BÆREDYGTIGE BYER OG BYGNINGER

SUSTAINABLE REGIONS

SUSREG
empowering sustainable urban planning

Co-funded by the Intelligent Energy Europe Programme of the European Union

SUSTAINABLE REGIONS
– BÆREDYGTIGE REGIONER

Medlemsblad for
Foreningen Bæredygtige Byer og Bygninger
18. årgang nr.2, 2015

Udgiver: Foreningen Bæredygtige Byer og Bygninger
c/o European Green Cities ApS
Norsgade 17
8000 Aarhus C
Tlf: +45 86760903
Email: info@fbbb.dk, www.fbbb.dk

Redaktion: Erik Alsema, Esther Roth og Elsebeth Terkelsen

Oplag: 2000 stk
Layout/sats: reDesign

Fotos: Artiklens forfattere – hvis intet andet er angivet

Print: LaserTryk.dk

Nordisk Miljømærkning Tryksag 541-826

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INDHOLD

01: INTRODUCTION
Erik Alsema, senior consultant, W/E, the Netherlands

02: PROCESSES AND TOOLS FOR SUSTAINABLE URBAN PLANNING
Erik Alsema, senior consultant and Esther Roth, senior advisor, W/E, the Netherlands

03: STRATEGIC ENERGY PLANNING IN THE GREATER COPENHAGEN REGION
Morten Jörgensen, project coordinator, Gate21, Denmark

04: NIJMEGEN, IMPROVING SPATIAL QUALITY AND REDUCING ENERGY USE
Maarten van Ginkel, Sustainable development planner, Nijmegen, the Netherlands

05: ARNHEM, TRIGGERING THE MARKET ON SUSTAINABLE BIDS
Jos Verweij, urban & regional planner, Owner 'De Vrije Ruimte', Senior advisor for city of Arnhem, the Netherlands

06: DO NOT FORGET THE CONTRIBUTION OF THE SUBSOIL!
Brenda Schuurkamp, environmental specialist, ODMH, the Netherlands

07: INTEGRATION OF RENEWABLE ENERGIES AND A REGIONAL PERSPECTIVE
Ondrej Nemec / Jaroslav Emmer, energy consultants, Energetická agentura Vysočiny, Czech republic

08: BRNO, BRONX, ENSURING ENERGY EFFICIENCY & REVITALIZATION OF THE DISTRICT
Jiři Cihlář and Jarmila Hazuková (DEA Energetická agentura, s.r.o.) in cooperation with Karel Barinka, Senior consultant, IURS, z.s., Czech Republic

09: TREVISO – INVOLVING LOCAL BUSINESSES IN RATIONEL USE OF ENERGY
Roma Silvia, La Greca Maria Grazia, Valentina Mattara, Province of Treviso, Italy and Federico De Filippi, Project Development, Sogesca srl, Italy

10: EMILIA-ROMAGNA
Enrico Cancila, Head of Economic and Sustainable Unit and Fabrizio Tollari, Energy Consultant, ERVET, Italy

11: BURGOS RAILWAY STATION AREA
Jose Maria Diez, City of Burgos – strategic planning, Alberto Lopez, Provincial Energy Agency of Ávila and Xabat Oregi Isasi, Tecnalia Research and Innovation, Spain

12: LIMASSOL MUNICIPALITY
Alexis Violaris, project manager, Stratagem Energy Ltd. and Stelios Stylianides, Limassol Municipality, Cyprus

13: CAPACITY BUILDING FOR URBAN PLANNERS
David Struik, developer & designer, ISOCARP, the Netherlands

14: REFLECTIONS ON THE ROLE OF REGIONAL STRATEGIES IN REALIZING ENERGY NEUTRALITY IN REGIONS
Drs. Bauke de Vries, Saxion University of Applied Sciences, the Netherlands and Erik Alsema, senior consultant, W/E, the Netherlands

BÆREDYGTIGE REGIONER

Artiklerne i dette magasin er skrevet at forfattere fra seks forskellige lande og fortæller bl.a. om kapacitetsopbygning blandt byplanlæggere, herunder højdepunkterne fra en række casestudier om planlægning, vedvarende energi og bæredygtighed. Artiklerne er alle på engelsk. Megen vigtig information om bæredygtige byer og bygninger kommer fra EU, og kan vi trykke det på engelsk, har vi flere muligheder for at formidle nyheder. Vi arbejder også på at organisere det i samarbejde med European Green Cities Network. Mere om det på bagsiden.
Vi håber, at læseren vil få et nyttigt overblik over de forskellige måder byplanlægning og bæredygtig energi er indbyrdes forbundne og på hvilken måde, byplanlæggere kan støtte udviklingen med de rette kompetencer. (Red.)
GOD FORNØJELSE!

00 FOREWORD

For a successful implementation of sustainable energy projects, it is necessary that the potential from sustainable energy is properly included in the spatial planning processes, both at an urban and regional scale.

Urban and regional planning processes are by nature quite complex, involving many stakeholders and often having a long time horizon. In order to secure a proper inclusion of sustainable energy resources it is necessary that urban planners have a good expertise in the field of sustainable energy technology.

The SUSREG project has been elaborating precisely this objective: to stimulate the implementation of sustainable energy by means of capacity building among urban and regional planners.

With financial support from the Intelligent Energy Europe Programme, the SUSREG project has worked with staff of local planning authorities in nine European cities and regions on capacity building.

In this magazine we show the highlights from the case studies, which have been part in the capacity building process. The case studies cover a broad scope of planning approaches: from the development of a strategic regional energy plan to urban renovation plans and energy efficiency in industrial areas. Countries involved were Denmark, The Netherlands, Czech Republic, Italy, Spain and Cyprus.

All together we hope that the reader will get a useful overview of the different ways urban planning and sustainable energy planning are interrelated, and in what way we can support experts working on these subjects with focused training activities.

ERIK ALSEMA, **PROJECT LEADER, SUSREG**

01 INTRODUCTION

BY ERIK ALSEMA, SENIOR CONSULTANT, W/E, THE NETHERLANDS

One of the challenges to improve regional and urban planning authorities' policy for stimulation of sustainable energy supply and energy efficient building, is the need of improving knowledge, attitudes and skills of professional planners in the municipalities

Within the SUSREG project, we have developed a capacity building programme for planners. The programme, a master class of six full days, followed by a number of national workshops open for all professional planners, has been implemented in the 6 countries that are partners in the SUSREG Consortium.

We followed a three-stage approach:

» **Stage 1:** Description of good planning examples and practical planning tools;

» **Stage 2:** Regional case studies together with a series of master classes for involved staff»

» **Stage 3:** National workshops for professional planners.

Focus has been on integrating sustainability ambitions in the early phases of planning and on safeguarding these ambitions during the actual implementation of plans in concrete case studies.

In this magazine we describe the framework and content of the master classes, and methods and tools for sustainable urban planning. Main focus is on the case studies, used as best practice examples of sustainable urban planning. Finally is an evaluation of the master classes and workshops, and some reflections on empowering of sustainable urban planning.

02 PROCESSES AND TOOLS FOR SUSTAINABLE URBAN PLANNING

BY ERIK ALSEMA, SENIOR CONSULTANT, AND ESTHER ROTH, SENIOR ADVISOR, W/E, THE NETHERLANDS

Developing a process description of methods and tools that is suitable for different countries in Europe is a rather challenging task. Urban planning processes are often tightly interwoven with decision procedures for local authorities. In different countries the responsibilities, legal obligations and the level of stakeholder involvement can vary widely. This means that our process description has to remain fairly abstract and with no connection to legal procedures

FIVE PHASES IN A STEPWISE APPROACH

A stepwise approach can be useful for preparation of a sustainable urban plan. For each phase of the plan, due attention should be given to sustainable energy resources.

If we focus on the energy aspects of an urban plan, we can identify some aspects, which are highly relevant:

- Enable low, life-cycle energy consumption in buildings, utility services and transportation;
- Tap the full potential of renewable energy sources;
- Make efficient use of existing sources of waste heat (i.e. by means of district heating);
- Provide a proper infrastructure for (renewable) energy distribution, which also provides sufficient flexibility with respect to future technological developments (e.g. switch to electrical energy consumption)
- Effects of life style on energy consumption, i.e. facilitate, guide or provide flexibility for more energy efficient life styles.

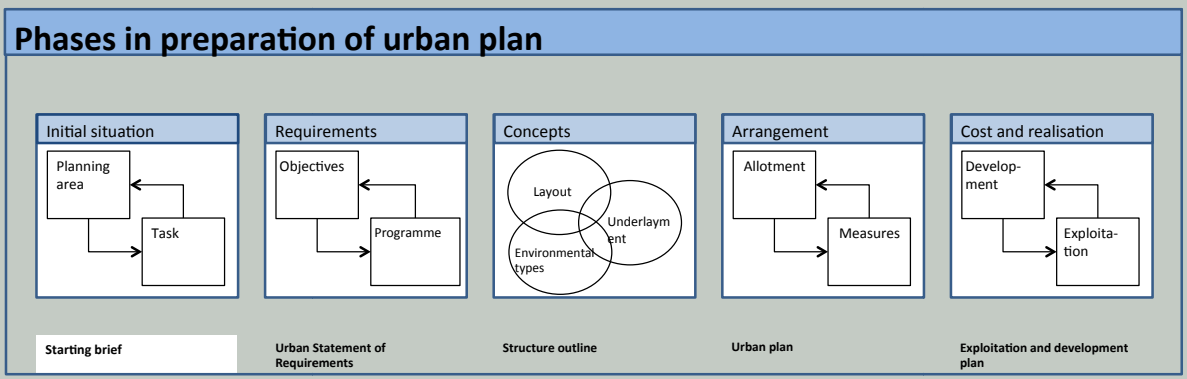


FIGURE 1: FIVE PHASES IN THE PREPARATION OF A (SUSTAINABLE) URBAN PLAN (AFTER SEV, 1999)

Success factors
As part of our inventory of good practices we have identified a number of key success factors that will help to organize a broadly supported, sustainable urban plan. We arranged these success factors in 4 thematic areas:

Political
- » work from an integrated policy including regulation on energy saving, building standards and renewable energy systems;
- » provide clear political guidance and support for plans;
- » establish clear regulations to achieve sustainable buildings.

Urban plan
- » create a liveable and attractive urban area that is appealing to residents and visitors;
- » take care of high quality of buildings and public space, including social, leisure, shopping facilities and public transport.

Technical
- » plan a gradual phase-out of old fossil energy plants;
- » provide good documentation of present energy consumption data and potential renewable energy supply options;
- » provide monitoring and documentation of demo projects and early adopters.

Process and stakeholders
- » invite private sector actors in a municipal forum to develop sustainable solutions;
- » use a bottom-up process approach, involving all relevant stakeholder form early phases in plan preparation;
- » establish clear roles for private sector and civil servants;
- » take your time to create positive attitude and enthusiasm among stakeholders;
- » create a glossary or dictionary for the development to ensure that all parties have the same objectives in mind when talking about sustainable urban planning;
- » take stakeholders on a tour to similar developments in order to specify their wishes;
- » try to integrate sustainability and planning themes and give support to interdisciplinary approaches;
- » create budget for extra sustainable measures by assuring market value of new buildings.

TOOLS FOR SUSTAINABLE URBAN PLANNING

Several software tools exist that can support urban planners in considering renewable energy integration or sustainability in general[1)] in the planning process. Here we will mention one tool, GPR Urban Planning, which was partly developed within SUSREG. The use of one other tool, for analysis of solar access in build-up areas, is illustrated in the Spanish case study.

GPR URBAN PLANNING

Municipalities and planners face the question, how to incorporate sustainability targets into urban developments. The GPR Urban Planning software facilitates this by evaluating the sustainability of urban developments. It is helpful in formulating ambitions, monitoring the progress and keeping an overview of the sustainability aspects. GPR Urban Planning brings together different specialisms and makes it clear that sustainable urban development is a shared responsibility. The user gets a well-structured insight into the aspects of sustainability as well as the sustainability performance of a new urban plan or the restructuring of an existing area.

The user of GPR Urban planning first has

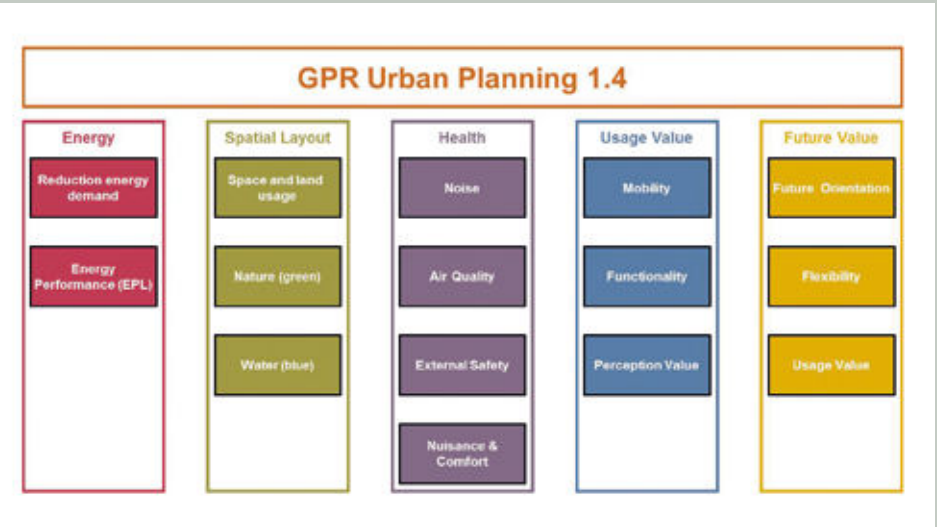
1) For more in-depth coverage of this subject see: X. Oregi et al. Use of ICT tools for integration of energy in urban planning projects, 7th International Conference on Sustainability in Energy and Buildings, Lisbon, June 2014

to specify the characteristics of the urban area and the planning choices that are made with regard to certain themes.

Based on these selections, an urban development is rated on five indicators on a scale of 1 (bad) to 10 (very good). The key performance indicators are: Energy, Spatial planning, Health, Quality of use and Future Value. Each indicator is divided into several sub-indicators (see figure).

When assessed, the performance of the urban plan is rated per indicator. Policy makers and urban planners can thus determine ambitions for each of the five indicators and focus on the topics, which are most relevant for a specific situation. For example, in rural areas the spatial planning might be more relevant, whereas in densely populated areas the health aspects may need more attention.

The GPR Urban Planning tool has also been used within one the Dutch case studies (see the case study Nijmegen). An English language version with relevant energy performance data for the SUSREG countries is available on request.



THE DIFFERENT THEMES DISTINGUISHED WITHIN THE GPR URBAN PLANNING TOOL

CONCLUSION

As an urban planner and with focus on integrating sustainable energy in the planning process, it is important to be aware of the different process models and ICT tools that are available. The use of such tools can especially be worthwhile to support the communication with stakeholders, as it can visualise the effects of certain design choices or illustrate the potential of sustainable energy resources in a certain area.

More information on the GPR Urban Planning tool and other tools can be found in a background document on the SUSREG website (www.susreg.eu).

STRATEGIC ENERGY PLANNING
IN THE GREATER COPENHAGEN REGION

03

29 MUNICIPALITIES CONVENED FOR NUMEROUS MEETINGS TO DEVELOP THE COMMON ENERGY VISION

DENMARK AND THE COPENHAGEN REGION

BY MORTEN JÖRGENSEN, PROJECT COORDINATOR, GATE21, DENMARK

The Strategic Energy Planning project "Energi på Tværs" has aimed at achieving a consensus among all relevant stakeholders on the transition to a fossil-free region not later than 2050. To achieve this objective in the most cost-efficient way, the stakeholders analysed a number of scenarios comprising various renewable energy supply options, including wind, biomass, and solar energy

The project concluded that:

- (1) It is possible and desirable to make the heating and power supply sector fossil free by 2035 and the transport sector by 2050;
- (2) In 2020 the gross energy demand can be reduced by 6.3% as compared to 2012 (in average 0.8% per year), and the CO_2 emissions could be reduced by close to 27%;
- (3) During the next several years about 10-15 billion of DKK (1.3 to 2.0 billion EUR) need to be invested in energy infrastructure each year;
- (4) These investments need to be made in a coordinated way with all stakeholders contributing to the common goal;
- (5) The total costs for the society in meeting the energy demand using renewable energy, would be of the same magnitude as of if the maintaining of the supply using fossil fuels.
- Achieving the consensus was a result of a long and complex process with active participation of all stakeholders showing a lot of motivation and passion towards contributing to the common goal of the fossil free society. Top officials from the 29 municipalities, the regional authority and from the energy utilities convened for numerous meetings where the modalities of the common energy vision were discussed. Technical officials, specialists and consultants met in several network groups to discuss technical and financial details, and in the end mayors from most of the municipalities convened and agreed on the common energy vision, and outlined the way forward for the implementation of the vision.

04

HEAT DISTRIBUTION NODE UNDER CONSTRUCTION IN THE WAALSPRONG

NIJMEGEN, IMPROVING SPATIAL QUALITY AND REDUCING ENERGY USE

BY MAARTEN VAN GINKEL, SUSTAINABLE DEVELOPMENT PLANNER, NIJMEGEN, THE NETHERLANDS

Grote Boel is part of a larger area designated for expansion of the city of Nijmegen. It is located north of the City Centre, on the north side of the river Waal. The location is within the concession area of a district heating system. The heat for this system is generated by the waste combustion plant in the south-west of Nijmegen. Other new built developments and existing housing areas are to be connected to the system as well. The municipality of Nijmegen has formulated an energy strategy for the city called Power to Nijmegen, whose aim is to reach zero fossil energy usage by 2045

MAQUETTE OF THE GROTE BOEL. THE COLOURED HOUSES DEPICT THE FIRST DEVELOPMNET PLAN

OVERVIEW OF GPR SCORES AND ANALYSES-MAPS OF TRAFFIC, SHOWING BICYCLE AND CAR STRUCTURE, AND GREEN SPACES, SHOWING POTENTIAL RECREATIONAL USE

PUTTING DOWN FOOTPRINTS AT THE START OF THE BUILDING OF THE GROTE BOEL

During the case study the original urban plans for the area Grote Boel were evaluated with the GPR Urban Planning tool. Originally, the planning focused on landscape development. Green areas were planned at the edges of the new development and heating will be supplied by district heating. After evaluating the case study with the GPR tool, the results show that the focus on landscape development pays off with highest performance on the theme 'Quality of use'.

Due to the economic crisis the demand for new houses reduced temporarily, thus causing a delay in the development process for the Grote Boel. But this also offered the opportunity to assess the plan again with the GPR Urban Planning tool and evaluate different scenarios for this development:

- integration of sustainable energy,
- livability and flexibility of plan,
- placement of green spaces and,
- traffic structure optimized for bicycles.

The result of the evaluation of those scenarios was an adapted plan with stronger emphasis on bicycle use, better balance in green spaces and a higher chance of success for implementation of the development as planned. Sustainable energy has been integrated more in the urban design. The enhanced focus on sustainable development in the project attracted developers with new building concepts, like GB4All who will build 60 dwellings in a nearly zero energy concept and convinced the traditional developers like Heijmans Bouwbedrijf to also market 0-energy houses in the Grote Boel development.

The visualization of the performance of the area has also resulted in an amelioration of the cooperation between experts (energy experts in urban planning). It gave the opportunity to establish the similarity of issues to be resolved in other town developments, leading to a closer cooperation with the neighbouring town of Arnhem.

05 ARNHEM

TRIGGERING THE MARKET ON SUSTAINABLE BIDS

BY JOS VERWEIJ, URBAN & REGIONAL PLANNER, OWNER 'DE VRIJE RUIMTE', SENIOR ADVISOR FOR CITY OF ARNHEM

In the city of Arnhem a completely new residential district is under construction for 20.000 inhabitants: Schuytgraaf. For the second phase of this development the decision was taken to review the focus and market orientation towards a sustainable residential area, being the new brand for the area

A pilot was started for a smaller part of about 140 houses, 'Veld 3'.

The pilot is based on a completely new approach in which the market will be triggered and 'seduced' to present bids that will meet a series of ambitions on sustainability and just a few spatial conditions in stead of a traditional large set of precise conditions.

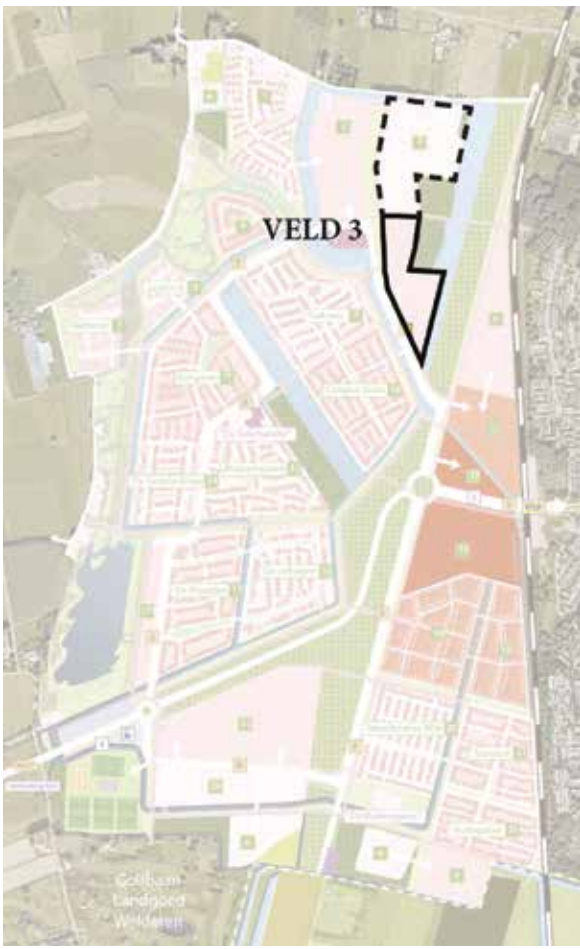
A so called 'Ambition document' was composed for the development of this neighbourhood, emphasizing sustainable ambitions on:

- energy (heat and electricity)
- water and green
- mobility
- sustainable use (flexibility).

Also a toolbox was presented with (innovative) solutions to meet these ambitions. The bids with the best scores on these ambitions will be invited to develop parts of this pilot-area. The focus is on initiatives by developers, as well as housing corporations and private initiatives (self-construction).

After a market consultation, to see if this new approach will work, the ambition document was recently approved by the city council (July 2015).

A major issue is the question if there need to be a (compulsory) connection of the pilot area to the existing district heating network. On the one hand this is estimated to be a rather sustainable solution (70% less carbon emission because of the reuse of heat produced by the waste incineration plant), on the other hand several private developers stress their preference to make their own choices in heating solutions.



PILOT AREA 'VELD 3' WITHIN THE LARGER RESIDENTIAL DEVELOPMENT 'SCHUYTGRAAF' FOR THE GROTE BOEL DEVELOPMENT

06 DO NOT FORGET THE CONTRIBUTION OF THE SUBSOIL!

BY BRENDA SCHUURKAMP, ENVIRONMENTAL SPECIALIST, ODMH, THE NETHERLANDS

The region of Middle Holland regards the use of the subsoil, for example the use of heat cold storage, being one of the methods to reach the European 20-20-20 goals. Unfortunately, spatial planners and property developers do not naturally regard the use of this energy source as self-evident. Among other reasons, a lack of knowledge and a crisis-based fear of too high costs causes property development to be implemented with no more than the minimum requirements on sustainable building of the Dutch Building legislation (Bouwbesluit). Sadly, this does not include an obligation to use sustainable energy sources

The focus of the project thus lies on availability of information for and awareness among spatial planners and developers.

How do we make sure that the use of sustainable energy sources in for example construction and renovation are included in the spatial planning process? Is extensive knowledge on all sustainable energy sources and the subsoil a necessity when working in spatial planning? How do different actors cooperate and make the most of it? These questions were dealt with in the region of Middle - Holland.

A manual on spatial planning, property development and sustainable energy[1]) is developed to help special planners think in 3D. The document provides an energy potential map. On this map areas are indicated in which spatial development will take place in the upcoming 10 years. The areas are linked to potentials for different energy sources and legal possibilities and obstacles.

Six phases in spatial planning are defined; the initiative, research, planning, execution, managing and demolition phase. For each phase several tips are given.

For example in the initiative phase the following tips are given:

» 1. Define the ambition to use sustainable energy sources for a certain, reasonable percentage, but do not be too specific on the energy sources that should be used. The exact details will be completed in a later phase.
» 2. Understand that there are many financing methods. The method "total cost of ownership" creates other possibilities than the usual financing methods. Also in other phases a different way of financing can lead to new and more sustainable solutions.

CONCLUSIONS FROM THE MAP:

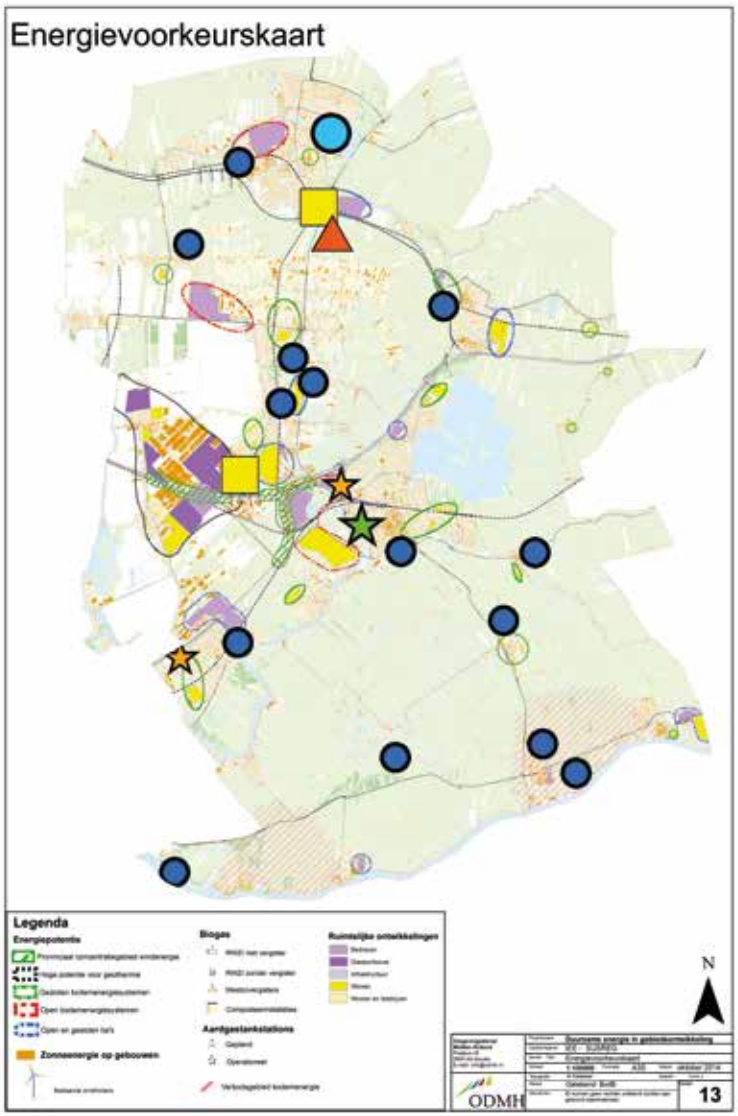
» 1. Because of the high-energy demand the (planned) greenhouse areas are best suitable for geothermal sources.
» 2. The relative shallow phreatic aquifer (0 – 60 meters deep) in most of the region is reserved for small (closed) heat cold storage systems (residential areas) and other subsoil use. The deeper phreatic aquifer (60 meters and deeper) can be used by the bigger heat cold storage systems (offices, hospitals and industrial areas).
» 3 Solar energy is a good option in the existing residential areas.

1) The manual and English summary can be downloaded from the website www.susreg.eu

When using heat cold storage (combination pump) 1.000 – 1.200 kg CO_2-emission is being reduced. A combination pump emission is about 1.200 – 1.600 kg CO_2, whereas regular heating on gas knows an emission of 2.800 kg CO_2

- 4. The larger windmills are allowed in one area in the municipality of Waddinxveen. Smaller windmills are allowed in more areas, but are not always adequate for the energy demand of the total residential development area.
- 5. A combination of heat cold storage and solar panels is a very good way to reach higher sustainability aims.

The question remains how to make sure that the manual, the map and the tips are used in the spatial planning process. One important lesson is that the influence of alderman should not be forgotten. The early involvement of these alderman will make sure that the switch in approach can take place.
Other important lessons are that information to potential buyers should not be underestimated. Also the technology on sustainable energy develops very rapidly, therefore not too many details should be defined beforehand. Leave it to the market, but communicate together (municipalities, project developers, future buyers, etcetera) on the possibilities. Realise that in housing the buyers are not as well informed as you may think. It is essential to provide the future buyers with enough information on the possibilities to reach the (municipal) goals on CO_2-reduction. In an early phase exploring the possibilities, good communication and knowledge will contribute to optimal use of space and sustainable energy sources.



MAP OF ENERGY SUPPLY

Choose the sustainable energy source or combination of energy sources that is most suitable for the area. Do not forget to involve different players to come to the best result. There are a few regions in the region of Middle - Holland where heat cold storage is not allowed, while these areas are appointed as groundwater protection area. The water in these areas is used for drinking water.
Considering a variety on sustainable energy sources should never be forgotten.

07

INTEGRATION OF RENEWABLE ENERGIES AND A REGIONAL PERSPECTIVE

BY ONDREJ NEMEC / JAROSLAV EMMER, ENERGY CONSULTANTS, ENERGETICKÁ AGENTURA VYSOČINY, CZECH REPUBLIC

The Czech Republic consists of 14 regions including the Vysočina Region, which is located in the middle of the Czech Republic. The environment in the Vysočina Region is considered as well preserved and the region belongs to one of the most environmentally-friendly regions in the country. In the Vysočina Region there is a widespread district heating using renewable energy sources. Nevertheless, the most important source for electricity generation is the Dukovany nuclear power plant

The aim of the study is to ensure the integration of renewable energy in the sustainable development of urban planning and in proposals of energy concepts focused on the Vysočina Region. The most important element is raising the awareness of representatives of regional authorities and implementing bodies. This should lead to the ability to take into consideration the use of renewable energy within their work.

Representatives of the Regional Authority of the Vysočina Region were trained in the field of renewable energy sources. Within our cooperation with the Regional Authority of the Vysočina Region two seminars were arranged especially for employees of the regional authority, employees of building authorities and for urban planners. This activity was organized in cooperation with IURS. This type of education in the field of renewable energy was also provided in many public buildings such as primary and secondary schools. Seminars were organized for students, public buildings users, etc. Based on the evaluation of the current situation, the sustainable way of the renewable energy use was proposed and included in a new "Proposal of updated territorial energy concept of the Vysočina Region".

PROCESS DESCRIPTION

Step 1 – Evaluation of the current situation in the field of renewable energy sources in the Vysočina Region and its use.
The necessary information was obtained thanks to the cooperation, meetings and seminars, which were organized for municipalities, manufacturing entrepreneurs, regional authority representatives etc., and from the Czech Statistical Office, Ministry of Industry, Energy Regulatory Office and Ministry of Environment.

Step 2 – Proposal for and organisation of heating and hot water preparation in the Vysočina Region using renewable energy sources.
The initial costs are the basic problem for the use of renewable energy sources. Due to this fact the investments in renewable energy sources are financially supported by subsidies. In the public sector the subsidies are provided by the Ministry of Environment through its Operational Programme Environment. In the private sector there are two ministries supporting the use of renewable energy sources – the Ministry of Environment and the Ministry of Industry. While the Ministry of Environment opens a programme called "Green savings" assigned to the refurbishment of family houses, the Ministry of Industry supports the Operational programme Enterprise and Innovation for Competitiveness addressed to entrepreneurs and business companies.

Step 3 - Proposal for and organisation of electricity preparation in the Vysočina Region using renewable energy sources.
Electricity preparation using renewable energy sources was highly supported from 2009 to 2011 especially when talking about photovoltaic power plants. This caused a rapid increase of installed power. Purchase of electricity from photovoltaic power plants was disproportionately supported. The price did not correspond to investments costs needed for building of these facilities. This led to a significant reduction of the support for purchase prices. The result of this minimized support was cessation of the investments in the field of renewable energy sources.

The current situation requires renewal of investments in the use of RES in the Vysočina Region and the Czech Republic in general, but this time it has to be done under the sustainable conditions.

RENEWABLE ENERGY SOURCES – TECHNICAL SOLUTIONS IN THE VYSOČINA REGION

The district heating system uses mainly biomass energy (wood, wood chips, straw, etc.) for the heat and hot water generation.

In private buildings biomass energy is also used and is supplemented with solar panels for hot water preparation. Lately there has also been a growth in the use of energy from the surrounding environment, heat pumps for heating and hot water preparation.

08

BRNO, BRONX: ENSURING ENERGY EFFICIENCY & REVITALIZATION OF THE DISTRICT

BY JIŘI CIHLÁŘ AND JARMILA HAZUKOVÁ (DEA ENERGETICKÁ AGENTURA, S.R.O.) IN COOPERATION WITH KAREL BARINKA, SENIOR CONSULTANT, IURS, Z.S., CZECH REPUBLIC

The so called Brno Bronx area is part of two districts and lies near the city center. The total surface area covers 40ha, including the proposed Brno Creative Centre in a former prison. It is a mixed-use district, primarily consisting of multistory residential buildings from the middle of the 20th century. The municipal project for sustainable regeneration also targets a complete upgrade of this socially impacted district

The aim of the study is to define the potential sustainable development of the locality in terms of the renovation of existing buildings, the construction of new buildings and finding methods to respond to energy needs in accordance with the principles of energy efficiency and sustainable energy supply.

Carbon dioxide emissions (or achieving what is known as a ZERO-CARBON state) was chosen as an indicator of sustainable development, in line with the SUSREG IEE (Intelligent Energy Europe) project, which is also part of the study.

As a pilot stage, part of the area known as Brno Bronx, has been selected. A computation model was developed for this stage, which has produced various solutions. The district is a very diverse, densely built-up urban area within the city. The location is suitable as a model case because it includes several types of building usage and methods of energy consumption.

Part of the study involved a calculation of current energy consumption in the area and its structure with regard to the building usage profiles - housing, administration, manufacture, etc. These calculations were not actually based on measured values, which were not deemed to be suitable for this purpose, but on average building usage.

Existing energy consumption is not exceptional in terms of energy performance, with wide variations ranging from neglected, brick, not insulated buildings to nearly new buildings or buildings that have been insulated after complete reconstruction. The area contains no buildings complying with low

STREET VIEW BRONX

energy or passive standards with premium thermal and technical characteristics and advanced technologies.

The area contains production units (bakeries), with a significantly different pattern of consumption – involving technology with high heat consumption.

The area also includes a large historical building, which has limited use and is linked to the Brno Creative Centre project.

The area is connected to a district heating system but coverage is not very extensive –approximately 27% of total consumption. Most buildings have boiler rooms or local domestic heaters using natural gas.

The calculation of the initial state also took into account the parameters of the district heating system – distribution losses, source production efficiency, etc. Sources of district heating predominantly burn natural gas, with a certain percentage covered by municipal waste incineration.

A marked reduction in energy consumption was achieved for the target state thanks to both structural measures such as building insulation and increasing the efficiency of energy production and distribution. As part of the study, specific measures were proposed leading to energy savings and expected benefits were calculated for individual consumption rates – heating, water heating, cooling, lighting, etc.

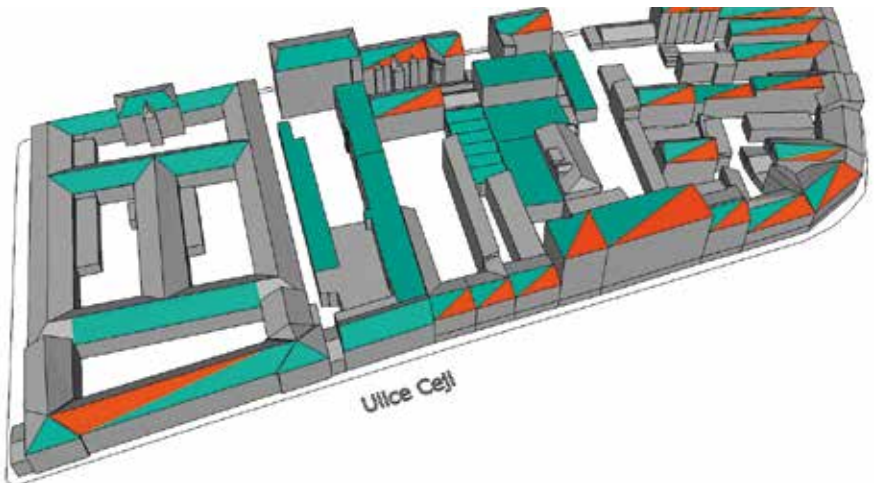
Possibilities for supplying the location with progressive energy sources with low or no carbon dioxide emissions were addressed. The primary preference was for producing energy locally through renewable resources – solar collectors were proposed for water heating and electricity generation. The possibilities for producing energy from renewable resources in the area are relatively limited.

The solution chosen was hooking up the remaining buildings to the district heating system, which in the target state allows for a greater volume of combustion of wood chips or straw and simultaneous combined production of electricity and heat.

A ZERO-CARBON state was achieved by offsetting the residual CO_2 production in the heating plant sources via the electricity produced in co-generation. The result is a zero carbon balance for the area as a whole from the perspective of total energy needs.

PROCESS DESCRIPTION

- **1. Step:** Estimation of existing energy consumption in existing buildings (most buildings from the 1st part of the 20th century, high density), function structure and users profile. The energy profile of the buildings were calculated using software compliant with the National Calculation Methodology (NCM).
- **2. Step:** Proposal for a technical upgrade of the buildings (insulation of walls, windows, roofs, etc.). A passive standard was recommended for new buildings .
- **3. Step:** Energy supply system, the district 'is' connected to the City Central heating system (mostly gas and waste incineration),
- **4. Step:** Renewable energy resources in Bronx (solar energy – photovoltaic panels on roofs /possible m^2, water heating, central heating, etc.).
- **5. Step:** Traffic system and parking. Streets and courtyards made friendly for inhabitants, more green areas.



PHOTOVOLTAIC AND THERMIC PANELS ON ROOFS, POTENTIAL LOCATIONS

09 TREVISO – INVOLVING LOCAL BUSINESSES IN RATIONAL USE OF ENERGY

BY ROMA SILVIA, LA GRECA MARIE GRAZIA, VALENTINA MATTARA, PROVINCE OF TREVISO, ITALY AND FEDERICO DE FILIPPI, PROJECT DEVELOPMENT, SOGESCA SRL, ITALY

In recent years the Province of Treviso has given increased attention to the reduction of Energy consumption, to achieve the objectives identified by the 2020 European Strategy. The rationalization and efficiency of the industrial areas, a proper energy policy but, above all, the integration of the tools of the municipal area planning with the Sustainable Energy Action Plans (SEAPs) and the awareness of the stakeholders working in the framework of energy issues at local level, are the main strategies to achieve the goals of environmental, economic and social sustainability

All these considerations pushed the Province of Treviso to participate in the SUSREG Project that, through a case study applied to a pilot area of the provincial territory, enabled the Provincial Administration to start a dialogue with the companies believing that the rational use of the energy resources is a key step to boost the competitiveness of companies and an opportunity to reach real savings to invest in growth and innovation, especially in the current difficult economic situation.

THE BIGONZO INDUSTRIAL AREA

The industrial area of Bigonzo (807.196 square meters) , in the municipal territory of Casier, is one of the 37 areas individualized by the PTCP (Territorial Plan for Provincial Coordination) as a strategic area to enlarge. It was chosen as case study, because it represents the model of the provincial industrial areas that are characterized by:

- industrial, commercial and service activities
- environmental and recreational interests and surrounding residential areas
- potentialities
- companies dealing with energy and environmental issues

The activity was characterized by a campaign of free energy audits in the companies and the organization of public meetings among entrepreneurs, local authorities and trade associations, that facilitated the preparation of an Action Plan describing the methodological approach tested for the analysis of the case study and provided a set of possible actions for the energy efficiency. It turned out to be a practical application as the industrial areas and actions proposed in the Plan were included in the SEAP the municipality of Casier relised after its participation in SUSREG project. The steps were as follows:

1. Identification of the general objectives of the SUSREG project;
2. Creation of the working group;
3. Involvement of the stakeholders during public meetings;
4. Analysis of the area and the settled companies,
5. Energy analysis of the buildings and productive processes and audits carried out in a sample of companies;
6. Diagnosis and data analysis;
7. Drafting of an Action Plan.

The actions were carried out considering, from one hand, the possibility of enhancing the collaboration among the companies in order to manage the industrial area and, on the other hand, to push the single entrepreneur to realise some interventions for a sustainable management of energy and reduction of the consumption.

BOTTLENECKS AND OPPORTUNITIES

In developing the action plan some problems arose: little collaboration between the companies, small financial possibility from their part, limited regional/national funds or difficulty in reaching them. On the other hand, the opportunity emerged to realize renewable energy installations or to

BIGONZO INDUSTRIAL AREA – CASIER MUNICIPALITY

appoint a leading organisation coordinating and managing the organization of the area. An important experience reflects the limited possibility of planning structural actions related to the productive processes and the companies' un-willingness to participate in purchasing groups to reduce the costs deriving from interventions aimed at improving single companies energy performance.

RESULTS AND EFFECTS

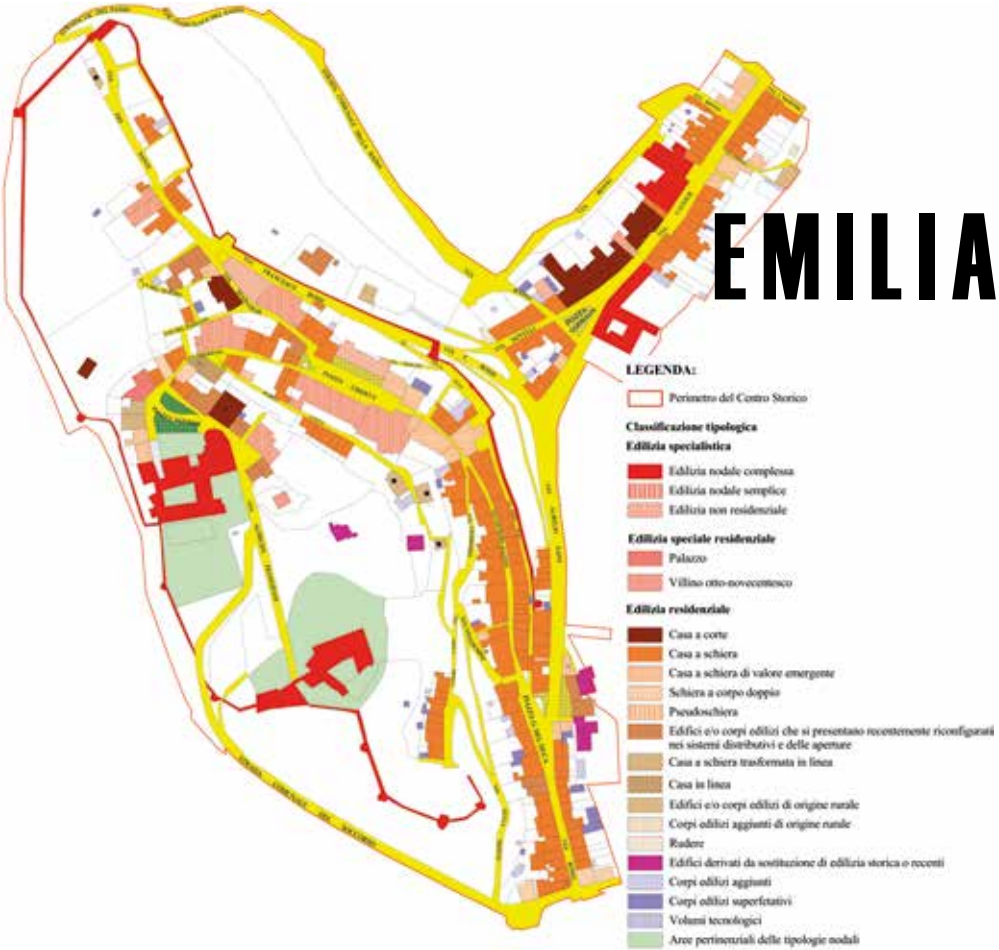
The evaluation of the above mentioned aspects generated a list of different proposals or results. The results are divided into two different levels:

- **Actions carried out in the area**: optimization of the management of green spaces, performing of the lighting systems along roads and public areas, promotion of cycling paths connected to the neighbouring urban centres, reduction of the "heat island" effect using permeable paving for external areas, installation of solar panels on the roofs of large buildings and installation of centralized co-generation systems.
- **Actions carried out in the single company**: rehabilitation of the internal - external lighting systems, installation of solar panels, performing of the optimization of the heating systems , use of shading systems, improvement of the thermal resistance of the building, use of high performance thermal systems and installation of geothermal plants with heat pumps to heat or produce domestic hot water.

TRAINING ACTIVITY

The training activities were carried out from 2013 to 2015, in collaboration with SOGESCA. It involved some technical planners of the Province and municipalities, with the aim of improving the specific skills of the participants regarding energy efficiency and energy production from renewable sources. Nine meetings were carried out addressed to some professionals working in the energy sector and public bodies, stimulating also the participation of those technicians operating in the Covenant of Mayors initiative where the Province of Treviso is a Territorial Co-ordinator, with the intent of providing a real support to those municipalities involved in the preparation of SEAPs, according to the criteria established by the European Union.

10 EMILIA-ROMAGNA



BY ENRICO CANCILA, HEAD OF ECONOMIC AND SUSTAINABLE UNIT AND FABRIZIO TOLLARI, ENERGY CONSULTANT, ERVET, ITALY

The Union of municipalities of Romagna Forlivese consists of 15 municipalities (about 188.000 inhabitants). It is including the provincial capital town, Forlì and was formally established as a new local administration at the beginning of 2014. As a follow up of the structure changes, competencies (some of those about energy planning) was to be moved from the municipalities to the Union, in order to optimize the management of specific functions connected with the territorial government

Even before the formal establishment of the new administrative level, the group of municipalities of Romagna Forlivese used to work together in order to develop common tools for urban planning and practices of involvement (such as protocols of agreement) with local and regional stakeholders. Among the most important initiatives:

- the group of municipalities joined the Covenant of Mayors initiative and finalized in the last months the preparation of a joint SEAP-Sustainable Energy Action Plan
- they prepared and revised a common local Regulation about energy efficiency and bio-building (including different kinds of incentives connected with renovations) that is going to be adopted by each of the 15 municipalities
- the same municipalities signed 2 years ago a Protocol of agreement with CNA, an important local SMEs association (Small and Medium Sized Enterprises), for supporting local energy and building companies through the promotion of energy renovation of public and private buildings.

Therefore, the SUSREG working group was established, finding already a strong capability of local planners, local professionals and associations of working together.

DEVELOPING THE CASE STUDY: URBAN REGENERATION AND ENERGY RENOVATION IN HISTORICAL TOWNS

Most of the territory of Emilia-Romagna is characterized by a high degree of land exploitation. Local territorial plans are expecting to slow down the land exploitation for new urban areas and new buildings, therefore urban regeneration, together with recovery and use of public and private buildings and spaces are the main issues that local planners as well as local professionals (architects, etc.) are working at now.

The SUSREG working group of local planners was composed by local municipal officers and technicians, local professionals, ERVET (SUSREG partner) as the regional development agency and representatives of CNA, the local SMEs association. After the

first masterclasses on energy policies and planning, the group decided to focus on technical issues concerning energy renovation of buildings and public spaces connected with urban regeneration practices developed in small historical urban centers. In fact, the Romagna Forlivese (like the most part of the Emilia-Romagna territory excepting mayor cities) is characterized by small urban communities built around (or still essentially constituted by) ancient historical centers. Energy renovation interventions both on a macro and micro level and their designing and implementation are strongly influenced and limited by regulation, conservation and structural safety needs, costs of materials, etc.

As the planning instrument the working group decided to develop "Guidelines for urban regeneration and energy renovation within the historical centers of Romagna Forlivese". It is a non-binding instrument aimed at:

- composing a coherent framework of all ongoing initiatives connected with energy sustainability and urban planning, from the Joint SEAP to the protocols of agreement to the relations with local stakeholders, within the general framework of European, national and regional policies and legislation.
- stating and describing mayor technical issues and solutions covering all applications: renovation of urban centres and private buildings, renovation and management of public buildings, requalification and reuse of public spaces, also through participatory or citizens involvement processes.
- building a roadmap in order to assure full integration of all ongoing and future initiatives and projects within the competent urban and energy planning instruments.

TODAY, FOLLOWING SUSREG

- the working group is well established and has a reference roadmap for the following months
- urban planning or regulations tools were integrated within the joint SEAP
- the municipalities have now tools for a better access to public grants or private funds through forms of fund raising
- the monitoring of the SEAP will provide useful data
- national and regional regulation on planning tools or energy efficiency requirements are currently under discussion.

LESSONS LEARNED

The Emilia-Romagna case study, developed with the municipalities of Romagna Forlivese, represents a good practice and a significant experience at regional level, where 300 over 340 municipalities in the region have their SEAP prepared or in progress, most of them coordinated at the Union (group of municipalities) level.

The experience within the SUSREG project demonstrated that urban planning and urban regeneration initiative can be integrated within local energy measures planning, providing a very important added value. In fact discussing about practical local needs, and interventions, and issues mobilizes knowledge, skills, ideas, support a clear vision of tools to be adopted, and provide professional growth as well as business opportunities. Public officers can maintain good relations with local stakeholders and also make a good fund raising job whenever it is needed; local professionals can develop and extend their expertise focusing on the needs the local context they belong to, SMEs and new entrepreneurship can rely on local opportunities to develop and experiment new technological and business solutions

UNION OF MUNICIPALITIES OF ROMAGNA FORLIVESE

MAYORS OF ROMAGNA FORLIVESE

11 BURGOS RAILWAY STATION AREA

BY JOSE MARIA DIEZ, CITY OF BURGOS – STRATEGIC PLANNING, ALBERTO LOPEZ, PROVINCIAL ENERGY AGENCY OF ÁVILA AND XABAT OREGI ISASI, TECNALIA RESEARCH AND INNOVATION

The City of Burgos is a medium-size city (178,000 inhabitants) located in the north of Spain, between Madrid and Bilbao, being part of the Pilgrims' Way and with a strong cultural and heritage background (three World Heritage Sites)

The former railway station area of the City of Burgos, which was a very deprived area, where actions to eliminate the railways layout were needed, as it acted as a physical barrier that cut the city in two parts. Nowadays, the area has been refurbished at a 60% (urbanization of streets and common areas: sidewalks, green areas, parks…) thanks to the Master plan designed by the famous architects Herzog & De Meuron in the period 2001 – 2005, inaugurated as The Boulevard of the city of Burgos in 2011.

The case study in Burgos consisted of an evaluation of the area in terms of energy and sustainability. After citizen participation, the following measures were implemented in the field of energy efficiency: (new efficient public lighting), green areas, garbage collection (district pneumatic collection) and transport. The proposed measures for transportation issues were establishing a bus lane with priority (green wave), a bicycle lane (not initially included) and fewer facilities for the private vehicles (only one lane and no possibility of turns or u-turns). Furthermore, ITS (Intelligent Transport System) was implemented in order to manage traffic and parking (real time e-signals and advice) and safer and wider pedestrian areas for walking; energy efficiency as new efficient public lighting; green areas; and garbage collection (district pneumatic collection).

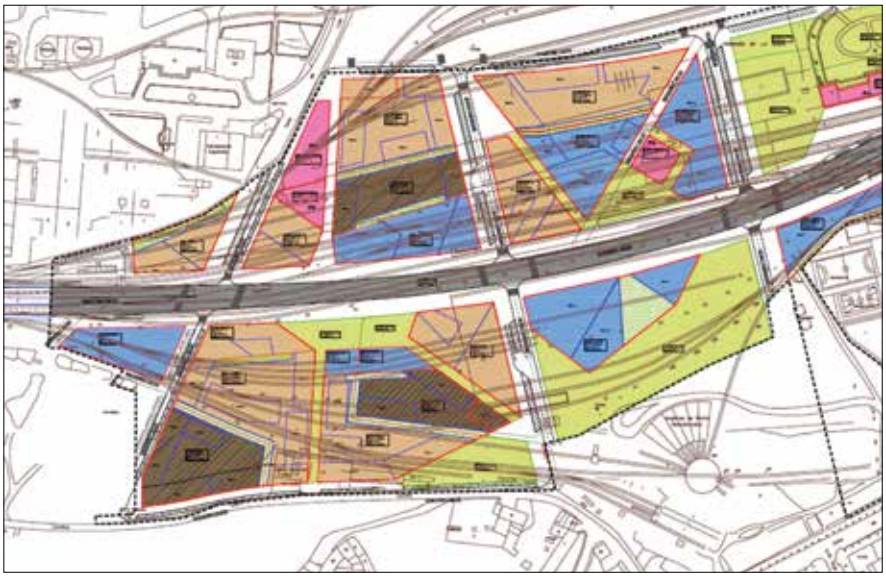
The activities within SUSREG in Burgos were focussed on the absences detected in the plan for future buildings in terms of energy. Concretely, the indicators studied, covered the urban development layout, studying alternatives on reducing the building floors or considering the shade, projected by buildings, and the hours of sun, received by each building or public area. In terms of building, introducing renewable energy generation capacity or increasing the insula-

tion level beyond the law requirements was analysed. All these studies were carried out with the collaboration of the Architecture Professional Association of the Region, and the staff from the Municipalities of Burgos and Ávila, partners in this project.

It has been found that the majority of the reasons for the planned had only esthetical purposes, trying to change the configuration of the city in order to create a new "sky line" like big cities, integrating this view with the old town view. This is a possible reason to explain why the planned area does not guarantee some policy and legislation requirements, e.g. as a minimum of sun light received by all the apartments.

Another important reason to justify the urban area layout is financing, as this area presents a very high density of land use as a way to finance (and get benefits) of the urbanization. Reducing the number of dwellings would be difficult, as it means less income to support the rest of the actions already performed by the Municipality and the owners.

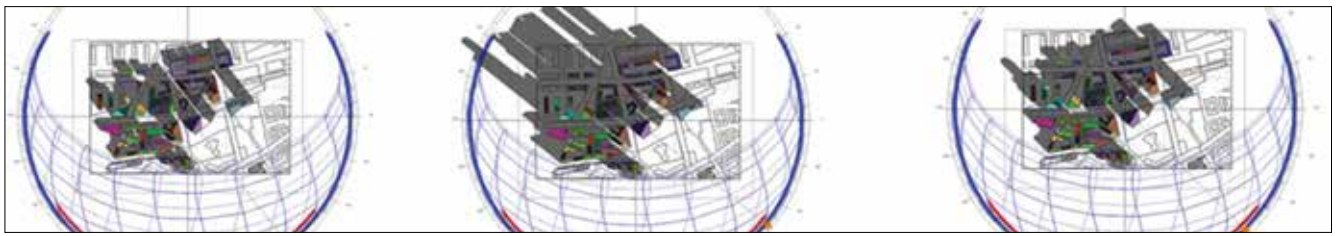
All the aspects considered, made clear that despite the fact that the current design with big buildings is not sustainable in terms of energy, it would be impossible to change this for economical and aesthetical reasons.



BURGOS RAILWAY STATION AREA

Therefore the proposals coming from SUSREG have been focussed on building level, proposing measures in terms of increasing the size of dwellings (the bigger the dwelling is, the higher the legal energy requirements are), proposing a higher insulation level and the installation of PV solar panels on those buildings with enough solar access. All these measures would reduce the energy consumption of the urban area by 40% (from 23.667 to 16.664 MWh/year) and 46% in terms of CO_2 emissions (7.900 to 4.262 tCO_2/year).

Moreover, during SUSREG training and discussions, some other factors as awareness, dissemination and citizens participation during the urban planning process were analysed, concluding that the participation of relevant stakeholders in the urban planning process is needed and pointing out potential changes and improvements are required.



IT HAS BEEN NOTED THAT THE SHADOWS OF THE TOWERS COVER THE ENTIRE PUBLIC SPACE THAT IS LOCATED IN THE NORTHERN PART OF THE AREA. THE SHADOW PERIOD IS 87% IN THE WINTER AND 23% IN THE SUMMER. IN THE COLD CITY OF BURGOS, THE SUNLIGHT IN PUBLIC SPACES IS ESSENTIAL TO ENJOY COMFORT THROUGHOUT THE YEAR, AND IT HAS BEEN PROVEN THAT THE SHADOW IS ALMOST CONSTANT IN WINTER. AFTER CONDUCTING VARIOUS STUDIES BY ECOTECT, IT IS POSSIBLE TO DEMONSTRATE THAT A REDUCTION OF THE TOWERS IN THE MAIN STREET BY 4 FLOORS DECREASE THE DEMAND FOR HEATING OF THE BUILDINGS BY 9% ON THE NORTH SIDE OF THE NEW DISTRICT. IF THE REDUCTION WOULD BE OF 9 FLOORS, THE HEATING DEMAND REDUCTION COULD REACH UP TO 15%.

LIMASSOL MUNICIPALITY 12

BY ALEXIS VIOLARIS, PROJECT MANAGER, STRATAGEM ENERGY LTD. AND STELIOS STYLIANIDES, LIMASSOL MUNICIPALITY, CYPRUS

Limassol municipality central area covers 2,5km² and there are 5600 residences and 1500 households. The majority of the buildings were built between 1940 and 1980 and their energy labels are between C and E. In the area the new Marina with residences, restaurants and shops was built within the duration of the SUSREG project. The area faces major problems with traffic congestion, largely affecting air pollution and CO_2 emissions and thus environmental quality of the city. Mobility in the city's historic and commercial centre is of critical value to residents, businesses and visitors

There are supporting schemes aiming at providing financial incentives in the form of government grants and/or subsidies for the promotion and penetration of Renewable Energy Sources (RES) and Energy Efficiency (EE). Individuals as well as companies / organizations are eligible for participation. The supporting schemes cover investments for thermal insulation on existing residential buildings, heating / cooling from RES and electricity generation from RES. Measures have been implemented to promote EE of buildings and enhance the use of renewable energy sources, such as energy performance requirements, energy performance certificates and regular inspections of heating and air conditioning systems.

The vision of the Limassol city is to become **'smarter'**, innovative and more creative, to ensure societal and social development and the well-being of citizens and visitors. Towards this end, a Smart City Strategy has been put in place, while the city has already planned a number of stand-alone smart city projects. Experience, however, shows that a strategic vision, backed by all stakeholders and supported by long-term integrated approaches and policies and respective regulatory frameworks, is the basis for an effective and efficient change process. By combining the SUSREG results, Limasol Municipality, the SEAP and their smart city strategy plan prepared a proposal under the Smart Cities and Communities call H2020-SCC-2015. There were four types of actions as described below.

LARGE SCALE REFURBISHMENT OF RESIDENTIAL BUILDINGS

The action is about large scale refurbishment of 250 residential houses, affecting about 800 residents. The refurbishment per building includes improvement of roof insulation and double glazed windows, installation of inverter air-condition system and wall insulation, replacement of lamps to LED and installation of light sensors, installation of 3kWp PV system

SMARTER E-TRANSPORT IN THE CITY CENTRE

The action is about purchasing an Electric Vehicle fleet (20 cars and 2 electric mini busses), installation of 26 electric charge stations and electronic rental machines.

ENERGY SAVING PLAN

The action is about Replacement of 2000 lamps in street lighting with LED lamps, Installation of Wi-Fi as hubs for communication and sensors for energy saving and transport management and deployment of monitoring tools to monitor performance

in terms of energy efficiency and financial viability of the project.

CREATION OF OPEN DATA PLATFORM FOR MANAGING AND MONITORING ENERGY AND TRANSPORT

Traffic, street lighting, parking, EV mobility and other services will be constantly monitored and integrated in the Open Data Platform, where data they will be elaborated in order to produce useful information for various users' groups (public administration, energy providers, transport providers, businesses, citizens, etc.).

LIMASSOL - SEA SIDE PROMENADE AND PARKING

13
CAPACITY BUILDING FOR URBAN PLANNERS

SUSREG TECHNICAL SEMINAR, PARTICIPATION OF LOCAL PROFESSIONALS

BY DAVID STRUIK, DEVELOPER & DESIGNER, ISOCARP AND ERIK ALSEMA, SENIOR CONSULTANT, W/E, THE NETHERLANDS

In the previous chapters we described the different case studies that were elaborated as part of the SUSREG project. However, the primary objective of the project was to improve the expertise of professional planners with respect to sustainable energy. Therefore we organized two sets of trainings: 1) a series of masterclasses for the staff working on the case studies, and 2) a number of national workshops open for all professional planners. In this chapter we will shortly describe the contents of these trainings and the main lessons from this activity

MASTERCLASSES FOR REGIONAL STAFF; CONTENT AND ORGANISATION

A series of six one-day masterclasses was developed and organised in each country. This training was targeted at the urban planners and related staff from the regional authorities involved in the project. The idea was that the trainings should support them with their work on their own case study. Each masterclass focussed on a different aspect of the integration of sustainable energy into the planning process. The subjects covered consecutively were:

Session 1: Climate policy and energy consumption - Vision and ambition are important to get into the right direction;

Session 2: Matching energy supply and demand - Technical knowledge is necessary for implementing ambitions;

Session 3: Stakeholder involvement - Knowledge to involve stakeholders through the planning process. Formulating and responding research questions;

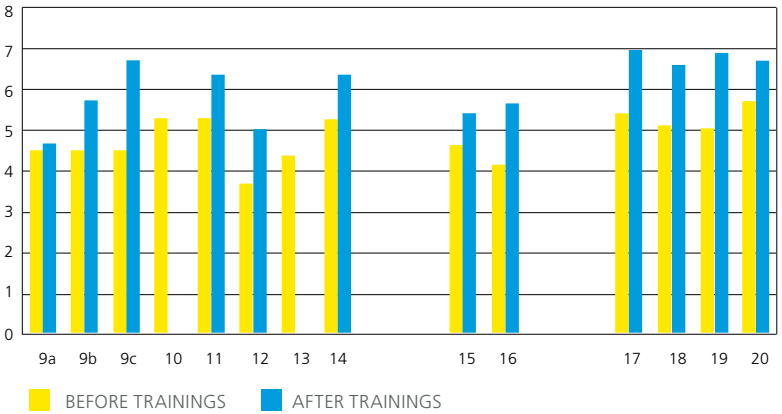
Session 4: Process for new building - How knowledge can be applied successfully. Detailing the process for new building developments;

Session 5: Process for building renovation - How knowledge can be applied successfully. Detailing the process for renovations / refurbishment / regeneration;

Session 6: Communication - Creating enthusiasm for sustainable planning.

FIGURE 1: THE RESULTS OF TWO SELF-EVALUATIONS BY MASTER-CLASS ATTENDANTS, BEFORE AND AFTER THEIR TRAINING, ON A NUMBER OF SUBJECTS RELATED TO SUSTAINABLE ENER-GY AND URBAN PLANNING

AVERAGE SCORE FOR PERSONAL EXPERTISE AND SKILLS, BEFORE AND AFTER TRAINING, ALL COUNTRIES



During a 'train the trainer' session an initial version of the training material was developed. This material was then translated and customized by the trainers in each country to meet the specific needs of the local attendants. The complete set of training materials for all countries is available on the SUSREG website.

LESSONS LEARNED

Some common lessons have been learned from the organisation and execution of the masterclass. The first one is that a series of six 1-day masterclasses requires a large investment of time from the attendants. It can be difficult to have the same number of participants throughout the masterclass. But it helps if attendants receive credit points that count for their professional training.

Another lesson is that it is not so easy to develop common training material, which may be used in all countries. It proved to be quite time consuming to customise the training to the local situation and education needs.

Furthermore, it was found that the session on technical aspects of sustainable energy was often too technical for the public of urban planners. Urban planners may benefit more from a collection of key performance data and potential estimates for each sustainable energy technology. Such an overview could be included as an appendix in the training syllabus. The training itself can thus focus more on the spatial consequences of each technology. Homework assignments as part of the training were found to be not very effective.

The final and most important lesson was that a large success factor for the trainings was to bring together planners from different organisations and staff from different disciplines within an organisation (i.e. departments from a municipality). Many participants considered this as an important benefit from the master classes.

From a pre-training and post-training evaluation among masterclass attendants, we could observe a clear improvement in the attitude and the self-reported expertise level with respect to the sustainable energy technology (see figure 1). But also the exchange of experiences between partners from different

countries was considered very valuable by the persons involved in this.

NATIONAL WORKSHOPS FOR PROFESSIONAL PLANNERS; CONTENT AND ORGANISATION

In the final phase of the SUSREG project national workshops have been held throughout the six participating countries, with over 500 participating planners.

The workshops shared a common set-up, enriched by presentations on local legislation, policies and exemplary projects. Staff from the national knowledge partner and the regional partners were invited to contribute to the workshops. In a number of workshops the European context was highlighted by means of key note presentation from ISOCARP.

During the project 'lessons learned' were derived from all case studies and workshops. These lessons all originated in a site specific, local context. However, by defining more general themes (process, tools, finance and communication) the cases became comparable and thus useful for the workshops.

Subsequently cases were selected which were exemplary for a certain theme. For example Copenhagen stood out for a holistic approach (process), Brno was a good example of analysing a mixed neighbourhood (tools), Treviso was interesting when it comes to involving companies (finance) and Burgos showed how important participation is (communication).

In a number of countries the national workshops were organized in collaboration with a professional association of urban planners, in other cases it was conducted in collaboration with local authorities or educational institutes.

LESSONS LEARNED

The local trainings were very useful and interesting in multiple ways:

- training of local and regional planners
- creating/reinforcing a local network of public officers, planners and other stakeholders all working on sustainable regional development
- sensing what is urgent and upcoming in the local context
- dissemination of the European context by means of interesting SUSREG case study results

When it comes to the idea of training professional planners by means of workshops there are two main lessons:

The first is about the set-up of the workshop. Connecting the workshop to a larger event or adding a bonus system (like training points) proved to be a good way to draw a larger number of participants and disseminate to a broader audience. Feedback from the participants showed that having professionals from different backgrounds in the same room is a clear success.

The second lesson is about the quality of the workshops. An important element of the trainings has been the confrontation of theoretical concepts and tools with real-world practice. Case studies based upon realized project had the most impact on the audience and there was a clear demand for a sort of booklet with examples derived from reality. Workshops in which participating professionals could bring in their own project with questions had the highest quality. The attendants stayed on average longer, were more involved and behaved more like a learning community with interaction after the event itself as well.

Tips when organizing a training (see p.27):

- Search for trainers and experts who know the region well
- Deliver key performance figures of sustainable technologies as background material
- Stimulate exchange between attendants from different organisations and departments
- Connect to the daily practice of the attendants
- Don't expect the attendants to work on assignments after or in between the master-classes.

14 FINAL REFECTIONS ON THE SUSREG PROJECT

BY DRS. BAUKE DE VRIES, SENIOR LECTURER, SAXION UNIVERSITY OF APPLIED SCIENCES AND ERIK ALSEMA, SENIOR CONSULTANT, W/E, THE NETHERLANDS

In the broader context of energy supply, several things changed in the past few years. Technological improvements lead to lower costs for energy efficiency measures and renewable energy systems. Especially households experience that energy measures become more and more cost effective and pay back in a relatively short period. PV systems on homes are not only for the environmental freaks, but can be seen in every street

At the same time we have seen a growing awareness for energy, climate and ressources. Especially geopolitical reasons urge for an energy neutral society. Europe wants to limit its dependence on fossil energy from politically unstable regions. The winning of natural gas and shale gas within Europe meets with severe limitations and concerns from local population and the combustion of coal in a climate proof energy system is almost impossible.

Europe has also experienced significant changes in demography and economy, and related changes in building and planning practices. Many regions experienced a stabilizing or even shrinking population and a drop in economic growth. This led to a gradual change from urban expansion to urban transformation, where energetic improvement of the built environment needs to focus on improvements in existing buildings. This is more challenging than realizing new energy efficient or even energy neutral buildings in urban expansion areas. On the other hand, the economic crisis is also a serious barrier for entrepreneurs, especially SMEs, to invest in energy saving measures or other long-term investments.

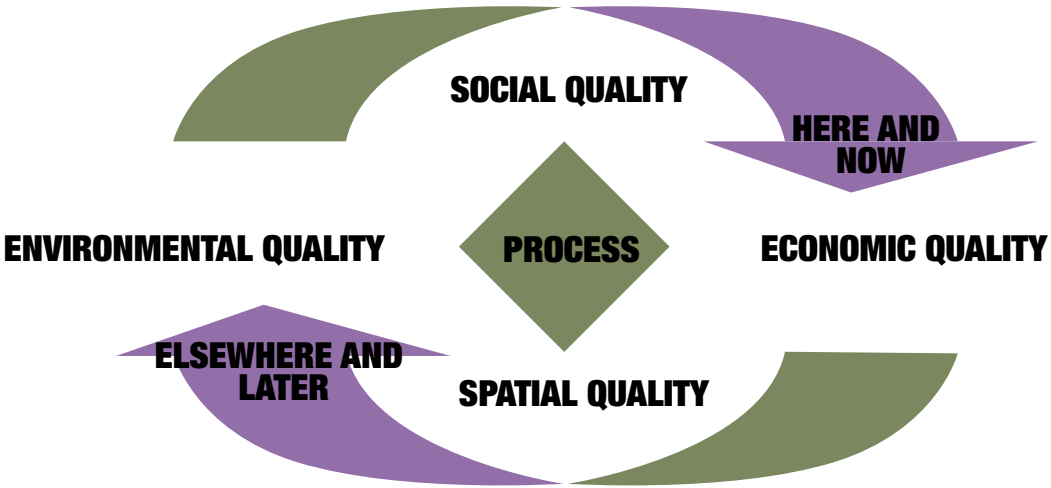
PROGRESS IN THE SUSREG REGIONS

To which extent did the regions, involved in the SUSREG project make progress in their process towards energy neutrality, and what role did SUSREG itself play in this respect? The context and the starting point differ in all cases, for example if we look at the political and legal context, budgets and financial instruments, available and applicable technology, and skills and traditions with respect to stakeholder engagement and communication. Also the scale and the power of local and regional authorities involved differ substantially. This implies that each partner made progress on its own level and with its own priorities. The templates for the training material of the Master Classes, developed by the group of knowledge partners, provided a starting point for this local learning process. These training materials were translated and adapted to the local situation where necessary, by the local knowledge partners. They determined, together with the local authorities, the choice of the location and the aims of the local case study areas. This flexible approach was necessary to make use of the local opportunities in an optimal way.

ENERGY EFFICIENT BUILDINGS AND ATTRACTIVE NEIGHBOURHOODS

Some of the regions realized concrete progress in planning or realization of energy efficient buildings. The city of Arnhem developed a pilot for energy neutral refurbishment of existing dwellings, together with a housing corporation; the city re-organised its bidding process for real estate developers in such a way that it triggered them to set high ambitions for sustainability in an urban expansion area. The city of Nijmegen developed an integrated perspective on quality in an urban expansion area, that did not only focus on energy but also on other sustainability issues that made the area into an attractive place to live. SUSREG supported the process of knowledge exchange between regional partners, and between different departments within the cities involved. Even though Arnhem and Nijmegen were part of a formal city region, civil servants had limited opportunities to exchange knowledge between the different municipalities. The SUSREG training sessions and international meetings provided a platform where the civil servants could meet and exchange their experiences.

The city of Brno made a detailed technical study on a 40 hectares block of historical buildings, a renovation area that develops into a creative center. They calculated the



present level of energy consumption, developed a proposal to upgrade the buildings and link them to the local heat network and a PV network and combined this with additional measures to improve the spatial quality of the area.

The city of Burgos worked on the improvements in the energy performance of planned buildings, through better insulation and the implementation of PV panels. The expected energy savings of these measures are around 40%. According to the experts involved, higher savings could have been realized by a more fundamental redesign of the area as a whole. Until now, the local support for a complete redesign is too limited.

AWARENESS RAISING AND NETWORK DEVELOPMENT

Within all the SUSREG areas, the masterclasses and other activities played an important role in awareness raising and network building. In some areas, these were the main outcomes, since the SUSREG project did not result yet in planning or executing concrete physical interventions. In most cases, it is expected that these interventions will follow in the near future.

The region of Middle Holland focused on raising awareness for the importance of the underground as a possible source or storage system for renewable energy. The region has great potentials for shallow ground source heat and cold exchange or deep geothermal energy. Not all planners are aware of these potentials let alone that make use of it in their planning work. The Master Classes and the regional vision on the use of ground source energy systems helped in raising awareness and agenda setting.

In Romagno Forlivese, Italy, the focus was on energy saving measures in cultural historic buildings. An influential network including local building professionals, energy experts and representatives of the municipalities in the region developed guidelines for energy efficient restoration of historic buildings. The SUSREG Master Classes and workshops directly supported the development of this network and provided part of the knowledge that was used to develop the guidelines.

The procince of Treviso worked on the improvement of energy performance and related quality issues on industrial sites. The SUSREG partners developed an approach to support businesses with on-site advice on energy performance. These measures should improve the quality of the business sites and make them more future proof. It turned out to be hard for the entrepreneurs involved to invest in long term benefits related to energy saving measures, in the context of an economic crisis where most entrepreneurs focus on their needs for today and tomorrow.

The SUSREG Master Classes in Limassol, Cyprus, fitted within the awareness raising programme in the local Sustainable Energy Action Plan (SEAP). This included training and information diffusion, energy saving for municipal and public buildings, municipal vehicles and street lighting, management of traffic and public transport, and renewable power generation. This was applied in plans for the refurbishment of a part of the Marina of Limassol. An ambitious plan was developed including measures like energy neutral refurbishment of buildings, setting up a system of electric cars and charging points

in the city centre, and LED public lighting facilities. The next challenge is to find funds for the realisation of these plans.

Finally the city of Copenhagen set up a large regional debate, using the Master Classes to increase the knowledge of the stakeholders. The result was an ambitious plan to make the region completely fossil free in 2050. The Master Classes brought all the regional partners together and provided a platform, where the debate among the stakeholders could take place in an effective way. The plan is supported by national, regional and local governments and by businesses and knowledge institutes in the region. It will serve as a road map for the implementation of measures in the coming years.

With these observations we finish these reflections, looking back at a meaningful project that helped in bringing climate proof and energy independant Europe a little bit closer. All partners will use their personal energy and engagement to set the next steps in this respect.

STØTTE TIL SKITSEPROJEKTER

v/Karin Kappel, sekretariatsleder, Solar City Denmark

Boligforeninger, virksomheder, kommuner, ejer- og andelsforeninger m.fl., der overvejer en investering i solcelleanlæg, har mulighed for at få støtte til et skitseprojekt. Tilskuddet dækker 60 % af udgiften til en kvalificeret rådgiver og kan afklare ejendommens potentialer, hvordan solceller, arkitektur og økonomi kan kombineres, så æstetik og investering bliver optimal.

FORUDSÆTNINGER

Solcellerne skal være bygningsintegrerede, dvs. de skal være en del af husets klimaskærm. Solceller opstillet på stativ, eller applikeret uden integrering, er ikke omfattet af ordningen.

Bygningens ejer skal tilvejebringe de nødvendige tegninger, beregninger og andre bygningsoplysninger, samt indhente oplysninger om relevante klausuler og bestemmelser vedr. den pågældende bygning

ØKONOMI

Et skitseprojekteringsforslag koster 10.000 kr. plus moms., og heraf skal bygningens ejer betale 4.000 kr. plus moms som egenfinansiering.

Skitseprojekterne støttes af ForskVE via projekterne ´PV-Active Roofs and Facades´og ´BIPV Quality Cities.´

STUDIETUR

Som inspiration er det muligt at deltage i en studietur, der primært henvender sig til almene boligforeninger, som overvejer solceller i forbindelse med renovering af tegltage eller andre tage med hældning. Turen fokuserer på eksisterende bygninger, hvor integrerede solcelleløsninger i tag gennemgås af arkitekter, solenergileverandører og andre fagpersoner. Studieturen handler om den praktiske udførelse: proces, udfordringer, forløb, økonomi og løsninger. Men også om æstetik og arkitektur, og hvordan opnår man et flot resultat. Undervejs på turen har deltagerne mulighed for at stille spørgsmål i relation til deres egen ejendom. Turen afholdes 24. november. Se program her www.solarcitydenmark.dk.

ANSØGNING OG TILMELDING

Ansøgningsskema om støtte til skitseprojekter downloades på www.solarcitydenmark.dk og indsendes på mail til:
kk@solarcity.dk .
Uddybende spørgsmål via mail:
kk@solarcity.dk
eller telefon 2859 5940.
Tilmelding til studieturen samme sted.

BYGNINGER OG ENERGIFORSYNING

Næste nummer af medlemsmagasinet sætter fokus på **bygninger og energiforsyning**. Der er både ændringer på vej i rammebetingelserne for solceller og en række spændende resultater fra forskellige ForskVE og EUDP projekter, herunder Active Roofs and Facades, Det ny Tag og BIPV Quality Cities.

WWW.FBBB.DK

LÆS MERE OM FORENINGEN BÆREDYGTIGE BYER OG BYGNINGER OG MELD DIG IND PÅ HJEMMESIDEN WWW.FBBB.DK.

Partnerorganisationerne i SUSREG projektet har samarbejdet i 2 1/2 år for at udvikle og afprøve et master program, der - ved hjælp af opbygning af viden hos by- og regionale planlæggere - kan fremme af gennemførelsen af bæredygtig planlægning med vedvarende energi. Projektet har vist, at det er meget vigtigt, at give byplanlæggere viden om energiforsyning og energieffektivitet for at nå EU-målene for 2020 og 2050. I dette magasin kan du læse om casestudier i bæredygtig planlægning fra seks europæiske lande, samt en evaluering af uddannelsen.

SUSREG PARTNERS:

W/E Consultants Sustainable Building	www.w-e.nl
International Society of City and Regional Planners	www.isocarp.nl
Stadsregio Arnhem-Nijmegen	www.destadsregio.nl
Environment Agency Middle Holland	www.odmh.nl
University of Applied Science Utrecht - Master of Urban & Area Development	www.muad.nl
Tecnalia	www.tecnalia.com
Agencia Provincial de la Energía de Ávila	www.diputacionavila.es
City of Burgos – Strategic planning	www.burgosciudad21.org
Sogesca	www.sogesca.it
Province of Treviso	www.provincia.treviso.it
Emilia Romagna region	www.ervet.it
Institut pro udržitelný rozvoj sídel z.s.	www.iurs.cz
Energy Agency Vysocina	www.eav.cz
European Green Cities Network	www.europeangreencities.com
Gate 21	www.gate21.dk
Stratagem Ltd	www.stratagem-ltd.com
Limassol Municipality	www.limassolmunicipal.com.cy

LÆS MERE OM EUROPEAN GREEN CITIES NETWORK OG MELD DIG IND PÅ HJEMMESIDEN WWW.EUROPEANGREENCITIES.COM

EUROPEANGREENCITIES

FBBBs medlemmer tilbydes nu også at blive medlemmer i European Green Cities Network (EGCN).
EGCN er en sammenslutning af byer, organisationer og virksomheder med fokus på at bidrage til en bæredygtig udvikling i Europa. EGCN har p.t. 85 medlemmer fra 14 lande og arbejder bl.a. med EU-projekter, Intelligent Energy Europe og Horisont 2020, formidling, innovation og initiering af nye projekter. Netværket formidler resultater og tager initiativer til nye EU-projekter.

THE EUROPEAN GREEN CITIES NETWORK: WWW.EUROPEANGREENCITIES.COM

Ansvaret for indholdet af dette magasin er alene forfatternes. Det afspejler ikke nødvendigvis EU's synspunkter og holdninger. Hverken EACI eller EU Kommisionen er ansvarlige for eventuel anvendelse af de informationer, der findes i magagsinet.dk