BEA-APP
BALTIC ENERGY AREAS
A PLANNING PERSPECTIVE

EU STRATEGY FOR THE BALTIC SEA REGION
FLAGSHIP

Interreg
Baltic Sea Region

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Baltic Energy Areas – A Planning perspective

Project Final Conference

Renewable energy and spatial planning: challenges and future perspectives

Riga, Jelgava 29-30 January 2019

Content

Baltic Energy Areas – A Planning Perspective (BEA-APP)

The BEA-APP project brings together two perspectives: spatial planning and regional energy policy, focusing on the capacity building of regional actors by:

- providing adjusted spatial planning instruments targeting renewable energy development;
- developing innovative stakeholder involvement methods and financing systems to increase social acceptance through local ownership;
- applying the developed measures to pilot cases, studying the features of suitable renewable energy production sites and, thereby, setting the scene for concrete projects.

The goal of the Final Conference of the BEA-APP project was to provide information on main results and outcomes of the project and to network with other projects and initiatives dealing with renewable energy, energy efficiency and spatial planning in the Baltic Sea Region. The conference comprised a study visit to the facility of "FORTUM Jelgava" Ltd - the first large-scale biomass cogeneration plant in Latvia.

More than 70 experts, representatives from ministries, energy agencies, municipalities, NGO's and other stakeholders from 10 countries participated at the event.

29th January Riga, Latvia

The first day of the Conference was devoted to highlight the possibilities of the regions to increase the use of renewable energy sources and to promote the transition towards low carbon economy. An overview on the main BEA-APP project outcomes was presented, including the criteria and recommendations developed for planning of renewable energy, innovative forms of stakeholder involvement, incentives for financial citizen involvement in renewable energy projects. During the poster session of the Conference participants could learn about the results from pilot cases implemented in the BEA-APP project partner regions fostering application of renewable energy. Other projects and initiatives related to renewable energy, energy efficiency and spatial planning were also introduced during the event. The first day of the Conference was chaired by Dr. Hannu Koponen, Regional Council of Central Finland.

Presentations:

Policy goals and recent developments related to the use of renewable energy sources in the European Union

Christof Schremmer, Austrian Institute for Regional Studies and Spatial Planning

The role and possible contribution of regions to increase energy efficiency and share of renewables have been researched within the ESPON project LOCATE: Territories and Low-Carbon Economy. The study has highlighted the diverse regional prerequisites for transition to low-carbon economy (e.g., availability of renewable energy sources, climate conditions, topography, built environment, economic profiles, legal frameworks, stakeholder structures and engagement). Patterns of energy generation, exploitation rates for example for wind and solar energy widely differ a lot due to legal and aid frameworks and the contribution from regional stakeholders in their ambition to exploit renewable energy sources. Although ca. 70% of policies and measures have been implemented by national government, regions play an important role in utilisation of renewable energy potential e.g., through application of public procurement, setting standards for companies, implementing intelligent and affordable solutions. Application of instruments both for the demand side and the supply side are needed, however in order to make the process effective, the priority shall be given to the overall reduction of energy consumption. Cities and regions have a great impact in creating framework conditions for low-carbon energy projects (efficiency, renewable energies):

- planning of projects and locations, zoning, environmental assessment,
- demand-side rulings for energy efficiency and RES use (e.g. concessions),
- knowledge base development and building networks,
- financial support or partnership, access to national and EU funding.

Smart City Vienna Framework Strategy, Energy plan of the city of Zurich are few examples highlighting possibilities for innovative solutions at regional and local level.

SESSION I: Main achievements of the BEA-APP project

Overall introduction to the main achievements of the BEA-APP project

Jennifer Grünes, Ministry of Energy, Infrastructure and Digitalization Mecklenburg-Vorpommern, Germany

The BEA-APP project (2016-2019) has involved 11 partners from 8 countries and has addressed the territorial challenges related to the transition towards low-carbon energy systems. The main achievements are related to optimisation of spatial planning instruments, fostering social acceptance through stakeholder dialogue, implementation of 11 regional pilot cases demonstrating how to facilitate practical implementation of renewable energy projects, revising or developing municipal/regional renewable energy concepts/strategies. The outputs of the project will improve transnational planning approaches, finding the optimal balance between competing aims and land-use, facilitate cooperation between spatial planners and renewable energy planners, increase stakeholder involvement and acceptance towards local renewable energy projects and encourage dialogue and knowledge exchange on national and transnational level.

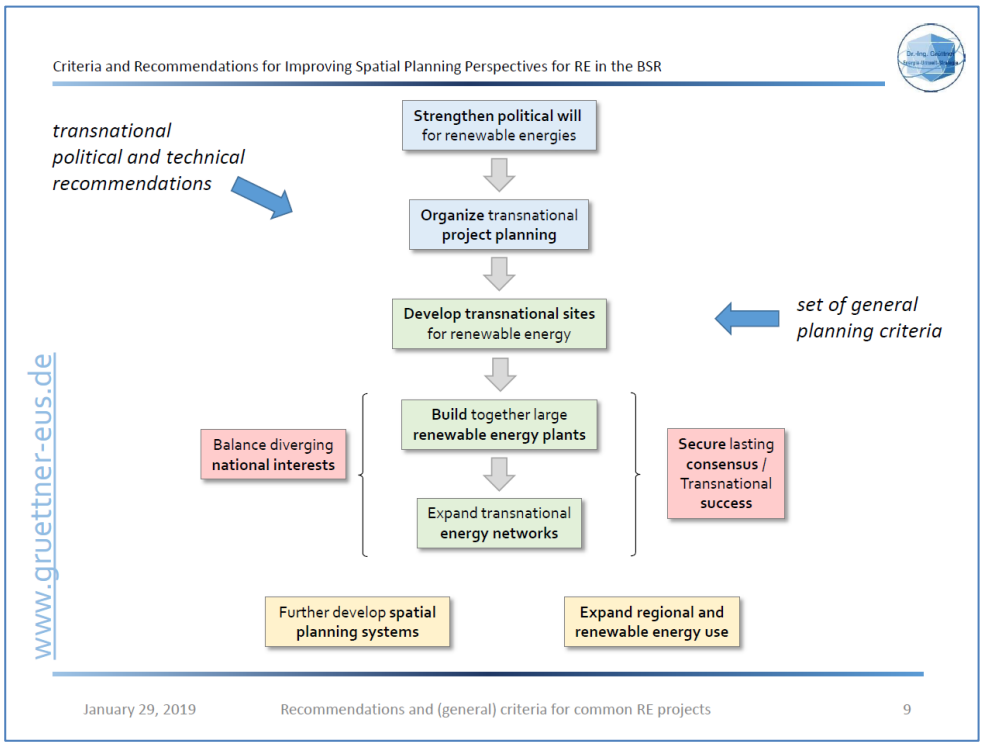
Criteria and recommendations for planning renewable energy

Dr.-Ing. Frank Grüttner, Consultant for Ministry of Energy, Infrastructure and Digitalization Mecklenburg-Vorpommern, Germany

Spatial planning approaches significantly differ in the BSR countries following top-down or bottom-up approaches or locally organised planning systems. Complex social, economic, technological and environmental factors are present in planning. Acknowledging similarities and differences in framework conditions of spatial planning for renewable energy in the BEA-APP project partner countries, a set of general spatial planning criteria to foster the production and use of renewable energy in the participating regions have been developed. Project results reveal that central aspects for spatial planning comprise the following thematic fields: planning, society, economy, as well as other and crosscutting aspects. In total 8 aspects have been identified:

Planning:	1. Designated areas for renewable energies 2. Standard planning processes
Society:	3. Models for participation in spatial planning
Economy:	4. Economic participation models
Other and crosscutting aspects:	5. Natural renewable energy sources 6. Grid capacity regarded in spatial planning 7. Capacity and height of installations regarded in spatial planning 8. Conflict potential

Transnational recommendations (political and technical) for improving the spatial planning perspectives for renewable energy in the Baltic Sea Region have been developed focusing on harmonisation of the legal framework and on joint projects i.e. on the construction of large transnational renewable energy plants and connecting infrastructure.



Innovative forms of stakeholder involvement

Daina Indriksone, Baltic Environmental Forum – Latvia

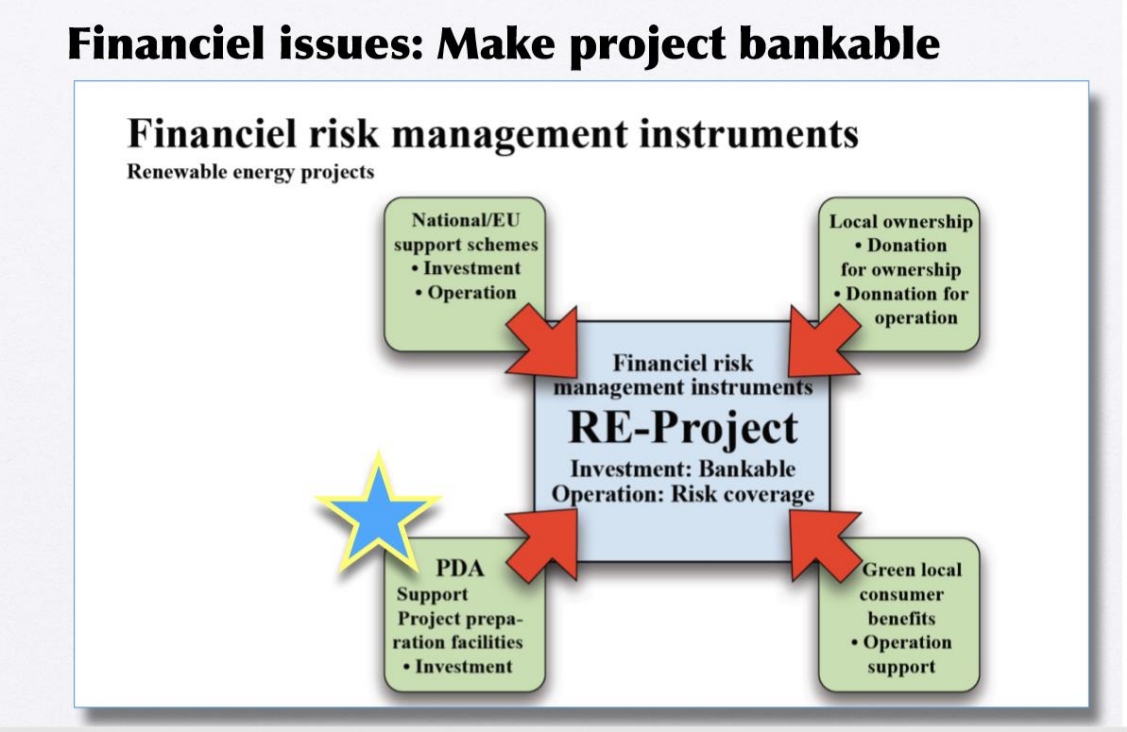
The aim of innovation is to unfold the potential of stakeholder involvement in renewable energy development. Key preconditions are early (timely) involvement of stakeholders starting from informing, building understanding, feedbacking and engaging. Application of common methods in a new practice or application of new methods and approaches both can be considered as innovative forms in stakeholder involvement. Innovation constitutes application of co-creation and co-planning concepts, multi-stakeholder and multi-disciplinary approach ensuring interaction between stakeholders from public, private & civic sector. In practice innovative forms of stakeholder involvement for renewable energy (RE) development at regional or local level can differ by the implementation phase of RE and spatial planning activity: (i) targeted planning, (ii) feasibility study, and (iii) project implementation phase. Various innovative methods and approaches can be applied during each of these phases e.g., living labs, crowdsourcing, online collaborative platforms, experiental learning, Q-tests, public-private partnerships. However, the following key aspects are to be considered:

- Identification of preferences and agreement on a common vision is essential;
- Stakeholder acceptance increases along with practical applicability of measures planned;
- Trustful and unbiased source of expertise (e.g., consultants) will enhance the value of information to public views;
- Appropriateness of information targeted to stakeholders;
- Trust in fairness of the project (no pre-determined outcome) enables «bridging» relationships between local people and authorities;
- Providing the «hands-on» experience is helpful to dissolve myth on possible negative consequences from the project;
- Personalised approach in communication with local stakeholders is always appreciated;
- Setting local cooperative initiatives helps to reduce opposition and NIMBY concern.

Incentives for financial citizen involvement in renewable energy projects

Tyge Kjær, Roskilde University, Denmark

Various forms of financing of renewable energy projects are available and are applied in BSR countries. The BEA-APP project has investigated innovative financing systems where risky renewable energy investments are made possible (or bankable) through blended funding based on four elements affecting the risk in a given renewable energy project – the use of support schemes, together with project preparation facilities, aimed at local involvement and donation and support from local green consumers.



There are 2 financing needs for the investment in renewable energy plants: the first (initial) financing needs linked to the development of project and the second financing related to the construction of the plant. Financing of the initial cycle of a project is especially important if a local commitment is to be created in the transition to renewable energy. The following aspects shall be considered – financing risk management, local involvement, structured decision making. The actual construction investment holds 95-98% of the total project costs. For this stage there several possible investors: private household investments, loan capital with municipal guarantee, loan capital from mortgage banks and regular banks, international investment banks, risk capital from local or regional utilities, risk capital from private equity funds.

Interactive poster session: Fostering application of renewable energy – results from BEA-APP pilot projects

The aim of the session was to introduce the results of BEA-APP pilot projects by short intro presentations from each pilot project, followed by an interactive poster session (see the Annex 1). Conference participants were encouraged to visit posters of pilot areas and complete a short query about the activities of pilot projects.



Green industrial areas, Mecklenburg-Vorpommern, Germany, *Jennifer Grünes, Ministry of Energy, Infrastructure and Digitalization Mecklenburg-Vorpommern*

The aim of the pilot project was to set up and launch a State initiative on green industrial areas to foster sustainable development and increase of attractiveness of these territories. A certification system (including logo and label) has been created to promote industrial sites producing and primarily using energy from renewable energy sources.

Sustainable Energy approach in public spaces located in the town centres of the Central Functional Zone in the West Pomeranian Voivodeship based on the example of Połczyn-Zdrój, *Justyna Strzyżewska, Regional Office for Spatial Planning of West Pomeranian Voivodeship*

The goal of the pilot project was to investigate the possibilities of using RES while enhancing the quality of public spaces at Połczyn-Zdrój. The innovation aspect of the pilot project stays with identification of the steps prior to the investment in renewable energy sources (RES) – understanding problems related with application of RES and building/creating solutions, energy efficiency, lighting solution. The project has brought wide interest in the results among local governments - signing the official „Statement about creating and supporting the development of interest in renewable technologies„ signed by representatives of local authorities and Marshal of the Westpomernian Voivodeship. Other regions might be interested to uptake recommendations for residents and local government in the field of energy efficiency improvement and the possibility of using renewable energy in public spaces - in the spatial planning.

Renewable energy mix in peripheral regions: the renovation project of the Rõuge village hall Southern Estonia, *Antti Roose, Tartu Regional Energy Agency*

The goal of the pilot project was to define the optimal renewable energy mix for renovated village hall (2 ha plot). Small-scale innovative applications of renewable energy technologies: ground heat (80 kW) + PV (18 kW) + firewood stoves have been considered. The pilot project has created contemporary, functional design and innovative engineering of the village hall. Particular attention has been paid to problem solving and decision making. Other regions might be interested to learn about the complex solutions applied for renewable energy engineering, energy efficient renovation and sustainable landscaping in a small town.

Urban planning for Solar Energy Skåne, Sweden, *Johan Nyqvist, Skåne Energy Agency*

The goal of the pilot project was to influence the planning of a new area in the city of Lund to optimize for solar energy. The carried-out activities included: obtaining contribution from expert consultant, organising stakeholder discussions and developing of a 3D-model for the area. It was acknowledged that planning is a long-lasting process involving many stakeholders. Solar energy is just one of many parameters to be considered in the planning process.

Offshore wind power case: Blekinge, Sweden, *Annica C Lindh, Energy Agency for Southeast Sweden*

The goal of the pilot project was to deliver a socio-economic report to the municipality of Sölvesborg related to application of the offshore wind power. Long experience of wind power in Sölvesborg and cooperation between municipalities was beneficial to perform the study. Many stakeholders, including business, interested municipalities have been involved. The socio-economic report was delivered in time. The work carried out and organised dialogue with citizens have created a good background for fostering the wind energy development in the region.

District Heating case: Blekinge, Sweden, *Annica C Lindh, Energy Agency for Southeast Sweden*

The goal of the pilot project was to find solutions to be able to use the waste heat in the district hearing network. Application of new cooperation channels can be considered as innovation aspect of the pilot project. The manufacturing industry in future is eager to utilise the waste heat. It corresponds to the interest of the municipality being reflected in the Detailed Development program. The pilot project acknowledges the need perform the stakeholder mapping and develop a plan to coordinate the stakeholder involvement.

Sustainable district heating system in Kaunas, Kaunas Region, Lithuania, *Nerijus Pedišius, Lithuanian Energy Institute*

The goal of the pilot project was to perform the transfer in district heating from natural gas to nearly 100% RES. The innovative aspects of the pilot project are organisation of a competition between independent producers in district heating sector, application of new fuel supply schemes (change of biofuel) and diversification of funding schemes. The pilot project has contributed to this process to be able to achieve the goal in extremely short period of 7 years (since 2012). Heat tariffs were reduced by over 40%. In addition, the environmental benefit was achieved by reduction of GHG via replacement of fossil fuel. The experience on diversification of solutions for district heating sector in large towns might be of interest to other regions as well.

Biogas Odsherred, Region Zealand, Denmark, *Cristina C. Landt, Tyge Kjær, Roskilde University*

The pilot project contributed to the development of a biogas plant. The innovative aspect applied is related to use and optimisation of the principle of circular economy for the benefit of all stakeholders. As the result of the pilot project, the biogas plant is under construction having received strong local support. It will bring multiple benefits – reduction of GHGs, application of RES, circulation of nutrients and gains for the local economy. The gained experience highlights the importance of creating and receiving support of local commitment, patience, persistence, identification of the focus and orientation towards the action.

Smart heating systems, Region Zealand, Denmark, *Cristina C. Landt, Tyge Kjær, Roskilde University*

The pilot project contributed to the development of the district heating on surplus heat. It created cooperation among companies, municipalities, cities, different interest groups. The project created preconditions to construction of the plant in 2019. Strong local support for plant construction was obtained. The main benefits relate to reduction of GHG emissions, receiving of heating for affordable price. The experience shows that patience is needed for development and implementation of such energy projects.

Geoenergy use in a new residential area in Äänekoski city, Central Finland, *Hannu Koponen, Regional Council of Central Finland*

The aim of the pilot project was to show the potential of geoenergy for municipalities. Finnish bedrock is very suitable for geoenergy, but it has not been utilized on larger scale. The pilot project succeeds in showing a potential of geoenergy in one site (Ääneniemi) and increased local knowledge on geoenergy utilization. This is a potential source for RE especially in areas with challenges on district heating network.

SESSION 2: Inside view from other projects on renewable energy, energy efficiency and spatial planning

The main solutions to create social acceptance in on-shore wind energy

Aija Zučika, Latvian Environmental Investment Fund

The H2020 WinWind project (2017-2020) aims to implement measures to promote widespread acceptance and support for the use of wind energy in accordance with the principles of environmental quality and sustainable development on land. For creation of social acceptance, the project acknowledges early involvement of all stakeholders in the vicinity of a planned wind farm during the entire project planning phase. Transparent handling of project-related information by project planners; additional information and transparency measures are other prerequisites for a successful outcome. Fair participation of all affected persons and residents, including those not directly benefiting as site owners are also important. Involvement of regional energy supply companies and financing institutions as partners for marketing and/or financing is needed. Development of financial investment opportunities for communities, citizens and enterprise is equally important together with life quality improvement for local citizens. Several good practice examples from various countries (e.g., Germany, Norway, Poland) have been identified during the implementation of project.

Deployment sustainable energy supply systems and low temperature heat distribution

Martin Kikas, Tartu Regional Energy Agency, Estonia

The Interreg LowTEMP project aims to make district heating supply in municipalities in the BSR region more sustainable by integrating low temperature district heating solutions (LTDH). The project considers various technological possibilities to use other sources (with lower temperature) of heat e.g., generated by heat pumps, waste heat form industry, possible use of return flow. In Estonia the project is focusing on development of district heating system in Karlova district.

The project intends to develop the web-based knowledge platform and tools for the target groups, simulation model on environmental benefits of LTDH. It will perform a study on business models and innovative funding structures for LTDH. The finalised pilot energy strategies and testing measures will be assessed by the whole partnership regarding effects and innovativeness as well as disseminated to the LowTEMP target groups all over the BSR. Six to eight pilot LTDH strategies will be developed. Joint testing and evaluation of the training programme and the subsequent transfer to a broader BSR target group presenting the learning experience will be performed.

Experience of DH Company in transferring from natural gas to biomass

Rimantas Bakas, DH company "Kaunas energija", Lithuania

The aim of the district heating company is to reduce consumption of natural gas and increase the use of biomass. Main supplies come from Lithuania and Belarus. Considerable results have been already achieved: in 2017 the consumption of natural gas has decreased by 9% compared to the year 2015. Along with increased profit of AB "Kauno energija", the price of heat during the period from 2012 till 2017 has decreased from 8.49 ct/kWh to 4.83 ct/kWh. The number of connected new consumers has remarkably increased. The company is also considering application of solar energy for preparation of hot water.

Development energy planning ICT tools for energy efficient urban districts

Marten Saareoks, Tartu Regional Energy Agency, Estonia

Increasing energy performance of buildings is still high on the agenda in Estonia. There are more than 24000 apartment buildings in Estonia and about 13000 of older buildings are waiting for renovation. Experience shows that monthly costs for electricity, heating and reparation in renovated buildings are considerably reduced. An energy planning ICT tool is being developed (expected launch in Spring 2019) to foster the building renovation process. The tool will ensure convenient input of consumption data, energy consumption monitoring. It also allows calculation of the current energy label and comparison of consumption with other buildings. The tools show the effects of energy saving measures (renovation, behaviour, PV) in the house. Having these results available, it is convenient to ask for expert advice and go for renovation with expert support, at the same time also consider application of renewable energy technologies.

Determinants and directions of energy efficiency improvement in historic downtowns

Karolina Kurtz-Orecka, West Pomeranian University of Technology Szczecin, Poland

Building energy efficiency improvement in downtowns has the following determinants: density of land parcelling, and buildings shape, duration of the building, existing construction and technical tissue, influence of the building surroundings, potential archaeological sites and legal restrictions. Energy efficiency improvements include various actions e.g., thermal refurbishment of building envelope, improvement of technical systems efficiency, inclusion of energy from RES in the balance of energy demands. Due to certain limitations for application of RES in historic downtowns (space limitations, dense underground infrastructure, possible noise pollution, etc.) use of RES is focused mainly to exploitation of roof surfaces for solar installations (solar panels and PV systems), energy supply of central systems, e.g. central hot water preparation. Several good practice examples of use of RES in non-residential buildings are available. However, the opportunity for an installation of RE technologies on historical buildings or in conservation zones, is conditioned by receiving a positive decision from the monuments conservator's office.

Energy self-sufficient new dwellings. Finding the golden path

Tommy Lindström, Energy Agency for Southeast Sweden

The smart village comprises 75 apartments with 5300 m2 of heated area and applies 4 energy scenarios regarding production, storage, financing and inter-grid solutions. The experience shows that concerning production there is a need for adaptation to surroundings by spatial planning and building permits. It is difficult to maximize in order to achieve the off-grid capacity. Large financial investment is necessary to reach the off-grid status. Concerning the inter-grid management avoiding peak loads, nudging behavioural change and cloud dependency must be considered. Long term sustainability shall be ensured by technical development, financial solutions and the societal impact.

INTENSSS-PA, Horizon2020 project

Raitis Madžulis, Zemgale Planning Region, Latvia

One of the aims of the Horizon2020 project INTENSSS-PA (2016 -2018) was to increase stakeholder involvement in co-creation and co-development of renewable energy action plans considering the dimension of spatial planning. For this purpose, a regional living lab comprising various stakeholders has

been formed in each project partner region. It has been a challenge to find consensus among 22 municipalities, thus the closest cooperation was established with the cities. The focus of Zemgale Regional Living Lab (RLL) was on elaboration of Sustainable energy action plan for use of RES in the transport sector. The activities of the project included RLL meetings, Core team meetings for preparation of RLL meetings, involvement of external experts in elaboration of plan; performance of road shows for dissemination of results. The developed plan has been approved by Zemgale Region Council and will be integrated in the Energy plan of Zemgale Planning region and in the Development Programme.

Co-producing and co-financing renewable community energy projects in Baltic Sea Region – Co2mmunity

Nele Ivask, Tartu Regional Energy Agency, Estonia

Community energy projects are projects here citizens join forces to set up, finance and manage energy production based on renewables in their region. The Interreg project Co2mmunity (2017 – 2020) aims to foster community energy projects being highly promising for increasing the share of renewable energy in the BSR. The project provides stakeholders the information they need to start and run community energy projects in their regions, encourages and supports citizens to co-finance, co-develop, and cooperate sustainable energy projects. Renewable energy cooperative partnerships (RENCOPs) are the core of Co2mmunity. The project will elaborate Guidelines for Participation Mobilization Process and the RENCOP Roadmap. The project will deliver 8 country-specific community energy guidebooks for municipalities as well as citizen and energy associations addressing their respective lacks, incl. information about organizational and financial possibilities, technical aspects, and local/regional community energy potentials. There will be a Policy paper - BSR-wide policy recommendations for national and transnational decision-makers responsible for energy issues and a White paper - for national and regional stakeholders to support/initiate community energy projects.

PANEL DISCUSSION: Outlook for future: prospects of renewable energy in the Baltic Sea region

The main aim of the expert panel discussion session was to reflect on various project activities introduced during the conference and on general potential and prospect for production and use of RES in the Baltic Sea region. The panel session was moderated by Dr. Hannu Koponen, Regional Council of Central Finland.



Panel experts:

Dr. Beatrix Romberg, Ministry of Energy, Infrastructure and State Development Mecklenburg-Vorpommern, Germany

Dr.-Ing. Graham M. Butt, Consultant for the Ministry of Energy, Infrastructure and State Development Mecklenburg-Vorpommern, Germany

Nikolay Zhunda, ICSER Leontief Centre, Russia

Martin Kikas, Tartu Regional Energy Agency, Estonia

Andrejs Apaņuks, Ministry of Economics, Latvia

Starting the panel discussion experts briefly introduced to their roles and involvement with respect to renewable energy and situation about RE in their countries. For example, in Russia the main concern is related to reduction of energy consumption. The renewable energy target of 11% to be reached in 2030 is envisaged. In Germany sustainable development of industrial sites along with development of bioenergy and wind energy is essential. A lot must be done in order to find appropriate incentives for municipalities, companies to increase the share of renewable energy in heating, electric mobility and storage. In Estonia it can be envisaged that utilisation of biomass in the heating sector will remain high while various energy sources can be utilised for electricity generation potential lies with onshore and offshore wind, solar energy. Latvia is currently concerned about the feed-in tariff system established in the past – the system needs substantial revision in order to safeguard reaching binding RE targets. Similarly, to Estonia, high importance of use of biomass for energy production in Latvia will be kept at least for the next decades. Electrification of the heating sector along with utilisation of wind energy is gaining increasing attention. The current policy and measures to increase the RE share (45% in 2030) is reflected in the National Energy and Climate Action Plan.

The spatial planning aspect (planning criteria) in relation to RE development is gaining increasing attention, e.g., district heating development has a close relation to development of settlements. For example, in Germany increasing the share of RE for heat production is a topic high on the agenda. Sharing good practice examples of application of planning criteria e.g., smart zero-energy cities concept, would be useful.

It was acknowledged that developers are frequently facing opposition from local communities related to concerns of possible side effects from RE projects (wind in particular). Although legislative framework for public involvement differ in countries, all experts in the panel agreed that early engagement of stakeholders is crucial for creation of social acceptance towards RE projects. Raising awareness along with providing economical and other benefits to local communities (various ownership forms - formation of local cooperatives, stock sharing etc.), presentation of good practice examples of similar projects increases the social acceptance. Inhabitants producing renewable energy need to be awarded by e.g. tax reduction or other financial incentives. At the same time more attention shall be paid towards sustainability of RE production e.g., combustion of wood biomass. Along with guidelines for sustainable RE production, sustainability certification system, efficiency requirements shall be applied in the RE sector. Tackling energy poverty issue, larger attention shall be paid not only to the production, but also to the consumption side (energy efficiency).

In conclusion panel experts acknowledge the efforts and steps undertaken in the countries of the Baltic Sea region towards unfolding the RE potential. Further strong political support, development of long-term vision towards RE, reduction of administrative burden is essential.

30th January Jelgava, Latvia

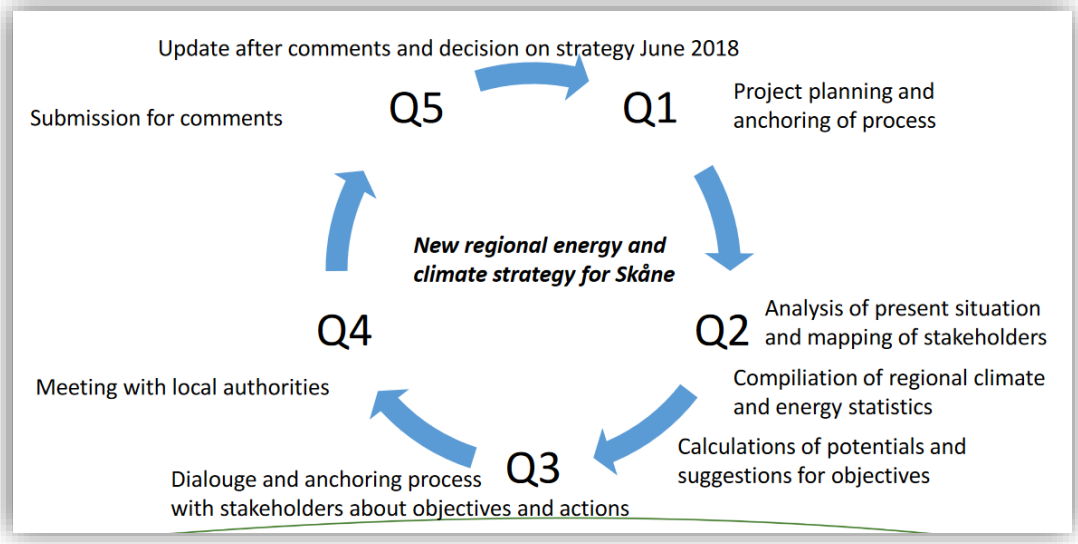
The second day of BEA-APP project final conference occurred in Jelgava city which is the heart of Zemgale Planning Region. Zemgale is in the central part of Latvia, to the South from Riga. Region is placed along the border of Lithuania and is also bordered by the Latgale, Vidzeme, Kurzeme and Riga Planning Regions. It is in the central part of the Zemgale plain.

In the opening of second conference day the participants were welcomed by Valdis Veips, the Executive director of Zemgale Planning Region. In continuation the project partners presented the Energy strategies of BEA-APP project pilot regions.

Raitis Madžulis from Zemgale Planning Region (Latvia) presented developed Regional Energy Action plan as well as 16 municipal Energy Action plans. The chapters within the Energy Action plans for period of 2018-2025 include energy efficiency, renewable energy sources as well as green transport. R. Madžulis pointed out the good transfer of practices from other partner regions in fields of solar energy, geothermal energy, RES district heating and RES mix.

Per-Johan Wik from Skåne Energy Agency (Sweden) explained about the need to update the regional climate and energy strategy. Previous climate and energy strategy from year 2013 was with the target year 2020, however the new strategy developed in 2018 has a new objective for year 2030. The main organizations for development of previously mentioned strategy are Skåne Association of Local Authorities, County Administrative Board of Skåne and Regional authority of Region Skåne.

Concerning greenhouse gases, the target of Skåne on year 2030 is -80%, however the target of Sweden on 2045 is -85%. During the development of new regional climate and energy strategy for Skåne, the following phases were processed:



In the future the work towards a climate neutral and fossil fuel free Skåne in 2030 the cooperation include following stakeholders:

- business sector;
- industrial sector;
- academic sector;
- public sector and citizens.

In continuation **Jenny Rydquist**, representing regional administration of Region Blekinge (Sweden), introduced with the situation in energy field of Blekinge region, pointing out that the Regional Climate and Energy Strategy for Blekinge is aiming to no net emissions of GHG in year 2045 in Blekinge region and in Sweden. So far there has been strategy of 2013 and revised version of it from 2017/2018 determining action for 2020.

Currently there are 4 areas the strategy is focusing on:

- reduced energy consumption;
- renewable energy;
- transports;
- engage more people.

In total there are planned 69 actions to fulfil the targets and have been determined responsible actors for each action. The strategical planning process

includes the assignment for County Administrative Board as well as Climate Cooperation for Blekinge, organisations, public and bussiness sector together.

The representative from Regional Council of Central Finland **Suvi Bayr** introduced to the Climate Change Mitigation and Adaptation Program of Central Finland. Within BEA-APP project has been updated the first version of this strategy from 2011). The target of GHG emission reduction for 2030 has been increased to 40%. As a background information, a study was done to monitor how the strategy targets have been met. Also, a publication was done to evaluate the climate change effects of the regional plan.

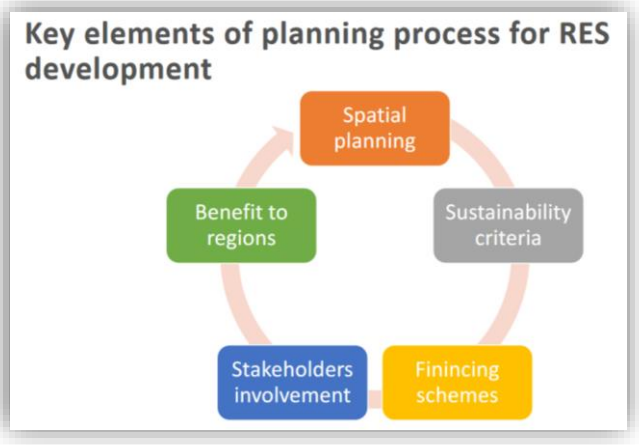
The next speaker **Antti Roose** from Tartu Regional Energy Agency (Estonia) presented the Sustainable Energy Action plan (SEAP) of Southern Estonia municipality Rõuge.

The Rõuge municipality with 264 km^2 and 2215 inhabitants (2017) decided to join the Covenant of Mayors on 18 December 2013. 20 % CO_2 reduction objective by 2020 is 1300 t CO_2 (from 6400 t). The division by sectors are following: 25 % residential, 23 % industry, 22 % heat, 10 % municipal, 8 % transport. The faced challenges during planning process were following:

- optimal energy consumption, energy planning and management, promoting energy efficiency and deployment of RE;
- citizens involved in the energy transition;
- the simplest tasks as priority actions coming years (smart street lighting, solar energy, energy efficiency);
- investment policies are cost effective and rational.

During planning process while upgrading the existing SEAP (2016/2017) involved the participation of following stakeholders: Rõuge municipality council and its commissions, all departments of Rõuge municipality government, Rõuge Communal Services (heating operator), Rõuge Energy Centre (awareness, campaigning and specialised tourism), energy operators and consultants as well as active citizens.

Nerijus Pedišius, the Head of Laboratory of heat equipment research and testing of Lithuanian Energy Institute presented the concept on spatial planning via introduction of planning criteria and value added for regional renewable energy sector on the example of Kaunas City Municipality. He emphasized that for

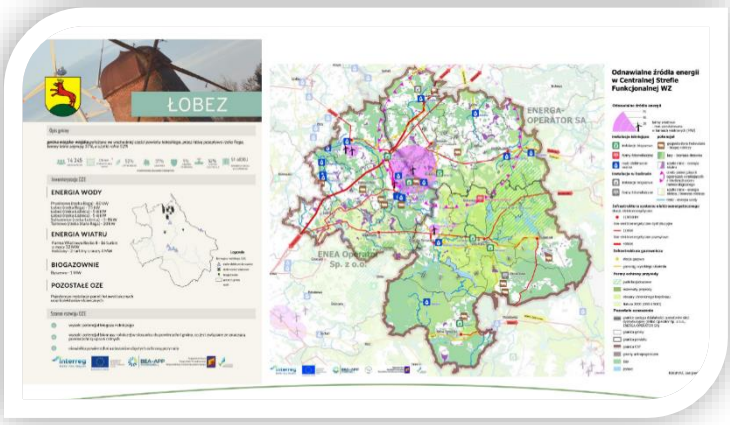


solution of emerging problems one needs to improve existing planning system for energy objects, extend definition of planning criteria, evaluate new innovative project funding possibilities (funding schemes), impact to regional economics as well as apply new dialogue methods between project developers and publicity.

The concept on spatial planning development of renewable energy for Kaunas on 2018-2027 include various spheres such as solar PV, non-district heating heat, district heating as well as electricity in transport. Below are given some cases and targets to be reached:

- Solar PV (on municipal buildings) with two-side power metering and support for producing consumers 20 kW/a (2 buildings) – total 200 kW;
- Non District Heating heat (solar collectors) – annual growth of solar collector in new or renovated buildings, installed by physical or juridical persons with total capacity 1.5 MW/a – total 15 MW;
- District Heating (biomass boiler-houses) – municipal waste burning CHP plant with capacity appr. 70 MWth. It will use about 200,000 tons of municipal waste and generate appr. 500,000 MWh of heat;
- District heating (solar collectors) – annual growth of solar collectors on renovated multi-apartment houses –200 kW/a (4 buildings) – total 2 MW;
- Electricity in transport (individual transport means) – Annual registration of electro mobiles –20/a – total 200;
- Electricity in transport (charging stations for electro-mobiles) – Annual installation of 4 charging stations – total 40;
- Electricity in public transport (new trolley-busses) – planned number of new vehicles acquired, which is defined by municipal budget;

In continuation **Tomasz Furmańczyk** from Regional Office for Spatial Planning of Westpomeranian Voivodeship introduced to the regional concept for the development of renewable energy sources for the municipalities of the Central Functional Zone in the West Pomeranian Voivodeship. He emphasized that the main aim was to determine the directions of development of renewable energy sources in the subject area.



There were excreted three stages of preparation:

- diagnosis of the energy sector considering the existing strategic documents (characteristics and energy balance).
- development of individual recommendations for CSF WZ municipalities relating to energy planning, transition to a low-carbon economy and improvement of air quality.
- final elaboration of the "Concept" document containing the results of the first two stages, extended by development scenarios for a sustainable energy approach by the 2030-time frame (a total of 61 pages plus attachments).

The implementation of the concept is going to result in the continuation of cooperation between local and regional authorities:

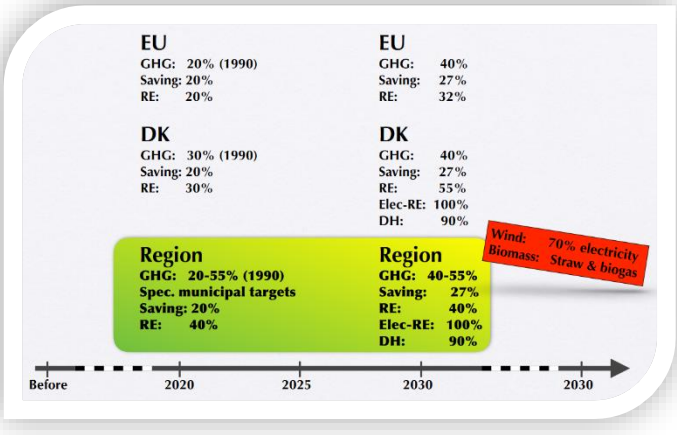
- development of a common formula for supporting RES investments for deficit areas in the region using the Regional Operational Program;
- development of regional RES monitoring system.

In the next presentation the representative of Roskilde University **Tyge Kjær** talked on Region Zealand Strategy. The first Climate Action plan of Zealand region was prepared in 2009 within Covenant of Mayors and focusing on business as usual and preparing Detail plans of 17 municipalities and Climate plans for 5 municipalities. During the strategic planning phase in 2012 the goal was desirable/ possible future.

There were prepared Strategic energy plans in 17 municipalities, Wind Turbine plans with local ownership as driving force, plan for Biogas plant as establishment of up to 10 new plants as well as developed Green collective heat supply in 8 different municipalities.

In 2018 were prepared public and private Investment plans with focus on capacity building. Within this T. Kjær mentioned Investment plan 2025 for Starter in Roskilde municipality; Space, environment, resources framework for energy conversion as well as FREO – Joint regional energy conversion.

In Energy Strategy of Zealand region, the included general overview of the conversion is the reduction of GHG and increased renewable energy. There is a target on 2030 of GHG 40-55% and RE of 40%.



T. Kjær admitted that there is a big difference in resources in each municipality regarding windmill capacity, electricity self-supply, straw potentials and new biogas plants.

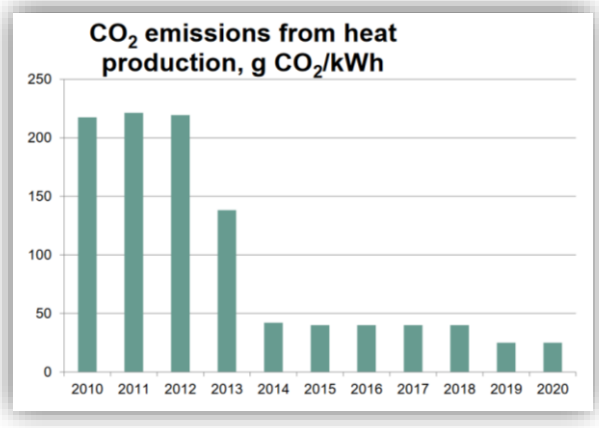
Study visit

After the presentations of Energy strategies of BEA-APP project pilot regions the Chairman of the Board of Fortum Latvia Andris Vanags presented the company and its key figures. Fortum core include hydro and nuclear, combined heat and power production, circular economy, energy-related products and expert services.

Fortum in Jelgava is operator of Jelgava district heating system since 2008. Earlier production was 100% natural gas based, using boiler houses from 1970`s.

Fortum's investment during 2008–2017 was totals to ~ 95 M €, including:

- network renovation and interconnection of two district heating systems under the river Lielupe,
- replacement of all heat production units,
- bio-cogeneration plant based on wood chips.



The company has been created around 300 indirect workplaces in the fuel supply chain. Since Fortum is operating in Jelgava, amount of CO_2 emissions from heat production is by 70 % lower than in 2010.

This fulfils Jelgava's targets under The Covenant of Mayors to reduce CO_2 emissions by 20 %, to increase energy efficiency by 20% and to raise the share of renewable resources in energy production by 20% (annual savings from burning biomass exceeds 30 thousand tons).

Annex 1. Results of BEA-APP pilot projects presented at interactive POSTER EXHIBITION.

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Germany
Mecklenburg-Vorpommern

PILOT GREEN INDUSTRIAL AREAS

Goals and activities

- Sustainable development of business locations and increase of attractiveness: establish new companies and create new jobs (marketing instrument)
- Generation and direct marketing of renewable energy on-site (regional added value) and strengthening of entrepreneurial cooperation (industrial symbiosis)
- Promotion of sustainable, efficient land management and sectoral integration (electricity, heat, transport)

PREPARATION STATE INITIATIVE

1st Phase: Analysis & dialogue

2nd Phase: Pilot areas

3rd Phase: Concept development

4th Phase: Launch state initiative

Figure 1. Implementation process

Main results

STATE INITIATIVE "Green industrial areas in Mecklenburg-Vorpommern"

The state initiative addresses municipalities and companies as well as marketers of industrial and commercial areas. Those industrial sites which produce renewable energy and primarily use it can be certified.

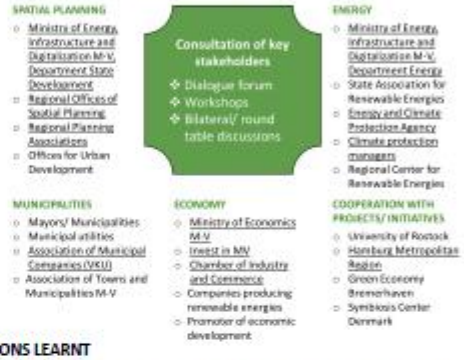
The requirements of the G³ label are subdivided into basic requirements (mandatory) and additional qualifications (bonus system) which creates incentives for the further development of the awarded industrial parks.

Figure 2. Certification requirements for the label G³

Main aspects and lessons learned

Stakeholder involvement

The preparation and implementation of the state initiative is accompanied by a core group of stakeholders. Co-operations links for following stakeholders were established:



LESSONS LEARNT

- Clear and transparent internal and external communication
- Early and interdisciplinary involvement of experts
- Constructive culture of open criticism and discussions
- Practice/feasibility check in regular intervals
- Confidence building

1st Awarded industrial park in Mecklenburg-Vorpommern

Figure 3. Stakeholder event Hagenow

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Urban planning for solar energy in Lund

Skåne, Sweden

Main aspects and lessons learned

To plan for a new city district takes time, much more time than anticipated. The new train station in Sydvästra Lund will be in place in 2024 and the pilot project started in 2016, very early in the process. When starting the pilot, some dialogue meetings had been held by the City of Lund and an architect contest had been organised. In the beginning of the pilot project there was not really much information to relate to regarding planning of buildings and solar energy installations. At first glance it would look like a problem but it turned out to be the other way around. By being part of the planning process in a very early stage it was possible to bring up solar energy on the agenda and give the planning group the possibility to work in an unrestricted way about possible solar energy installations. Also, it gave the planning group the possibility to plan the area for the best conditions for solar energy before anything is already set and difficult to change when decided.

To bring in an expert consultant that had worked with urban solar energy planning before was very useful. The consultant was able to give the planning group valuable advise, and the inspirational examples the consultant presented gave a new perspective on solar energy. The example model the consultant developed in 3D with a block of buildings optimised for solar energy installations was brilliant and gave the planning group valuable insights for the future development of Sydvästra Lund.

The city of Lund with 115 000 inhabitants is planning for the development of a new urban district, Sydvästra Lund (Southwest Lund), which also includes a new train station. The train station is planned to be ready 2024. Ensuring a high share of renewable energy supply is an important aspect in planning for this new district. The city of Lund is especially considering possibilities for solar energy installations. This pilot project within the BEA-APP project will look into how Skåne Energy Agency, Skåne Association of Local Authorities can support City of Lund in giving the best prerequisites in the planning process for solar energy installations.

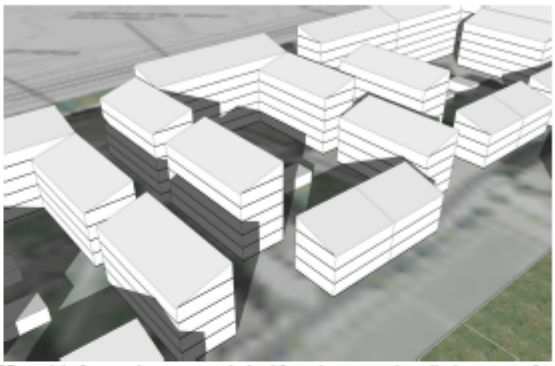
Area of Sydvästra Lund. Aerial picture: Ingvar Nilsson

Main results

The planning process: *Working with solar energy aspects early in the planning process have been very fruitful. This give the planners in the municipality possibilities to think about solar energy aspects early and adjust the planning accordingly. Still it is important to remember it will never be the municipality itself that installs solar energy in a new area if it is not the municipality's own buildings. What the planners can do, is to design a new area with the best prerequisites for making installation of solar energy economical profitable and the deprecation time as short as possible.*

3D-model Sydvästra Lund: *An expert consultant was contracted to support the planning group in the process and develop a design of a 3D area model where the buildings are optimised for solar energy installations in Sydvästra Lund. Also, calculations were performed by the expert consultant to show how much renewable solar energy that would be possible to produce from the optimised buildings.*

Stakeholder involvement: *To work with urban planning for solar energy is not a one-man job. Of course the responsible architect for the area is a very important person but to be successful many other positions need to be involved.*



3D model of new urban area optimised for solar energy installations on roof tops

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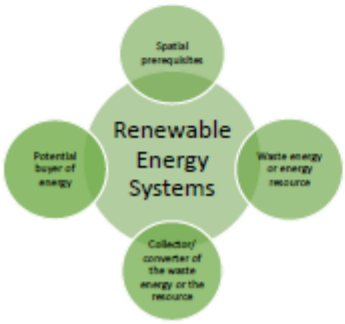
Blekinge
Sweden

District heating case

The focus of the pilot case is how a manufacturing industry with significant surplus energy could utilize the energy by distributing it to the district heating system.

A study indicates that the manufacturing industry, in Ronneby (SE) has significant amounts of surplus energy currently cooled off from the roof. Up to 90% of the electricity used for the ovens is lost, and so far it has not been possible to connect the waterborne waste heat to the district heating (DH) network.

The goal is to find solutions to be able to use the waste heat in the DH network. Several meetings and contacts have been made.



Main results

- A study shows a significant potential for developing the energy system in a sustainable direction by linking the action to the spatial structure. Studies also show possibilities to facilitate district heating expansion through a collaboration between district heating companies and the municipality's spatial planning.

- In the pilot case, we have tried to find possible solutions to recover heat without having to buy additional electricity

- This solution is only possible if you can get higher temperatures in the ovens used by the industry.

- Result of the survey in the existing system:

- *Heat recovery could be carried out by connecting one or more electric heat pumps. The disadvantage of this is the electricity dependence and lower efficiency, since approximately 3 GWh/year must be purchased to get out 8 GWh/year from the waste heat.*
- *Finding a solution for recycling without purchased electricity requires further in-depth investigation work*

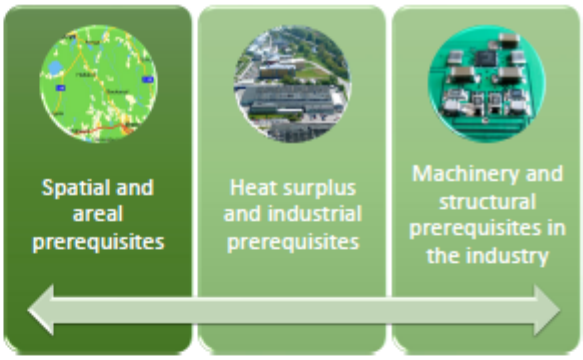
Main aspects and lessons learned

- It is important to involve stakeholders early in the project development phase and clearly present their role in the project. Also keep a continuous dialogue with stakeholders waiting for the project to be approved.

- In organisations and also municipalities, there exists different ways of working and with which department. These structures can affect how the work progress goes.

- Political decisions on national and regional level can really affect the results.

- Would have been good to have a plan to be able to handle heavy workload among stakeholders.



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Blekinge Sweden

Offshore wind power case

The wind power pilot project looks into how offshore wind turbines can support the transition toward reducing greenhouse gas emissions. In this case a planned offshore wind farm called "Taggen" is studied.

The goal is to deliver a socio economic report to the Municipality of Sölvesborg. Several meetings and contacts have been made in order to collect information and spread the result. The Socio-economic report have been delivered to the municipality of Sölvesborg.

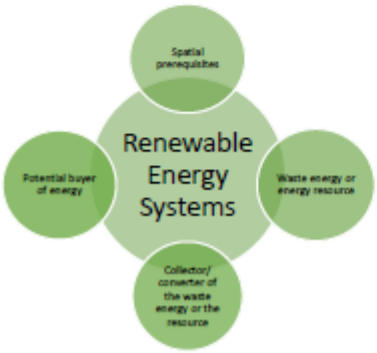

Figure 1. Renewable energy systems, in this case wind power

Main results

When a localization of a wind park like "Taggen" takes place, a large number of jobs are created. How many depend on how active the local business are when the major contracts are written

On the assumption that the service port will be localized in the county of Blekinge and 8% of the jobs will be local; it creates 338 new job opportunities (during the year 1-5; and 60 during year 6-20)

In this calculation, the pre assembly harbour is established outside Blekinge

In Blekinge, a major anchoring process has already been made through precious dialogues with citizens in connection with the permit process according to the Environmental Code. The municipality in Sölvesborg has adopted and communicating wind power plans; which includes both Blekinge Off shore's and Taggen´s planning areas, which are designated for energy supply

Main aspects and lessons learned

It is important to involve stakeholders early in the project development phase and clearly present their role in the project. Also keep a continuous dialogue with stakeholders waiting for the project to be approved. In the wind case the stakeholders were a bit surprised that they were a part of the application form and it took two meetings for us to solve the purpose of their participation.

Political decisions on national and regional level can really affect the results.

During the project a national initiative was carried out to develop sea plans for the Swedish coast, and the Swedish municipalities participated.

Energy prerequisites, development and social growth

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Central-Finland

Geoenergy use in a new residential area in Äänekoski city

In this pilot, regional geoenergy potential was studied for a new residential area in Äänekoski City, Ääneniemi.

As a part of the study, geophysical characteristics of the area were studied. Also, energy well (200m) was drilled in Jaakopintie, Ääneniemi. These together gave information on the geothermal energy potential of the area.

As a result, the study showed with concrete examples, the potential of the geoenergy utilization in the area, on different house types and the amount of heat energy required for heating.

Figure 1. Pilot case raised local attention.

Main results

Based on the results geoenergy can be recommended as a warming system for households in this area.

Results indicate good potential for geoenergy (geothermic gradient 1,2°C/100m), e.g. average rowhouse or apartment building (95MWh) requires 3-4 boreholes (typical depth 100-300m), average single house (150-250 m) 1 borehole.

Investment costs are high, payback time is app. 6-7 years.

In this project a map of the geoenergy potential of the area was done (Figure 2.).

Geoenergy pilot study provided information on geoenergy implementation for municipality level land use planning.

Main aspects and lessons learned

Central Finland's bedrock has good qualities for larger scale geoenergy utilization (Regional geoenergy potential study 2011). Larger scale geoenergy is very new in Finland.

Geoenergy is a prominent RE source for heating and cooling purposes. Geoenergy potential has been identified on regional land use plan.

Municipality is a key player in implementation. It will provide the framework via land use planning, e.g. by giving recommendations for energy type.

These kind of pilot studies can act as driving force for municipality level planning and thus implementation.

Land use planners have now an example on geoenergy potential in detailed planning, and on implementation.

Residents are important in implementation. In new areas this is problematic, since no residents exists during the planning phase.

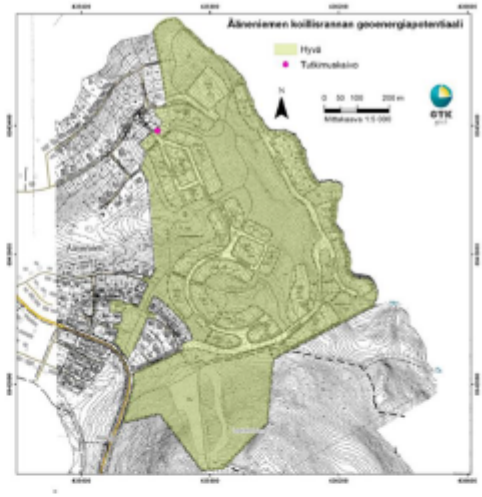

Figure 2. Map of the geoenergy potential of Ääneniemi area.

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Renewable energy mix - Rõuge. Renovation of the village hall

Southern Estonia

Main aspects and lessons learned

Spatial planning. The RES-focused renovation project is conditioned by the principles, standards and requirements of zoning, the task which directly practices the spatial planning methods, addressing the basic questions of spatial planning where and how. The zoning sets multiple spatial constraints for the cultural and education facilities in the pilot plot, premises and its surroundings in developing a cohesive built environment, plus facilitating renewable technologies.

Key issues discussed and agreed:

- General and façade design feasibility (energy efficiency)
- Engineering of renewable energy mix
- Climate-sound allocation and design of parking slot, public places, surfacing materials

- Allocation functional areas, entrances, proper space utilisation
- Cost-efficiency of energy engineering and design solutions

Stakeholder approach. The pilot project re-examined all the above-mentioned circumstances and addressed directly spatial, architectural and engineering compromises which succeeded in multiple expert discussions and public hearing. Stakeholder approach aiming the integrity of combined formal and informal, innovative, experimental and standard methods and procedures reaching the acceptance and approval design drafts and energy engineering.

Goals and objectives

- Small-scale innovative applications of renewable energy technologies
- Enhancing town environment in the historic memorial park
- Integrity and cost-efficiency of public premises

The pilot project focuses on renovation of the Rõuge village hall, including the selection and installation of renewable energy technologies.

Figure 1. Layout of Rõuge village hall plot. Designed by ROK-Projekt.

Main results

The project concept is based on place-based renewable energy production and use. The renovation and landscape design of Rõuge village hall is chosen to implement pilot project on RES mix in peripheral regions. Overall planning area is 2 ha, net floor area is 1200 m^2. The energy and heating systems will integrate ground source heat pumps with PV panels and biomass stoves. The innovative and highly efficient RES technologies to be applied as follows:

1) **Ground source heat** with min cap. 80 kW (4500 m horizontal collector pipelines without restricting objects).

2) **Solar energy**: 66 units of PV panels with total capacity 18,15 kW annual production 16 MWh installed according to solar engineering at the parking facilities.

3) **Traditional wood-burning stoves** as fireplaces.

Figure 2. Public hearing of draft plan and design in the Village Hall 23.02.2017, left – architect Karmo Tõra presents designs and solutions.

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Sustainable district heating system in Kaunas

Lithuania, Kaunas region

Goals:

- Transfer from 96% of natural gas in 2010 to sustainable district heating using 100% RES (biomass, solar energy, municipal waste);
- Achieving social and economic benefits via reduction of heating tariffs;
- Achieving environmental benefits via reduction of GHG emissions due to replacement of fossil fuel (mainly natural gas).

Activities:

- Construction and re-construction of biomass boiler-houses and CHP plants;
- Introduction of independent producers;
- New options (waste, solar energy, etc.).

Figure 1. Biomass boiler-house of independent producer and Solar PV on the roof of AB Kauno energija

Main results

- Share of biomass – from 4% in 2010 to 91% in 2017;
- Biomass capacities – from 9.6 MW in 2010 to 290 in 2017;
- Heat tariffs reduction: from 8.84 ct/kWh in Oct. 2012 to 5.12 ct/kWh in Apr. 2018;
- Independent producers – from 1 in 2010 to 12 in 2017.
- Solar energy – 30.6 kW_{th} and 20 kW_{el} today and future investment foreseen;
- Waste CHP plant (24 MW_{el}+70 MW_{th}) – under construction.

Advantages	Drawbacks
Goals to reach 100% of biomass in DH are to be achieved	Overcapacity in new plants cause conflicts among stakeholders
Company level planning was implemented for DH company and independent producers introduced	Demand limit for boilers and CHP plants was not defined via planning, spatial planning chaotic
Heat tariffs were reduced significantly	In case of better planning, heat tariffs could be reduced even more
Replacement of old pipes reduced heat losses in the network	Technical problems emerged in the network
GHG emissions reduced due to transfer from natural gas to biomass	Local pollution increased near the boiler-houses

Main aspects and lessons learned

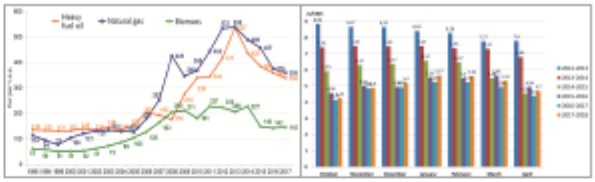
The development of district heating sector had a big number of planning, technical and public stakeholders and social partners, such as Municipality, DH company, independent producers, biomass exchange, residents of block apartment and a number of external lobby and consultants.
Municipalities have plenty of responsibilities in planning of RES in heat sector and supply and decision-making process lies on the municipal councils. However, planning indicators should be defined under intermediate planned national RES indicators and main conditions, defined for development of district heating and cooling sector using renewable energy sources.

Funding sources:

- For large projects (over 10 MW) - support for investment from EU Cohesion Funds under Cohesion Promotion Actions programme;
- For small projects (under 10 MW) – support from Lithuanian Environment Protection Investment Fund Programme, and Climate Change Special Programme;
- Own funding of the district heating company, incl. Bank loans;
- Municipalities can partly subsidize projects as main stakeholders of municipal DH companies.

Lessons learnt:
Though some conflicts (with population) are easy to solve via discussion and some positive actions, others (with partners – independent producers) are much more complicated;
Planning based on clear criteria should be introduced to avoid „chaotic" development;
Introducing new legal environment to heat producers solves some generation problems, but there are still conflicts in the activities of heat supply, which should be solved via discussions with authorities and among stakeholders.

(a) Fuel costs dynamics (b) Heat tariffs dynamics



(c) Change of fuel structure from natural gas to biomass in the integrated network (by DH company in independent producers)

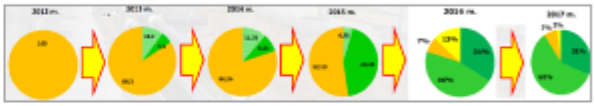


Figure 2. Main results: (a) fuel costs, (b) heat tariffs, (c) change of fuel structure

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West Pomerania
Poland

Sustainable energy in public spaces located in the town centers of the Central Functional Zone in the West Pomeranian Voivodeship based on the example of Połczyn-Zdrój

The aim of the project was to investigate RES optimization towards better local energy efficiency and enhanced quality of public spaces in Połczyn-Zdrój.

Introducing RES and energy efficiency is one of the basic factors increasing local ecological awareness of the space users. Responsible spatial planning is aiming at supporting of third wave prosumers, balancing the ideas of sustainable development with lowering the energy use through introducing of alternative technologies in urban spaces.

Figure 1. Pilot project area in Połczyn-Zdrój

Main results

The pilot project presents the results from extensive research, analysis and field studies on public space, with using energy mix. Based on those actions, concrete, tailor made solutions, tailored to the chosen area of Połczyn-Zdrój have been developed, and, as a consequence, they caused the creation of third wave of prosumers, or „aware" citizens.

Set of actions for self-government administration, institutions, local societies and investors regarding the implementation of actions connected to the use of RES and influencing the energy transition of public spaces:

- *Municipality as leader in promotion of energy efficiency*
- *Recommendations regarding an improvement of energy efficiency of the public spaces*
- *Recommendations in terms of including issues linked to energy efficiency, including thermo-modernization, and using RES in programming, strategic and planning documents*

Main aspects and lessons learned

1. *Conducting the lightning audit, including streets, communication routes and public spaces, pointing out possible changes in the lightning system of the city, so it would more energy efficient. A precondition of suggested changes was to base them on technological solutions, using energy from RES*
2. *Analysis of methods of thermo modernisation of buildings, including those under heritage and health resort protection, while including the possibility of using installations gaining energy from RES.*
3. *Concept of public space development with use of RES - Semester project of students*

Siemczyno, 27.09.2018

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Denmark
Zealand

Odsherred Biogas

Goals: *A biogas plant with a capacity of 160,000 tonnes, based on residues from agriculture and local industry. Open discussion of ownership and responsibilities.*

A planning process: Biogas plant – Odsherred Biogas: *A planning process was creating involving a number for invited stakeholders (see the list below). The goal (see above), the process and the expected outcome (see below) may shortly be presented as follows:*

The process: *Design of biogas plants. Meetings and discussion of the facility with (1) mayor and top officials, (2) municipal councillors, (3) involvement of direct stakeholders in the facility (4) public meetings on location plans, function and size of facilities, (5) public consultation meetings proposals.*

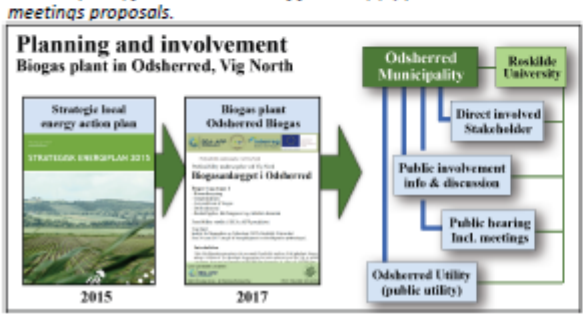

Figure 1. General planning and stakeholder involvement

Main results

Result:

Finished design of the plant. Environment and spatial approvals, (EIA, municipality plan additional, local plan, environmental permit of the facility). The plant is now under the first steps in construction (agreement on financing and procurement phase).

Expected yearly outcome:

61,800 MWh biogas; reduction of greenhouses gasses at 36,800 tons; 21 full-year direct employees; turnover at 4.3 million € and local economic benefit of 4.2 million € (employment & income).

Main aspects and lessons learned

Involvement on community level: The Strategic local energy action plan was presented and discussed in at number of public meeting before it was approved by the municipal board, including a presentation of the planed biogas facility.

Direct involvement with four types of involvements:

- Municipal council and the hinterland of each party in the council
- Direct stakeholder involvement (suppliers and buyers)
- Involvement of the broad public through a series of public meetings
- Public consultation according to existing rules on approvals, etc.

During the public hearings, a strong criticism of the expected load from odour and traffic was presented. This conflict was both expressed at several meetings and through the local newspapers. In continuation of this criticism, all interested citizens were invited to a visit to the newly built Solrød Biogas to obtain 'hands-on' experiences.

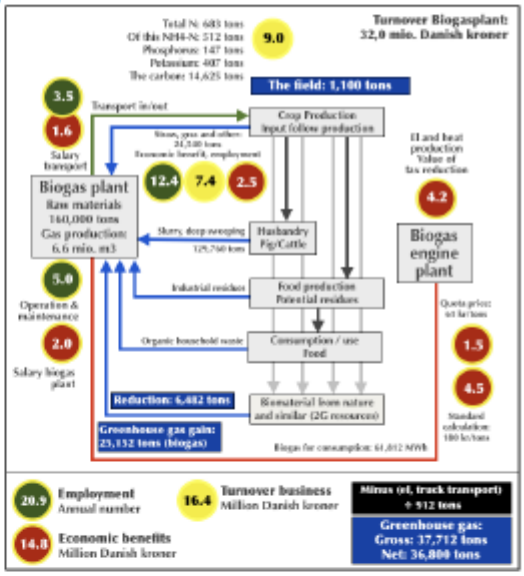

Figure 2. The local economic, environmental and employment effects of the biogas plant

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BEA-APP
BALTIC ENERGY AREAS
A PLANNING PERSPECTIVE

www.balticenergyareas.eu

Denmark
Zealand

Smart heating system

The Goals:

Replacement of Individual Heating from oil and natural gas with surplus heat from a large industrial facility in a district heating system.

The project plan:

Three steps: (1) Solar heat facility (established 2017); (2) Second phase: District heating for 350 houses/buildings (2018-19); (3) Third phase further district heating in the area of Havdrup (until 2020).

Activities:

Planning and involvement process to ensure development and support for the project.

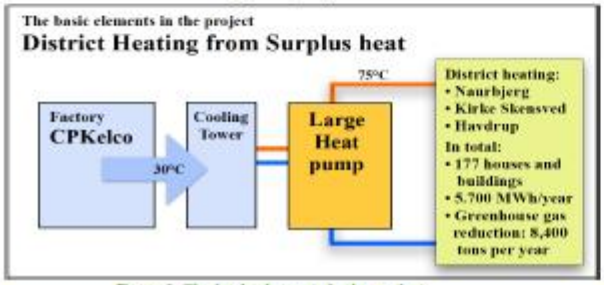

Figure 1. The basic elements in the project

Main results

Result:

Proposal, approved by the district heating company and the local council of Solrød Municipality. After the official consultation the proposal has been approved by the municipal board. Throughout the hearing, the project has become so popular that there has been a wish for extension of the project. Therefore, a supplement has been prepared for the project, which is now under a new consultation and is approved by the municipal council in October 2018. It is now in public hearing, to be finalizer in February 2019.

Expected outcome:

Energy savings and reduction of greenhouse gases by 8,400 tonnes. Expected total investment around 5 million €.

Main aspects and lessons learned

There has continuously been prepared analysis of the technical and economic feasibility. It has implied a dynamic interaction between the utility company (Solrød Fjernvarme) and the municipality on the one hand, and the people and communities that need to decide on the possibilities on the other hand.

The stakeholders: *The long-term climate change plan and training of local climate agents have created a well-founded basis for support for and interest in the surplus heat project. In the development and implementation of the project, a number of stakeholders have been involved, where the most important are:*

- *Representatives from the different cities and villages in the municipality (map)*
- *Supply company (Solrød Fjernvarme a.m.b.a.)*
- *Solrød Municipality*
- *Roskilde University*
- *Energy advisor – Rambøll.*
- *CPKelco – facory with the surplus heat.*

Figure 2. Stakeholders involved in the porject

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Notes

The report is prepared within the frame and under responsibility of the "Baltic Energy Areas – A Planning Perspective" – the project co-financed by Interreg Baltic Sea Region 2016 – 2019. The opinions expressed and arguments employed do not necessarily reflect the official views of presented institutions or the governments of member countries.

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