a more lively impression
- Many good ideas still not implementable because of financial constraints
- Use of renewables (biogas plants, solar energy) and CHP plants could be enhanced in CEE
- Munster's land purchase agreements are a very new concept; but presentations didn't really show practical examples on regulation and implementation of concession contracts, ways to motivate private investors; also what did municipality do in their own investments to set an example for others
- Munster: Able to observe necessary preconditions for successful implementation of instruments
- Planning concept of Vauban - older people should be more encouraged to choose to live there, to get a generation balance
- Salzhemmendorf - a small community can join forces and reach total independence from the big energy market, the governmental level is also on the side of the local developers due to bank support and other grants.
- Salzhemmendorf - real decisions options in the hands of the people and farmers, who are the owners and the customers at the same time.
- The center of craftsmen - that is what youngsters really need a good motivation and skilled tutors
- Münster - the power of cooperation
- Freiburg - well organized selling center and good guidance for those who want to use these energy saving methods.
- Kronsberg - kindergartens and schools were close to the residential areas.
- Kronsberg new living district: the different houses, the green public places and the whole planning philosophy behind.
- Kronsberg - the bicycle parks around all buildings, and the different methods for parking in order to reduce the level of traffic.
- Munster - the significant results that could have been achieved regarding environment-friendly transport (eg. 38% of all passengers uses bikes), which was largely due to the creation of the appropriate infrastructure (bicycle roads, bike sheds.)
- Freiburg - the people of the city do not think that it is enough that they have an excellent natural environment (large green area located around the city), but they continue to expand the green areas in many ways (eg. grass grown tram lanes)
- Vauban - the buildings of various style, the way the public areas are constructed, the traffic concept applied (traffic calming design, parking houses, the inner city can be easily reached by tram)

Lessons learned / messages carried forward:

- "CO₂-free village" shows that even without physical planning a good energy balance can be achieved – especially in rural municipalities
- Constant lobbying for energy-efficient approach at local and regional level crucial to get political approval - few people can do a lot if political mind is positive (involvement of local people into business and idea distribution is impressive)
- Any idea is applicable if you have responsive people around, crucial is awareness of inhabitants and decision makers about energy efficiency

- “It is not the most important to get a best solutions , but we have to get the best agreement between public and private interests”
- Workshop on Friday - maybe such a workshop at the start of the study visit would better facilitate networking afterwards
- Friday workshop showed that communication is the best way for exchanging new and different ideas, integrating different measures and cooperating among different professions - but more time is needed to develop a more serious project
- Public institutions have to be themselves forerunners and practical examples of the use of a new technology in new buildings and in renovations of old one
- Good examples were seen not only how to do things, but also how to present them, share good examples with others, involve local people
- Salzhemmendorf - independence from the big energy market - solutions could be the way of gaining real results on municipal level, local energy networks can provide more environmental friendly economical applications
- isolation and construction technologies
- Kronsberg - the use of district-heating and close wind turbine generators resulted in a low level of CO2 emission
- Kronsberg - the way of construction of sewers, how to collect and keep the rainwater in the collection area.
- Using more solar and alternative energy (wind energy also on the local not only on regional level).
- Implementing power plants for new residential areas.
- Green sewage system.
- Munster - asset management policy worked, with which the city could influence the quality of developments in respect of energy savings and the reduction of CO2 emission, and can contribute to the creation of pleasant living environment in the city
- Exhibition centre - we could actually “get into touch” with the suggested environment friendly insulating materials.
- Freiburg - the widespread application of solar energy and the construction of passive houses - decrease the environmental pressure.
- large-scale planning of electric public transport, the construction of a new bus station, green area development.
- discussion and evaluation of newly gained experience of the study visit, testing the practical use of what we had just learnt.
- “Direktives for prokurment of municipal estates” and the land sale contract with details to low energy standard.

Additional information needed:

- Handbook about Kronsberg Planning and Realization should be given as additional material; more technical information about the passive house structure as well
- There could have been more information about financial (investment&saving) aspects of refurbishment and new building projects
- Report about the visit, including concrete financial data on refurbishment and construction projects (before & after figures); distribute full list of contacts of SV participants
- To have more written materials about each place and accomplishment that were involved in this project.

Overall organisation avg 4.38 ☺

(WIFI access missing in hotels & very long travelling time are the only objections)

6) APPENDIX

LIST OF STUDY VISIT PARTICIPANTS

Participant	Municipality, organisation	e-mail address	Street	Town	Phone
Mr. Kalle Pungas	Saku, Vice Mayor	kalle.pungas@sakuvald.ee	Teaduse 1	EE-75501 Saku	+3725066974
Mr. Indrek Ranniku	Tartu, Head of Urban Planning Service	indrek.ranniku@raad.tartu.ee	Raekoja plats 3	EE-51003 Tartu	+3725110990
Mr. Meelis Linnamägi	Valga, Head of Development Department	meelis.linnamagi@valgalv.ee	Puiestee 8	EE-68203 Valga	+3725587784
Ms. Inta Ādamsonsone	Cēsis, Project Manager	inta.adamsone@dome.cesis.lv	Raunas Street 4	LV-4101 Cesis	+37164161818
Mr. Viesturs Krastiņš	Cēsis, Head of Department	viesturs.krastins@dome.cesis.lv	Raunas Street 4	LV-4101 Cesis	+37164161824
Ms. Linda Abramova	Cēsis, Director	linda.abramova@apollo.lv	Gaujas Street 7	LV-4101 Cesis	+37129171236
Ms. Evita Riekstiņa	Riga Energy Agency, Intl. Project Manager	evita.riekstina@riga.lv	Brivibas street 49/53	LV-1010 Riga	+37128603781
Mr. Rihards Baufals	Riga Energy Agency, IT Chief Specialist	rihards.baufals@riga.lv	Brivibas street 49/53	LV-1010 Riga	+3718370055
Ms. Ingrīda Brēmere	BEF Latvia, INTENSE Project Manager	ingrida.bremere@bef.lv	Doma Laukums 1	LV-1050 Riga City	+37167357561
Ms. Regina Bula	Riga City, Deputy Director	regina.bula@riga.lv	Dzirnavu Street 60-21	LV-1050 Riga City	+37129472125
Mr. Justinas Kilpys	BEF Lithuania, Expert Assistant	justinas.kilpys@bef.lt	Uzuplo 9/2 17	LT-01202 Vilnius	+37061329498
Ms. Asta Šidlauskaitė-Verbickienė	Vilnius, Expert	giedre@elektrenai.lt	Gedimino pr. 38/Vasario	LT-01202 Vilnius	
Mr. Feliksas Zinevičius	Kaunas, Expert	giedre@elektrenai.lt	Bresalaujos str. 3b	LT-44403 Kaunas	
Ms. Giedere Tomkevičiūtė-Kalinauskienė	Elektrėnai, Coordinator	giedre@elektrenai.lt	Elektrines Str. 8	LT-26108 Elektrėnai	+37052858066
Mr. Stasys Ščiukaitis	Elektrėnai, Expert	giedre@elektrenai.lt	Elektrines Str. 8	LT-26108 Elektrėnai	+37052858066
Mr. Filip Čejka	REC CO Czech Republic, Assistant	Fcejka@cz.rec.org	Senovazna 2	CZ-11000 Praha 1	+420725847638
Mr. Stanislav Kutáček	LAG Moravian Karst, Project coordinator	kutacek@mas-moravsky-kras.cz	Sloup 221	CZ-67913 Sloup	+420736643394

Ms. Marie Horaková	Economy & Society Trust, Project coordinator	horakovamar@email.cz	Sloup 221	CZ-67913 Sloup	
Ms. Petra Szakonyi	Győr, Strategic Planner	szakonyi.petra@gyor-ph-hu	Városház tér 1	H-9021 Győr	+3696500272
Mr. Istvan Schmidt	Veszprem, Head of office	tjzsa@gov.veszprem.hu	Ovaros sqr. 9	H-8200 Veszprém	+3688549224
Mr. Tamás Józsa	Veszprem, Strategic manager	tjzsa@gov.veszprem.hu	Ovaros sqr. 9	H-8200 Veszprém	+3688549224
Mr. Attila Zana	Szeged, Project Manager	zana.attila@szeged.eu			
Mr. Otto Szabó	REC Headquarter, Regional Director	oszabo@rec.org			
Ms. Kalinka Andreeva	Sapareva Banya, Head of Direction	sap_euro@abv.bg	1 Germaneya Street	BG-2650 Sapareva Banya	+3597073378
Ms. Snezhina Boyadzhieva-Zaimova	Sapareva Banya, In-House Consultant	szaimova@abv.bg	1 Germaneya Street	BG-2650 Sapareva Banya	+359898770228
Ms. Nikica Viličić	REC CO Croatia, Project officer	Nikica@rec-croatia.hr	Dordiceva 8a	HR-10000 Zagreb	+38514873622
Ms. Irena Brnada	REC CO Croatia, Director	irena@rec-croatia.hr	Dordiceva 8a	HR-10000 Zagreb	+38514810774
Ms. Štefica Lustek	Samobor, Consultant of civil engenering	stefica.lustek@samobor.hr	Trg Kralja Tomislava 5	HR-10430 Samobor	+385913366448
Mr. Miroslav Šavar	Samobor, Arhimir, Architect	arhimir@zg.htnet.hr	Zagrebacka 9	HR-10430 Samobor	+385913364366
Ms. Ljiljana Drešar	Samobor	ljiljana.dresar@samobor.hr			
Ms. Jasna Golubić	Koprivnica, Head of Departement	izgranja.grada@koprivnica.hr	Zrinski trg 1	HR-48000 Koprivnica	+38548279521
Ms. Maja Ištvan-Krapinec	Koprivnica, Head of Departement	prostorno.okolis@koprivnica.hr	Zrinski trg 1	HR-48000 Koprivnica	+385654840
Mr. Zdravko Sarapa	Koprivnica, Forma Biro, Architect	zdravko.sarapa@kc.t-com.hr	Ante Starcevic 5	HR-48000 Koprivnica	+38548622396
Mr. Vasile-Silviu Breazu	Băile Tușnad, Local Councillor	szafta.andras@yahoo.com	Str. Oltului, Nr. 63	RO-535100 Baile Tusnad	+40733937908
Ms. Ileana Colcer	Băile Tușnad, Local Councillor	szafta.andras@yahoo.com	Str. Oltului, Nr. 63	RO-535100 Baile Tusnad	+40733937908
Mr. Paweł Rędziaś	Ożarów, Deputy Mayor	zastepca@ozarow.pl	Ui. Stodolna 1	PL-27-530 Ożarów	+48502714247
Mr. František Belko	Ružomberok, Heat specialist	belko@cztrk.eu	Textilna 23	SL-03401 Ruzomberok	+421905452677

Mr. Joseph Jurčo	Ružomberok, Architect	j.jurco@yahoo.de	Nam. A. Hlinku 1	SL-03401 Ruzomberok	+421905559058
Mr. Marko Verdenik	Ptuj, Technical assistant	marko.verdenik@ptuj.si	Mestni trg 1	SI-2250 Ptuj	+38627482974
Ms. Asja Stropnik	Ptuj, Junior expert	asja.stropnik@ptuj.si	Mestni trg 1	SI-2250 Ptuj	+38627482966
Mr. Janez Petek	Ptuj, Local Energy Agency Spodnje Podravje	janez.petek@steng-nccp.si	Krempljeva ulica 1	SI-2250 Ptui	+38641981463
Mr. Peter Cafuta	Ptuj	peter.cafuta@ptuj.si	Mestni trg 1	SI-2250 Ptuj	+38627482991
Ms. Christiane von Knorre	Auraplan Architects	christiane.von.knorre@auraplan.de			
Mr. Matthias Grätz	BEF Germany, project manager	matthias.graetz@bef-de.org	Osterstraße 58	D-20259 Hamburg	+494053307076

AGENDA

Study visit Germany (WP4): 28.09.2009 – 02.10.2009

Monday, 28.09.2009		
<i>Hannover – new districts// Salzhemmendorf – 100% CO₂-free village</i>		
Time	Programme	Place
10:00-10:30	Get together: • Introduction to study visit program	Cityhotel Königstraße,
10:30-10:45	Departure to Kronsberg (group 1) by public transport – tickets on own expenses Departure to Salzhemmendorf (group 2) by organized coach, approx. 45 km south of Hanover	<i>or</i> Cityhotel am Thielenplatz, Hanover
Group 1		
11:45	Lunch (paid by Münster)	Kronsberg district centre "Krokus"
12:30-15:00	Site visit 1 <i>Ms. K. Rumming, Department of environment, City of Hanover</i> • Entirely new district Hanover-Kronsberg Space saving construction, Social balance in a new quarter, Mandatory Low energy standard and quality check for all buildings. • Passive house settlement; • CHP inside multistory house – cellar CHP for district heating; • Solar houses – solar architecture; • Big water tank for district heating – connected with solar thermal.	Kronsberg district Hanover
15:00-15:30	<i>Mr Kier, Planning and Urban development, City of Hannover</i> Presentation: "Space saving constructions in Kronsberg"	
Group 2		
12:00	Lunch "Ratskeller" (paid by participants)	Salzhemmendorf
13:00-16:15	Site visit 2 <i>Mr Kempe, Mayor of Salzhemmendorf</i> 100% CO ₂ free village Salzhemmendorf • biomass power plants; • wind park.	Salzhemmendorf
13:45	Visit of the thermal spa • Explanation of the heating concept	

14:30	Biogas power plant Ahrensfelde <ul style="list-style-type: none"> • Explanation of the concept. 	
15:00	Logona - Explanation of heating concept in cosmetics production	
15:40	Wind power plant park in Oldendorf	
16:00	Holzschnitzelanlage Gall (wood chip plant) Explanation of the technology <i>Mr. R. Sagawe, BUND</i> Presentation: „District Hameln-Pyrmont –100% CO ₂ -free“	
16:30	Return to Hanover	
17:30	Day conclusion <ul style="list-style-type: none"> • Transfer back to city centre • Free evening 	Hanover

Tuesday, 29.09.09 <i>Münster – urban planning instruments and practical results</i>		
Time	Programme	Place
08:45	Travel to Münster (Organised coach) <ul style="list-style-type: none"> • Opening the day • Round of introductions - exercise 	Meeting in front of Cityhotel Königstraße 8:45
12:00	Lunch - "Cafe Med" (on participants' expenses)	Café Med Hafenweg 26 Münster
13:15	Bus transfer to Hotel Mercure	
14:00	<i>Mr H. Bruns, Head of Department of green space and environment</i> "City of Münster Münster standard practice in energy optimised urban planning" Coffee-break	Hotel Mercure, Engelstrasse 39 Münster
14:30-16:30	Workshops on urban planning instruments	
	Group 1	
14:30 – 16:30	<i>Mr. Wilsmann/Mr. Krause, Department for urban planning City of Münster</i> Presentation: "Energy-Conforming General Development Planning" Questions and discussion	Hotel Mercure

Group 2		
14:30 – 16:30	<p><i>Ms. Vogel, Department of real estate management</i></p> <p>Presentation: “Low-Energy House Standard in land sale contracts” Questions and discussion</p>	Hotel Mercure,
18:00	Guided tour through the centre of Münster	Start - hotel Mercure
19:00	Common Dinner (paid by Münster) with tombola	Pinkus Müller

WEDNESDAY, 30.09.2009. <i>Münster - New buildings & refurbishment</i>		
Time	Programme	Place
8:30	Transfer to sites by organised coach from the hotel	Münster
9:00	<p>Site visits Münster practical examples in two groups</p> <p>1.) <i>Mr. C. Thiel</i>: New building - Passive house Wismarweg – Christoph Thiel</p> <p>2.) <i>Mr. S. Wismann</i>: Old building - Wohnstadtbau – Sanierung der Wohn und Stadtbau,</p> <p>Together as a group: <i>Ms. S. Diekmann & Mr. A. Müller</i>: Demonstration centre for craftsmen Lunch in the demonstration centre (own expenses)</p>	Münster
14:30	Train travel to Freiburg (tickets organised and paid by Münster for all participants)	Münster
21:00	<p>Arrival in Freiburg Accommodation in the following hotels: 1) Hotel Rheingold, Eisenbahnstraße 47 <i>or</i> 2) Intercityhotel Freiburg, Bismarckallee 3 Attention: All rooms will be shared twin rooms!</p> <p>Free evening</p>	Freiburg

THURSDAY, 01.10.2009. <i>Freiburg - site recycling</i>		
Time	Programme	Place
8:20	Transfer to the meeting venue by foot	Freiburg

	(approx 1 km)	
9:00- 10:30	<p>Freiburg: the holistic approach</p> <p><i>Mr. Daseking, Department for urban Development:</i></p> <p>Presentation: "Green city seminar: Quarter Vauban, sustainable urban Development"</p>	Freiburg Technisches Rathaus, Room 203 Fehrenbachallee 12
10.30 – 15.00	<p>Free time for sight seeing and lunch (own expenses)</p> <p>Travel to Vauban with tramway, meeting point tram stop Stadttheater (public transport tickets need to be bought by everyone staying in hotel Rheingold – the others staying in intercityhotel have it included in their stay)</p>	Freiburg
15:30 – 17:00	<p>Site visit: Freiburg-Vauban</p> <p><i>Mr. Fabian, Department of urban development, City of Freiburg</i></p> <p>New life in a Former military barrack area, ambitious project with different aspects:</p> <ul style="list-style-type: none"> • car free project • reuse of existing building stock • projects of joint living 	Freiburg
	Free evening	Freiburg

FRIDAY, 02.10.2009. <i>Freiburg - site recycling</i>		
Time	Programme	Place
09:00	<p>Workshop</p> <p><i>Moderation: Ingrida Bremere</i></p> <ul style="list-style-type: none"> • "Best practice in energy efficient planning for the future" • "What can be used for adaptation in CEE Municipalities?" • Feedback round • Recommendations for further activities • Closing of the event 	Freiburg, Hotel Rheingold Eisenbahnstraße 47
12:30	Lunch (not organized and on own expenses)	Freiburg