ENLARGE
ENergies for Local Administrations to Renovate Governance in Europe

www.ENlarge.eu | +39 0246764311 | contact@enlarge-project.eu

Project: ENLARGE – Energies for Local Administrations to Renovate Governance in Europe

WP3: Case study analysis

Report: 31 case study reports and case study cross analysis

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ENLARGE is a 2-year project funded European Union's Horizon 2020 research and innovation programme. It aims to generate and disseminate knowledge on participatory governance with focus on sustainable energy, through a process of dialogue and exchange involving policy makers, civil society actors and practitioners.

ENLARGE is realized by Istituto per la Ricerca Sociale (IRS), Università di Torino, Stockholm Environment Institute Tallinn Centre (SEI Tallinn), European Association for Local Development (ALDA).

Project coordinator

Erica Melloni (Istituto per la Ricerca Sociale)

Steering group

Stefania Ravazzi (Università di Torino – WP1 and WP 5 leader)

Antonella Valmorbida (ALDA – WP2 and WP6 leader)

Kaja Peterson (SEI Tallinn – WP3 leader)

Erica Melloni (IRS – WP4 leader)

Research team

Simone Busetti, Tiit Kallaste, Piret Kuldna, Kerli Kirsimaa, Flavia Pesce, Kaja Peterson, Gianfranco Pomatto, Manuela Samek, Franca Roncarolo, Cristina Vasilescu, Aldo Xhani, Irene Zanetti.

Table of contents

1 Presentation of the report

ENLARGE aims to generate and disseminate knowledge on participatory governance with focus on sustainable energy, through a process of dialogue and exchange involving policy makers, civil society actors and practitioners.

WP1 “Methodological approach. Construction of the co-design and co-production matrix” aimed to develop a conceptual and methodological framework of participatory processes, especially in the field of sustainable energy. The Conceptual report contains the ENLARGE main methodological assumptions, setting the path for the realization of the activities of engagement, collection and analysis of relevant participatory practices in the sustainable energy field and is available at this link.

WP 2 “Engagement and identification of practices” has been aimed at engaging local actors, through the identification of around 50 supporting partners and the launch of a Call for practices, with the goal of collecting real experiences of participatory approaches within policies and projects in the sustainable energy field. 35 cases have been collected and 31 have been selected for further analysis.

WP 3 “Case studies” dealt with the in-depth analysis of 31 case studies according to a common template developed in WP2 (scorecard). This report contains the scorecards of case studies and their statistical overview.

2 Practice scorecard

The ENLARGE call for practice launched permitted to collect various description of collaborative processes in the context of sustainable energy energy-related policies across Europe (both in EU and non-EU countries). After selection, 31 cases out of 34 practices received have been analysed in depth.

According to the ENLARGE methodology, the selected cases cover:

- A wide range of categories of sustainable energy, such as electricity production from renewable sources (e.g. wind, solar, etc), improving energy efficiency of housing or reducing air emissions from transport.
- Different types of initiatives, for example developing a policy (strategy) or a programme (a set of projects to achieve the policy goals) or a concrete project.
- Different kinds of collaborative processes and in particular co-design, co-production and co-evaluation processes,
- Different tools and mechanisms to boost participation.

Each of the collected case study was described via the following practice scorecard, including a short summary table and a more detailed description of the case.

The short summary included the following information:

Title (name of the document or project)	
Place (location, country)	
Type of initiative (policy, programme, project)	
Period (years)	
Sector(s) addressed (e.g. wind park, energy efficiency of housing, etc)	
Type of participatory process adopted (co-design; co-production; co-assessment)	
Contact person (name, email)	

The more detailed information on each case was divided into five sub-sections:

1. The context
2. The description of the policy, programme or project
3. The participatory process features
4. The outcomes achieved
5. Explaining linkages, lessons and shortcomings

The aim of the detailed description of the case was to focus on the participatory aspects of the policy, programme or project. For each case study, information on the case - with special reference to the participatory approach - has been provided by the contact person within the call for practices and then further deepened through direct interviews. The drafted case study has been finally discussed and verified with the contact person.

Since the information was provided by one person, the evaluation of the participatory process in terms of the implemented activities and their effect on the final outcome relies on his/her assessment and perceptions only. The case study scorecards would form the framework for the group discussions on participatory approaches and their impact on the final outcome during the Deliberative Event (WP4).

3 Cross analysis of 31 case studies

ENLARGE partners gathered 31 sustainable energy related case studies from different European countries. These were selected based on the approach described above and in WP2. Most of the case studies were from Estonia (10) and Italy (7). The other selected countries had 1–2 case studies each (see Figure 1).

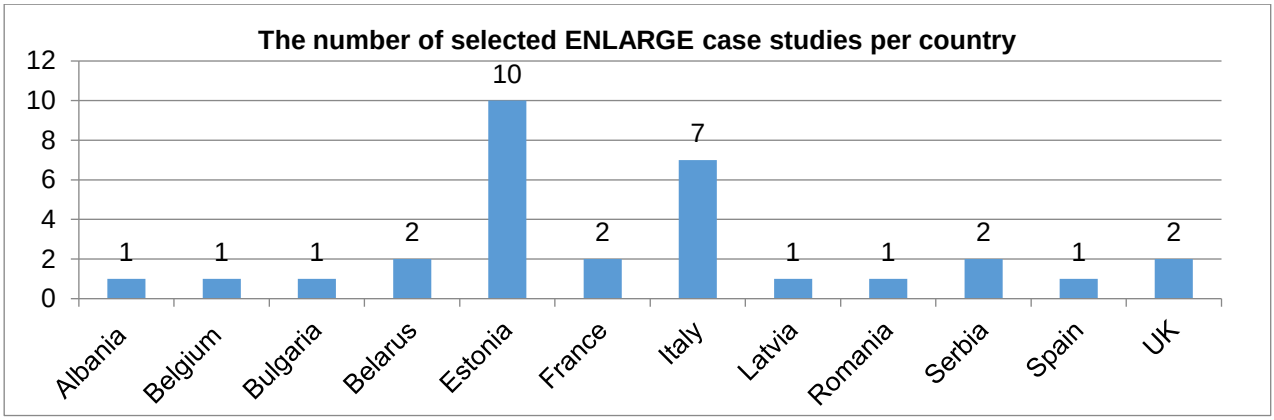

Figure 1 The number of selected ENLARGE case studies per country

The selected case studies in all the countries were classified under three categories: policies, programmes and projects. Policies are political documents that set policy goals for the future. In the sustainable energy sector, renewable energy policy, energy efficient housing policy or sustainable transport policy are typical policies (or strategies). It is also usual that the policy is time-bound, such as renewable energy policy until 2030 or climate adaptation strategy until 2050, etc. In order to achieve the policy goals by certain year in the future usually an action plan or a programme is developed. Such an action plan or programme contains activities or projects that need to be implemented. A single project may be developed as part of such an action plan or a programme or in isolation, depending on the promotor's intensions. The term "programme" as used in the ENLARGE context captures both action plans and programmes.

Figure 2 shows that most of the 31 selected case studies were projects (19), less were programmes (7) and policies (5).

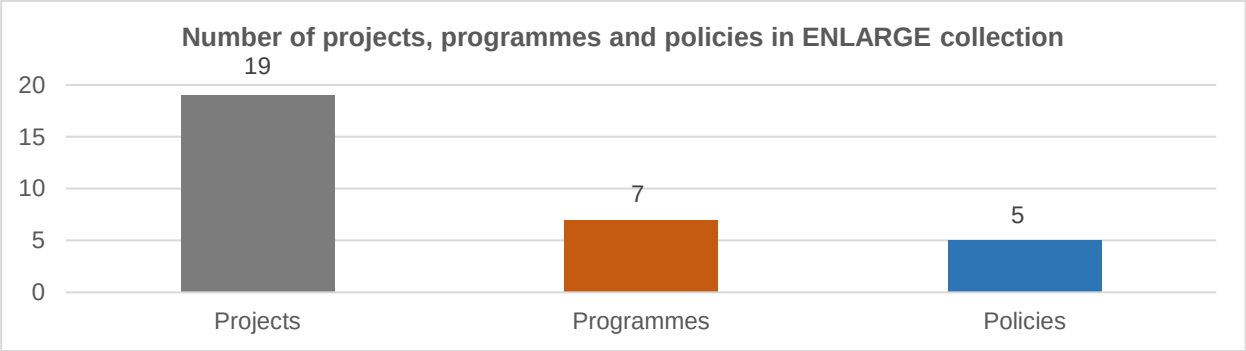

Figure 2 The number of analysed projects, programmes and policies

The policies, programmes and projects in turn were classified into 3 sustainable energy types as follows:

- Sustainable transport (less GHG emissions)
- Energy savings/efficiency in housing
- Renewable energy production/consumption (wind farms, solar farms etc)

Figure 3 below describes the outcome of such classification. It concludes that most of the collected case studies were projects related to energy efficiency in buildings sector, or projects related to renewable energy production/consumption.

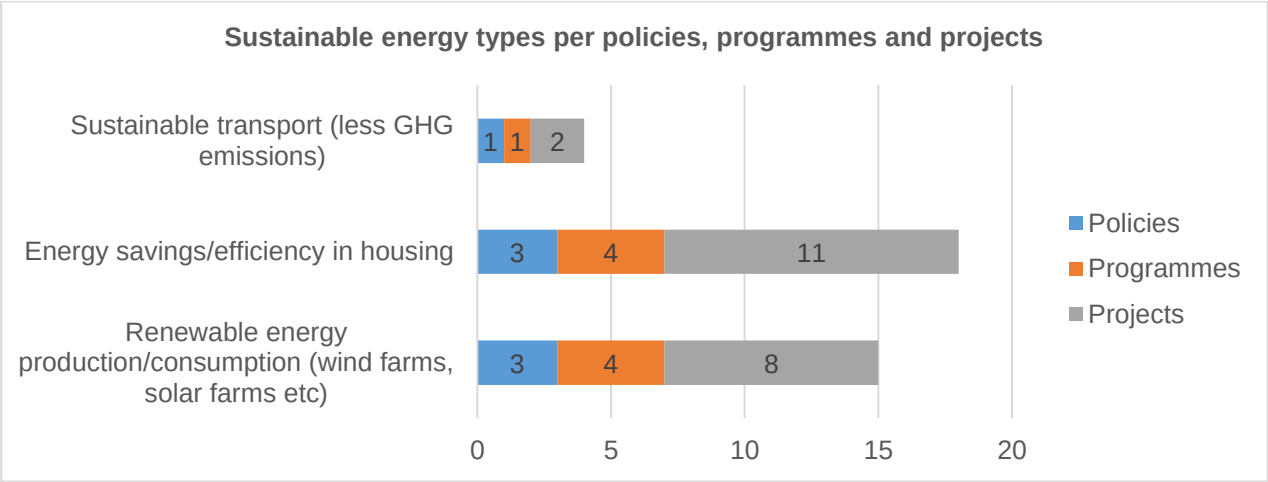

Figure 3 Number of projects, programmes and policies per sustainable energy type

The duration of all policies, programmes and projects varied in each case study (Figure 4). It should be noted that the duration is hereof defined as the time spent both on the preparation of the policy/project/program as well as the time spent on the implementation of the project/programme/policy. For instance, all the policies analysed in ENLARGE project are currently still valid, and the activities foreseen under these policies are still ongoing, sometimes even up to 2030. Figure 5 demonstrates that most of case studies are actually still being implemented (ongoing), whereas there were also a number of projects which lasted for up to 5 years (10) or even longer (4).

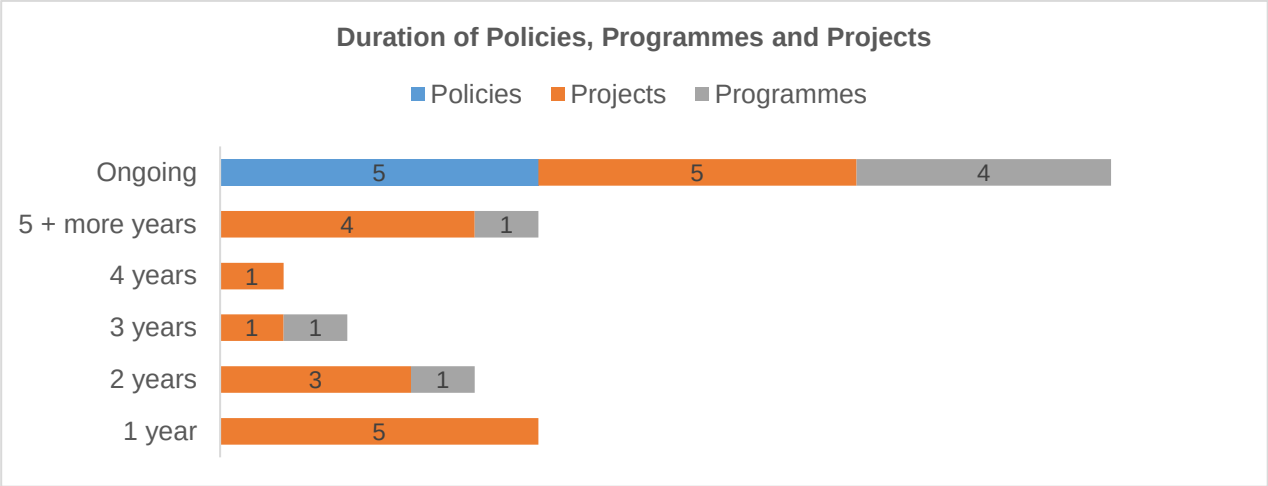

Figure 4 Duration of projects, programmes and policies

Each case study was classified into three types of collaborative process:

- Co-design: *Co-design* processes are designed and managed to involve extra-institutional actors in the *formulation* of public policies and in the design of public services. Their aim is primarily to help governments improve their ability to address user needs and innovate their problem-solving capacity,
- Co-production: Co-production processes are designed and managed to involve 'responsible citizens-users' in the implementation of the policies and in public service delivery,
- Co-assessment: Co-assessment processes aim to involve citizen and stakeholders in the monitoring and evaluation of the interventions, with the goal of contributing to the improvement of such interventions.

One case study could fall under one, two or all three categories at the same time. Figure 5 describes all the participatory types identified in case studies and the combinations of those. The figure shows that the case studies were usually a combination of co-design and co-production participatory types, or two of those types individually.

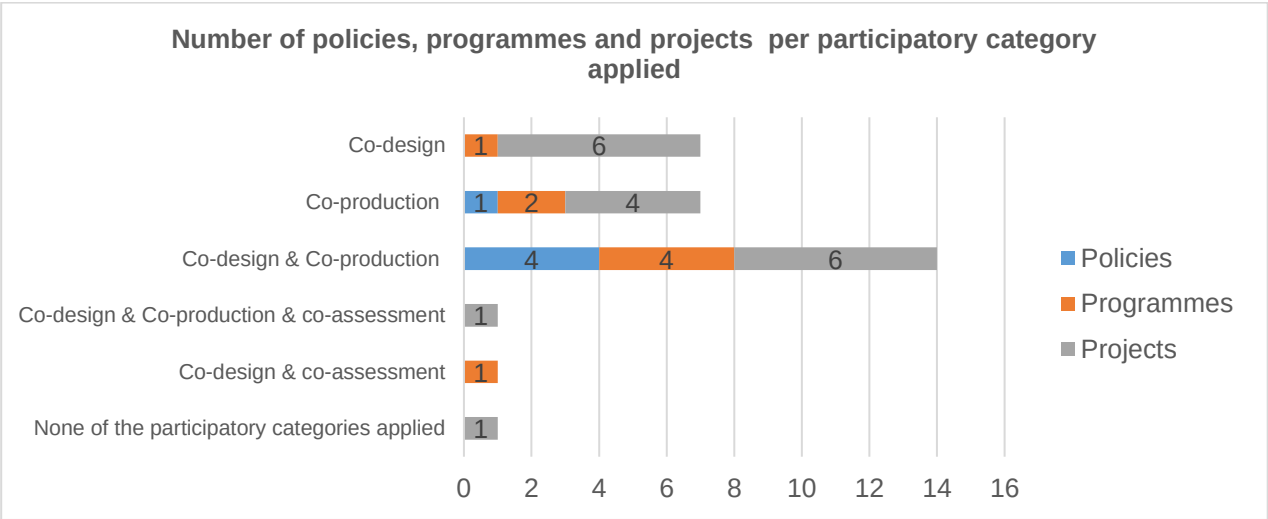

Figure 5 Number of projects, programmes and policies per participatory category applied

4 Practice scorecards of case studies

In the next chapters, the scorecards of all the 30 case studies are presented.

4.1 Wind farm project in Korca Region (Albania)

Practice scorecard:

Title	Wind farm project in Korca region
Place	Albania, Korca region
Type of initiative (programme, policy, project)	Project
Period	2007–2009
Sector(s) addressed	Sustainable wind energy
Type of participatory process adopted	Co-design
Contact person	Zana Vokopola, Executive Director, zvokopola@uri.org.al

4.1.1 The context

Figure 6. Korca Region, panorama

On its endeavours towards environmental protection, Urban Research Institute (URI) has studied the potential sources of renewable energies in Albania. Efforts and investments are made by countries all over the world to implement the climate and energy agreements. New energy sources that are efficient and have a very small impact on the environment, that is to say almost “zero", have to be taken into use.

URI is the pioneer NGO that started the initiative of setting up the first wind farm in the Korca region, in Albania. Compared to the conventional energy sources, the environmental effects of wind power are relatively minor. Wind power consumes no fuel, and emits no air pollution, unlike fossil fuel power sources. The energy consumed to manufacture and transport the materials for building a wind power plant is equal to the energy produced by the plant within a few months of operation.

4.1.2 The project “Wind farm in Korca region”

The Kappet wind farm is located in South-East Albania (close to Macedonian and Greek boundaries) in the District of Korca.

Though, the licensed number of wind turbines is 87, the Project’s topographical study identified in total 105 potential points for aero generators.

The project area is divided into two subzones:

- PETRUSHE Subzone – the northern zone in the Municipalities of Cerrava and Vreshtas (max 50 positions)
- KAPPET Subzone – the southern zone in the Municipality of Bilisht (max 55 positions)

Figure 7 The project area

In order to reduce the wake effect, the minimum distance between the wind turbines is 550 m (more than 5 diameters).

According to the actual design, it is possible to install 87 wind turbines on tubular steel tower (height 80 m) and rotor diameter of 94 m, whereas it is possible to improve the tower height and the rotor diameter, without changing the authorizations.

The total wind farm power is 150 MW +10% (maximum 165 MW).

4.1.3 The participatory process features

The agency preparing the environmental impact assessment, the Urban Research Institute in Tirana, is also legally in charge of producing information material about the project for the general public and to organise hearing sessions for citizens of the communities affected by the project.

The Urban Research Institute in collaboration with the municipality of Korca has identified different sectors of the community as the target group for the participatory process. After this, meetings were held in each zone of the project to provide the inhabitants with information on the impact of the project in their area.

In order to reach out the wider public, leaflets were distributed for information sharing and for inviting the inhabitants to the informing sessions. The sessions were also a key moment to collect citizens' opinions and concerns and better align the project with them.

The participatory tools used within this case were mainly of communication type, with the goal of raising the attention of the wide citizenship on the advantages of renewable energy sources:

Some kind of selection of participants (random sample, target groups etc.)	**x**
Involvement of technicians and experts in direct interactions with participants	**x**
Communication campaigns	**x**

4.1.4 The outcomes achieved

Attendance at the hearing sessions continually increased over time as more and more inhabitants got aware of the project and the informing-debating sessions. Local media also played a significant role by providing wide coverage to the project and the participatory action.

The participatory process increased both the transparency of the project and the accountability of the initiators towards the public.

4.1.5 Explaining linkages, lessons and shortcomings

One of the main challenges faced in this project, in particular in its initial phase, was to raise general public's awareness of the participatory process. A general lack of information among citizens about the advantages of renewable energy sources also represented a critical element.

Despite the negative elements above, we registered relevant changes in citizens' behaviours and attitudes towards the project and the participatory process. In particular, quite a group of inhabitants initially critical joined the informing sessions, expressed their views and contributed to the debate in a positive manner.

The cooperation with the municipality and the communes has also been key to promote a wide dissemination of the project and the participatory process and therefore keep the attendance in the meetings high.

4.2 Living streets in Gent (Belgium)

Practice scorecard:

Title	Living Street
Place	Belgium, Ghent
Type of initiative (programme, policy, project)	Project
Period	2012–2017
Sector(s) addressed	City mobility, urban street management and Living together
Type of participatory process adopted	Co-design, co-production and co-assessment
Contact person	info@livingstreet.org

4.2.1 The context

The city of Ghent is one of Belgium's largest municipalities with some 250,000 inhabitants. It all started in 2012, when the city administration asked citizens for their ideas and visions of the future of Ghent mobility by 2050. After several months of prospective thinking, the solutions imagined were noted down in a transition agenda, "The Bike of Troy" and presented to a hundred citizens.

Figure 8 Ghent, Belgium

The Ghent municipality was exploring ways to reinterpret urban spaces and to change the perception of mobility. As part of the transition group, the "Living Streets" project was developed - streets that are closed off to car traffic and turned into collective spaces. In line with the city's objective to become climate neutral by 2050, the initiative became an experiment to change the city's mobility strategy. By offering a reinterpretation of urban space, it reinforces social interaction and changes the perception of streets and mobility.

Among the citizens who attended the presentation of the "Bike of Troy" agenda, some were immediately won over by the idea of Living Streets. This marked the beginning of a movement of citizens, entrepreneurs and civil servants, who decided to take the realisation of the project into their own hands.

4.2.2 The project "Living Street"

Living Streets is coordinated by "Lab van Troje", a temporary non-for-profit organisation that was set up by the volunteers to be able to experiment and apply for financial support for the Living Streets initiative. The project also received grants from the EU and the Flemish government.

The idea behind Living Streets was to close off streets to car traffic for about two months at a time and transform them into social spaces in which neighbours can interact, eat together, play music, do sports, and let their children play. In spring 2013, the first two streets in Ghent were ready to be transformed into Living Streets, Pussemierstraat and Karel Antheunisstraat, and the residents started to organize activities on a daily basis or socialize outside spontaneously.

At the same time, the project also encouraged the usage of environmentally friendly transportation methods among the resident of Living Streets, such as electric bicycles or car-sharing. By banning cars from moving through or being parked on the street dedicated to the project, residents could experience alternative forms of mobility, experience the new neighbourhood parking and generally attempt to reduce car usage.

Figure 9 Every street is designed differently, www.LivingStreet.org

Thanks to the help of some Ghent companies, the Lab of Troy could buy materials. In later editions of the project, more streets of various nature followed: city-centre streets, suburban streets, residential streets and commercial streets. Crowdfunding was introduced as an addition to sponsorship to provide more financial freedom in purchasing of equipment of Living Streets such as lawn or barbecues.

4.2.3 The participatory process features

After the municipality's initial call which created the framework for the realization, the project was entirely managed by citizens, specifically by the volunteers of the "Bike of Troy" network and the inhabitants of the Living Streets. Therefore the participatory process encompassed all planning, implementation and evaluation phases.

Figure 10 Ghent, the Living Streets, www.LivingStreet.org

The project brought together not only volunteers from civil society but also businesses and community organisations, as well as local authorities.

4.2.4 The outcomes achieved

The Living Streets project had great success. It increased the community engagement of people of all ages, backgrounds and levels of education. Since 2013, Living Streets has been realised 51 times in about 30 streets in Ghent.

4.2.5 Explaining linkages, lessons and shortcomings

The starting point for a new Living Street was always an engaged group of citizens that started to cooperate with the volunteers of "Lab van Troje". Dialogue with all residents is necessary, private persons and shopkeepers alike. In order to be successful, everybody's needs and concerns should be addressed. The volunteers were always present throughout the entire planning process of a new project, guiding the participative phase.

Even though Living Streets was a bottom-up initiative, the cooperation with the municipality was crucial and functioned well. The initiative launched by "*Lab van Troje"* provided an opportunity to develop a unique, co-building relationship that places the municipality and citizens on an equal footing, also involving new challenges, like making the various municipal departments work together. The partnership also facilitated the necessary arrangements to be made with the police and garbage collection services, for instance. The two administrative departments of the city particularly involved in the process were those of mobility and of environment. The presence of one volunteer who was working in the municipality's department of environment significantly improved the cooperation between the volunteers and the municipality.

4.3 My contribution to climate change (Belarus)

Practice scorecard:

Title	"My contribution to climate change"
Place	Republic of Belarus, Beloozersk, Brest region, Berezovsky district
Type of initiative (programme, policy, project)	Project
Period	2017–2018
Sector(s) addressed	energy efficiency; renewable energy
Type of participatory process adopted	co-design & co-production
Contact person	Lyudmila Beletskaya, Director Organisation: The fund "Partnership in Action

4.3.1 The context

Brest region of Belarus is located at its southwestern part of Belarus, bordering the Podlasie and Lublin voivodeships of Poland in the west. The Berezovsky area is located in the central part of Brest region and occupies the territory of 1,5 thousand sq.km. Borders with Ivatsevichsky, Pruzhansky, Kobrinsky, Drogichinsky and Ivanovsky areas.

Figure 11 Brest region, http://www.bereza.gov.by/public_information/

Berezovshchina is an original, picturesque, dynamically developing and in its own unique region of the Republic of Belarus, with the richest historical, spiritual and cultural traditions. In written sources, Bereza was first mentioned in 1477 as the village of Seletskaya volost of Slonim Uyezd. With the transfer of the Birch to the ownership of the sub-chancellor of the Lithuanian Casimir Lev Sapieha and the construction of the monastery of the Order of the Carthusians, the settlement begins to grow and grow, and the Kartuzian monastery was the main town-building core of the town. Since that time, the city has become known as Bereza-Kartuzskaya or Kartuz-Bereza. This name existed until 1940.

The Berezovsky district was formed on January 15, 1940 by the Decree of the Presidium of the Supreme Council of the BSSR "On the Formation of Areas in the Baranovichi, Belostok, Brest, Vileika and Pinsk Regions of the Belarusian SSR". The district became part of the Brest region of the Byelorussian Soviet Socialist Republic.

In the centre of the district is the town of Beryoza. City of regional subordination - Beloozersk (founded in 1958, in connection with the construction of Beryozovskaya GRES). In the district there are 111 settlements, of which 16 have the status of agro-towns. In administrative terms, the district is divided into 11 village councils, 1 city council (Beloozersk city).

4.3.2 "My contribution to climate change project"

The project is implemented by the Partnership in Action Foundation, in partnership with the Beloozersk College of Electrical Engineering, the information centre for sustainable development of the city of Beloozersk and the Prometey Information and Education Centre of the Beloozersk College of Electrical Engineering with the purpose of conducting information and education work among the local population on climate conservation. In this project, the principle of partnership, equality is used. The core of the project lies in sharing your knowledge with others - participants of events in the Brest region (college students, the young people from the Brest region) will share the information they received with their parents, friends, and acquaintances in the course of the project, and those in turn with others. There will be a kind of snowball effect "My contribution to climate change".

Figure 12 **Local citizen filling in the questionnaire, *http://www.belfond.by/index.php/item/40-anketirovanie-zhitelej-mestnogo-soobshchestva***

The practical effect of processing branches of trees and shrubs into chips will serve as a pilot site for the introduction of this method in other parts of the Republic of Belarus. As an option, the creation of a production cooperative in the village from among the local unemployed could be established. The expected result is the creation of new jobs in the countryside, raising financial resources for rural residents, and processing waste.

Local authorities are interested in the development of the territory. Annual measures are planned for the improvement of settlements and the maintenance of the adjacent territory in proper sanitary condition. This project facilitates the establishment of partnership business contacts at the level of government, public organizations, institutions, the population to develop the local community.
Beloozersk is a city of power engineers. Beloozersk GPTK of Electrical Engineering educates specialists for the fuel and energy industry who must have knowledge of the use of alternative energy sources and energy-saving technologies to make a significant contribution to the development of alternative energy and environmental protection. Therefore, students and teachers have actively joined the international project on the use of resources and energy SPARE / SPARE, as well as the joint project of the European Union and the United Nations Development Program "Raising environmental awareness of youth through the establishment and development of" Green Schools in Belarus ".

The students together with the teachers developed a number of projects aimed at saving energy and resources, reducing CO_2 emissions by:

- upgrading electrical plate equipment,
- development and manufacturing of a solar collector,
- development and manufacture of a mini-spreader,
- development and manufacturing of a solar furnace with a reflector, etc.

According to statistics, due to the work by the students, the average consumption of heat and electric energy and 10% of water consumption were reduced by an average of 20%. At the level of a single consumer, the efficient use of energy brings not only a direct benefit in the form of cost reduction (saving energy is 4-5 times more profitable than generating the same amount of energy), but also reduces the amount of harmful emissions into the atmosphere.

The simplest ways of saving energy are available for everyone and can be applied virtually everywhere. But, unfortunately, a very small percentage (up to 1%) of the population of the local community is familiar with these methods and uses them.
The goal of the initiative is to create an operational training centre for the use of energy-saving technologies to promote ideas for energy and resource saving.
The system of the Beloozersk GPTKe's work on the formation of the resource and energy saving culture was awarded the Diploma of the 1st degree of the Ministry of Education of the Republic of Belarus at the republican contest "Energomarafon 2013", the Diploma of the 2nd degree of the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus and the Ministry of Education of the Republic of Belarus, School ", as well as Diplomas of the Department of Education.

Teachers of the college constantly share the accumulated work experience (delegation of teachers from the Brest region, Rivne and Lutsk regions (Ukraine), Gulbene region (Latvia), participation in the International pedagogical forum for teachers on the exchange of experiences "Energy saving and climate change in the school", etc.

4.3.3 The participatory process features

Involving the population in the process of saving fuel and energy resources at the local level, contributes to reducing the impact on the environment and gives an economic effect. So in the college, when implementing activities under the Alternative Energy program, the total consumption of electric energy was reduced by an average of 20%, and according to the program "Water - a precious resource" - by 20% water consumption. Savings will go to further modernization of equipment under the program "Resource and energy saving", as well as to modernize the established training centre.

By introducing energy and resource-saving technologies, we are reducing the consumption of hydrocarbon raw materials on an industrial scale, avoiding CO_2 emissions. Ecological situation in the region will be improved. And if this experience is extended to the whole of the Republic of Belarus, colossal ecological effects would be obtained along with the economic.

The established training center on the use of energy-saving technologies based on the Beloozersk GPTKe is the core for the popularization of energy and resource saving ideas in the Berezovsky district. In the future it will become a base for educational institutions of vocational education of Brest region, as well as schools of Berezovsky district. Hundreds of students will become agents of lean thinking about fuel, energy and material resources. The prospects, usefulness of this work should not be overestimated, because this project is practical in nature (introduction of best practices in resource and energy conservation). As part of the initiative, there was a large-scale exchange of experience, training of people on the ground - the creation of a training center for consulting, training and educating the environmental consciousness of the target group of this initiative.
All this could not but lead to:

- attracting public attention to environmental issues and climate change;
- promoting the ecology and attracting the attention of the population to the problem of environmental protection and safety of life;
- formation of ecological culture and moral qualities of project participants, necessary for improving consumer habits and transition to sustainable development.

Characteristics of the participatory process within the Project 'My contribution to climate change'
- Wide involvement of students, parents and the local community in the process of informing about saving the energy resources. - Practical application of the acquired knowledge. - Saving budgetary funds and protecting the environment.

The participatory process used the following tools:

Communication campaigns	X
Involvement of technicians and experts in direct interactions with participants	X

4.3.4 The outcomes achieved

Programs that were developed:

- "Alternative energy in the green economy" - for students, especially those studying to become electricians;
- "Smart home" - for different age groups of the population
- "Water is a precious resource" - for different age groups of the population
- "Economical consumption" - for people of retirement age.

Moreover:

- Teachers, environmental specialists conducted seminars, trainings on various aspects of resource conservation and environmental improvement in the educational institution and at home, in which more than 100 people took part.
- The information company covers about 30% of the local population. 500 copies of leaflets, brochures, leaflets on the effective use of FER for the population were published. The level of awareness among the local population of using alternative energy sources and energy saving technologies has been significantly increased.
- 50-70 people monthly develop their own plans for homeownership and reduce the consumption of electricity and other resources.
- More than 45 people took part in the competition of creative projects among students and teachers of the region "Energy saving is not economy, but reasonable consumption",
- Several Master classes organized master classes ("Waste to income, or we save together; "I am the masterful host")
- More than 200 people participated to the event "We vote for energy and resource saving"
- The exchange of experience on the issue of education, energy and resource saving culture in the form of a free microphone is organized.

Upon completion of the project, the saved budgetary funds of the Beloozero College of Electrical Engineering, envisaged for water consumption and water disposal, and energy costs will be directed to further modernization of water supply and energy saving, for the further introduction of modern energy and resource-saving technologies in the college buildings and the functioning of the training centre.

Successful experience in implementing the project is presented at the regional level by heads of educational institutions. Student's volunteers of the college - the project participants successfully shared information about the project on the scale of the Brest region. The local population was involved in the process of developing their own plans for homeownership and reducing the consumption of electricity and other resources. There has been a reduction in CO_2 emissions, improving the environmental situation and health of the local population. Wide awareness of other communities in the Brest region through:

- Placing information about the project on the college and project website;
- Newspaper articles in the local newspaper "Mayak":
- Presentation to the local community - multimedia lounge in the training centre.

At the end of the project financing, the work of the training centre on the use of energy-saving technologies to popularize the ideas of energy and resource saving will continue through budgetary financing, participation in the Energomarafon competitions, volunteer work of teachers and students.

4.3.5 Explaining linkages, lessons and shortcomings

People in rural areas are poorly informed, and in most cases do not know about climate problems, greenhouse gases, etc.

"I myself had to witness "wild processes" myself - my grandmother used a plastic bottle in the village to fire wood in the stove and this is not the onlycase. When you put things in order in the local area, they stacked tree branches, remnants of polyethylene film and other rubbish - all burned.

It's not their fault, they just put things in practice in their territories and do not have information about the serious consequences. Yes, it is impossible to solve this problem everywhere by one project, but to start and continue it, perhaps, especially with the involvement of young people.

In addition, thanks to such projects, more and more people around the world are decisively changing their way of life and everyday habits to more environmentally friendly and energy-efficient ones. People who are not indifferent to the issues of climate change and energy saving are becoming more and more.

Let our active participation in this project will become an impetus for each of us and the whole country to become more responsible in their words and deeds towards our planet." L. Beletskaya

The local authorities do not have the means and capacity to carry out climate change activities on the ground. Public organizations should more actively conduct information work with local residents.

4.4 Sustainable Energy Action Plan for Municipality of Polotsk 2011–2020 (SEAP) (Belarus)

Practice scorecard:

Title	'Sustainable Energy Action Plan for Municipality of Polotsk 2011–2020 (SEAP)'
Place	Belarus, Polotsk municipality
Type of initiative (programme, policy, project)	Policy
Period	2011–ongoing
Sector(s) addressed	Energy consumption, Green energy
Type of participatory process adopted	Co-design & co-production
Contact person	Katsiaryna Maslakova, Local Foundation for Promotion of International Dialogue and Cooperation "Interakcia", maslakova@eu-belarus.net

4.4.1 The context

Polotsk is a municipality in Northern Belarus, situated on the Dvina River. It is the centre of the Polatsk Raion – the second administrative level belonging to the Vitebsk region, with the population of about 80,000 people.

The interest of Polotsk for sustainable energy began in 2011, when the municipality became a partner in the EU-funded project SURE: Sustainable Urban Energy in the ENPI Region. Following that first engagement, on the 27th September 2011, the mayor of Polotsk signed the Declaration of Accession to the Covenant of Mayors.

With no previous experience in the field, Polotsk authorities organized educational visits to Germany and Spain and – thanks to the help of EU experts – set up the Polotsk Sustainable Energy Group (PSEG) for developing the Sustainable Energy Action Plan (SEAP) for the city. The PSEG included 15 members representing public authorities, experts and companies from energy-related fields. Interactions within the PSEG permitted to reveal contrasting stakeholders' interests, but did not create open conflicts.

Figure 13 Polotsk, Belarus

The process was a great opportunity for learning and permitted Polotsk to become a reference in Belarus. In June-September 2012, the municipality disseminated a special case study about its SEAP. In

deepening its experience on energy efficiency, Polotsk developed a Sustainable Urban Mobility week. This experience rapidly spread to other cities and towns in Belarus (up to now 23 Belarusian towns have signed the Covenant of Mayors).

The SEAP was developed in the frame of The Covenant of Mayors, one of the flagship initiatives of the European Union for engaging local and national authorities in reducing the volume of emitted CO_2. As mentioned, Polotsk was the first signatory of the Covenant in Belarus and the first Belarusian city to develop and introduce the SEAP. The plan is also consistent with the EU's 20-20-20 strategy that aims to cut CO_2 emissions by 20%, increase the share of renewable sources of energy by 20%, and boost energy efficiency by 20% by 2020. Finally, the development of SEAP contributed to the development of a Sustainable Urban Mobility Plan (SUMP) in Polotsk, the first mobility plan in Belarus.

4.4.2 Increasing energy efficiency in Polotsk: The Sustainable Energy Action Plan

Previously conducted energy analysis revealed that energy and electricity consumption in the city had been increasing over the last decade, with an average increase of about 2.78% per year. The Sustainable Energy Action Plan (SEAP) for the Municipality of Polotsk 2011-2020 tackles the issue by addressing both sustainable energy production and energy efficiency.

Figure 14 Light installations during the Energy days

In accordance with the obligations of the Covenant of Mayors, the objective of the Plan is to reduce CO_2 emissions by 20% per capita by 2020. This objective will be achieved by implementing measures on energy consumption and on the promotion of the use of renewable energy sources. The expected result is a reduction of energy consumption by 45,5% by 2020 (if compared with a scenario of growing consumption with no action delivered).

The SEAP establishes the following goals: increasing safety and diversification of energy supply, promoting sustainable development of the city's energy sector, making energy more affordable and optimizing prices on it. More operatively, the plan includes an energy audit for all municipal buildings in Polotsk and promotes a variety of actions to tackle energy efficiency. Among those: (1) installation of heat recovery HVAC systems in public buildings with high power installed; (2) modernization of the pumping equipment in boiler houses; (3) modernization of the heat supply network; (4) installation of wood chip boilers; (5) improvement of the insulation of walls and roofs; (6) replacement of ordinary light bulbs with energy-efficient ones; (7) introduction of LED technology in urban lighting; (8) development and implementation of the sustainable urban mobility plan.

Further, the Action Plan foresees the introduction of solar thermal facilities in sports centers, hospitals and municipal public buildings with high domestic demand of hot water. In addition, the municipality is considering the use of solar energy in all new municipal buildings with high demand of hot water which would mean significant reduction of fossil energy consumption with respect to the actual oil and gas-based water heating.

Figure 15 Opening ceremony of the bycicle lane in Polotsk

According to the preliminary estimations the required amount for implementation of the plan will be around € 9.9 million. Supposed sources of funding are: the municipal budget, the regional budget, national funds from the national energy saving programme and other sources.

The expected outcomes of the SEAP are: (1) to reduce CO_2 emissions by 20% by 2020; and (2) to reduce energy consumption by 15% by 2020. Presently, CO_2 emissions as well as energy consumption by 2016 was reduced 8% in comparison with 2010.

Actions included in the SEAP already delivered some relevant outputs:

- Development of the Sustainable Urban Mobility Plan (SUMP);
- Construction of the city's first bike lane;
- Preparation of the Lighting Development Strategy (which – among other actions – will permit in 2018 to substitute all street lighting with more efficient devices);
- Organisation of the festival of eco-friendly means of transportation - European Mobility Week (EMW), the first of its kind in Belarus;
- Organization of Energy Days during the European Sustainable Energy Week.

4.4.3 The participatory process features

Constitution of a steering committee to supervise the process	X
Some kind of selection of participants (random sample, target groups etc.)	X
Involvement of technicians and experts in direct interactions with participants	X
Constitution of a technical task force to support the collaborative process	X
Involvement of politicians and elected officials in direct interactions with participants	X
Constitution of a political task force to keep politicians updated	X
Election of delegates with control tasks	X
Vote as tool to take decisions into the participatory arenas	*X*
Communication campaign	*X*
Use of intrinsic rewards	*X*
Use of solidary incentives	*X*
Use of normative appeals	*X*
Adoption of assistance devices	*X*

The use of participatory tools regards the design, implementation and evaluation of the SEAP. Before its adoption, in fact, Polotsk executive committee organized public consultations on the plan draft, by setting up an online forum where residents were able to send their comments and discuss the draft. In the current implementation phase, citizens are involved in deciding strategies (such as the SUMP or the Lighting Development Strategy), planning interventions (such as the first bike lane of the city) and organizing awareness-raising festivals on energy-related topic (such as the European Mobility Week and Energy Days). Finally, the evaluation phase will also include active interactions with citizens through public surveys.

Figure 16 Awareness-raising campaign for schoolchildren in Polotsk

Foundation “Interakcia”, a non-governmental organization involved in EU-funded projects in Polotsk, closely cooperated with the municipality and was the promoter of the participatory approach. The use of participatory mechanisms was partly a requirement, in particular for the development of the Sustainable Urban Mobility Plan and of the Lighting Development Strategy, which were part of EU funded projects which explicitly foresaw forms of participation.

The SEAP explicitly acknowledge participation through several activities under the section “Work with the local population and stakeholders”. Such actions include both long-term working processes (as the Working groups for the SUMP and the Lighting Development Strategy) and single events (such as the Energy Days).

Overall, the participatory process involved local community members (bicycle communities of Polotsk and Novopolotsk, association of students-architects in Novopolotsk), public bodies (schools in Polotsk and Novopolotsk, Polotsk State University, Polotsk District Center of Children and Youth, Children’s Environmental Center in Polotsk), business (bicycle shop “Drive”, bike rental “LikeBike”, shopping centers “Manezh”, department store “Dom torgovli”), experts (Belarusian Research Institute of Urban Development, Belarusian Association of experts and transport surveyors) and mass-media (radio Europa Plus, online media Gorod214,by, 0214.by, ximik.info; local newspaper “Polatski Vestnik”, local TV channel “Sammit+”).

Figure 17 Public Consultation on the bycicle lane in Polotsk

Until now, different forms of participation have been implemented, such as public surveys, open voting, workshops, seminars and lectures, festivals and public events, and an architectural forum. Four interventions merit more in-depth analysis: the SUMP, the European Mobility Week, the Lighting Development Strategy and the Energy days.

The **Sustainable Urban Mobility Plan (SUMP)** was the product of participatory design in many respects. Before the SUMP elaboration began, the municipality run a public survey on the existing urban problems. More than 600 people responded and expressed their opinion on the main transport problems in Polotsk. The elaboration of the SUMP was supported through all its stages

by the Citizens Working Group (CGW), a body including local citizens, students specializing in architecture, local business and mass media. Its members were found through an online announcement and personal communication and were selected according to their expertise and experience. As a further means for participation, during the European Mobility Week in 2015 there was a SUMP pavilion, where citizens could ask experts in charge of drafting the document about the future urban development of the city.

Following the public survey for the SUMP, a demand for bike lanes emerged, and the municipality engaged in the project of the first bike lane for the city. The route was chosen through consultations with the local bicycle community whereas the Citizen Working Group was engaged in public control over the works (bikers from the CWG monitored the quality of the works).

Figure 18 Picnic in the European Mobility Week in Polotsk

The **European Mobility Week** was held twice in Polotsk: in 2015 and 2016. In 2015 online media group 0214.by conducted a survey on what people liked/disliked in Polotsk, and later created a mood board of the city. In addition, “mobile boxes” were installed in the center of the city, where residents could throw their proposals on how to make urban mobility more convenient and effective. A Car-free Day, held during the week, was marked by the competition for the most mobile school (in 2015 and 2016) and the most mobile organization (in 2016). In both cases children and workers were encouraged to use bikes instead of cars, and winners were awarded with a bicycle parking. In 2016, the Polotsk District Center of Children and Youth, and the Territorial Center of social services, took active part in yarn bombing, which resulted in knitted seats on a city bus in Polotsk. On the same year, students-architects made furniture for the City Picnic, which welcomed citizens with contests, workshops, lectures and music. Such activities were effective in getting citizens interested in mobility matters.

Figure 19 Students' in the Arch.Pro.Svet Forum in Polotsk

In developing the **Lighting Development Strategy**, it was decided to create an architectural forum – “Arch.Pro.Svet” – where 40 students-architects from all over the country generated ideas on urban lighting. Arch.Pro.Svet gave young architects an outstanding opportunity to interact with the customer (the city of Polotsk) and with residents directly. As a direct result of the forum, participants developed the decorative lighting of Polotsk, which will be part of the Lighting Developent Strategy. They decided several upgrading for the city lighting, such as gradient lighting guiding tourists to the city’s sights; the illumination of the entrance to the city and the most significant monuments, the construction of a cord sculpture illuminated with optical fiber for the city’s central fountain. This one-week forum cooperation was so effective and productive, that once it ended, the students organized another collaborative forum, the Center for Urbanism and Design.

In June 2012, Polotsk hosted for the first time the **Energy Days** campaign, held by hundreds of European cities as a way to draw attention to energy efficiency issues. From that year on, Polotsk has been welcoming the Energy Days each year, attracting attention of the locals to the problem of energy efficiency.

During this annual campaign local residents participated in bike rides, contests for schoolchildren and large families, trainings on energy saving. They got discounts on energy efficient household appliances and participated in a range of activities aimed at promoting energy saving. Energy Days 2015 are best remembered for the bike ride supported by the radio Europa Plus and gained no less than 1500 participants. In 2016, in addition to more traditional events, students of architecture and design at Polotsk State University, created 7 original lighting spheres from recycled materials. More than 200 Polotsk residents could enjoy the installation together with salsa and bachata lessons, covers of rock hits and poetry reading. Schoolchildren could participate in a video contest and theater performances encouraging their peers to save energy, competing for energy-efficient prizes. Finally, during one month, Polotsk residents submitted answers about their energy consumption habits. The results of this survey will be taken into account when planning further community outreach.

Figure 20 Concerts during Polotsk Energy Days

4.4.4 The outcomes achieved

The participatory approach was completely new to Polotsk. Accordingly, there was slight distrust on the part of both local citizens (it was difficult to find participants for the Citizens Working Group) and state authorities (who showed a certain passivity in participating). However, the participatory actions gradually gained trust, thanks to widespread communication of the initiatives through local media and progressive knowledge of the participatory approach. Such learning of participatory mechanisms is one relevant outcome of the process. Greater transparency and accountability by public authorities and improved quality of projects are reported as relevant outcomes by public bodies, who appreciated their increased ability to collect information and increase the legitimacy of their actions. On the part of citizens, the increased ability to influence decision making was certainly important and was a major driver in winning initial distrust. Interaction between public authorities and stakeholders created some conflicts, since different actors (e.g. the bicycle community and car drivers) had contrasting interests. However, conflicts were successfully dealt with and all actors learned to balance their position with respect to different interests.

4.4.5 Explaining linkages, lessons and shortcomings

The overall judgment on the activities related to the SEAP is certainly positive. Beyond the benefits outlined in the previous sections (greater accountability, development of trust, larger influence on policy making, effective conflict resolution), two lessons can be raised by the Polotsk experience, both linked to the need of winning distrust and disinterest.

First, decisions including citizens should be the object of constant attention. One-shot participation is hardly effective. People need to be made sure of the value of their participation and be reminded of the public decision at stake. In this respect, project longevity help maintaining attention and participation. An example in Polotsk was the organization of some participatory activities for deciding the bike lane route, and the set-up of additional participatory activities later for controlling the lane construction. Second, young people are easy targets for participatory activities, they are easily involved and feel rewarded by having a say on future projects. In this respect, they can be a good bridge to other – more distrustful – residents, who can feel more comfortable and reassured by seeing the commitment of their (young) fellow citizens and by interacting with them.

4.5 Program for energy efficiency in multifamily buildings (Bulgaria)

Practice scorecard:

Title	'National Programme for Energy Efficiency in Multifamily Buildings'
Place	Bulgaria, Gabrovo Municipality
Type of initiative (programme, policy, project)	Programme
Period	2015–ongoing
Sector(s) addressed	Energy efficiency in private buildings
Type of participatory process adopted	Co-production
Contact person	Tanya Hristova, civil servant, rso-csp@rso-csp.org

4.5.1 The context

Gabrovo is a city in central northern Bulgaria with around 60.000 inhabitants and it is the the administrative centre of the Province. Its population rapidly increased after the Secon World War: in ten years after the conclusion of the war the population almost doubled. A consistent amount of buildings have therefore been built in that period and it is cahracterized by a low level of energy efficiency and high energy consumption.

Figure 21 Gabrovo, Bulgaria

In the last 20 years Gabrovo municipality has been conducting an active policy in the sphere of energy efficiency, aiming at reduction of energy consumption and operating costs of buildings.

The municipal network for energy efficiency EcoEnergy was established in Gabrovo in February 1997, based on the initiative of 23 mayors.

An Energy Management Bureau was established to maintain and update a municipal energy data base including all municipal objects for energy consumption tracking since 1999 until now.

In 2007 Gabrovo Municipality became one of the pilot municipalities which took part in the so called "Demonstration project for rehabilitation of multifamily residential buildings", initiated by the Ministry of regional development and public works and United Nations Development Program. The project was realized in three phases (in 2007, 2008 and 2009). During each phase one building in Gabrovo, as well as its adjacent territory, was rehabilitated.

Regular information activities and campaigns for energy efficiency started in 2009 by organization of "Days of the Intelligent Energy". At a later time an Energy Efficiency Information Center was established in the administration (www.ee-infocenters.net) which provides up-to-date information about materials, products, equipment and technologies, relevant legislation, good practices and opportunities for energy efficiency projects funding.
Moreover Gabrovo joined the Covenant of Mayors in 2013 and elaborated an Action Plan for Sustainable Energy Development 2015-2020: the rational use of energy resources, energy

planning and energy independence are the key components of sustainable development policy of Gabrovo Municipality.

4.5.2 The 'National Program for Energy Efficiency in Multifamily Buildings'

Gabrovo Municipality is a partner of the National Program for Energy Efficiency in Multifamily Buildings that is an evolution of the "Demonstration project for rehabilitation of multifamily residential buildings". The programme started in 2015. Its main objective is to improve conditions in residential buildings by implementing energy saving measures that will result in energy savings over 40%; the programme covers the full costs of the rehabilitation works.
The participatory phase aimed to involve in the project the owners of the eligible buildings. Ten information meeting have been organized with an average participation of 50 citizens each one. 37 buildings were approved for rehabilitation in 2015 and Gabrovo Municipality managed to conduct public procurement procedures for all of the 37 buildings for the elaboration of investment projects, execution of construction works, supervision and investors control. After that the community interest in the programme increased significantly.

4.5.3 The participatory process features

The promoter of the participatory process was the Gabrovo Municipality. A technical team composed by managers and experts from Gabrovo Municipality and the Energy Efficiency Information Center with different competencies (lawyers, construction experts, financiers) was formed and it was a crucial actor for the good working process.

Figure 22 An information meeting

At first the technical team promoted a research aimed to identify the buildings that must be involved in the program due to their dimensions and other structural characteristics: 80 house managers and representatives of eligible buildings have been identified.

Ten information meetings (Figure 10) were organised in order to increase the level of awareness of the citizens on energy efficiency of buildings, to present the programme and the opportunities it offers and to stimulate an active adhesion to by the owners of the eligible buildings. House managers and representatives of eligible buildings who were previously identified were invited to take part to one or more of the meetings; at the same time all meetings were publicly announced, open and accessible to everyone willing to take part.

Members of the technical team or representatives of Gabrovo Municipality moderated the meetings, professional facilitators were not involved. During those informational meetings, the conditions, terms, possibilities and needed documents for participation in the programme were explained by the experts. Citizens received answers to all questions connected with financial or technical procedures they advanced. For example, questions about the responsibilities of the owners and the owners associations were answered during the discussion, also the implementation of the work projects and the presence of commercial premises in the buildings were discussed, etc. The participants were explained that the most cost-effective package of energy-saving measures will receive funding.
The citizens who adhered to the program were offered constant support by the technical team. The team in fact provided full administrative and legal assistance in preparation of the documents at each stage of the application until the procedure was finalized and the construction started.

The participation of the public meeting and the adhesion to the program were stimulated by a communicative campaign. The time, the date and the venues of the meetings were announced a week earlier through information leaflets delivered directly to the owners of the eligible buildings and through local media. A series of interviews in the local media delivered regular information about the progress of the programme, including the number of meetings held, the number of contracts signed and the stage of the construction. The participation in the programme was also encouraged through outdoor advertisings: video advertising on LED screens in the city and advertising and information materials on bus stops with high concentration of eligible buildings. The progress of the programme implementation was regularly presented on the internet site of the Municipality, where the investment projects for the buildings, their new outlook and pictures from the construction sites were also available. Aiming at providing publicity of the programme execution, Gabrovo Municipality developed a GIS application (Figure 11), which allows checking the status of all buildings on the territory of Gabrovo. With this GIS app, citizens can track any changes in the status of the buildings included in the programme itself - from the creation of the owners associations until the execution of construction activities and commissioning of the buildings.

Figure 23 GIS application

Characteristics of the participatory process

The participatory activities were organized through:

a) A preliminary study to identify the eligible buildings and the owners;

b) Informative meetings;

c) Support to citizens who adhered to the programme during the implementation phase;

d) Communication campaigns.

4.5.4 The outcomes achieved

During 2017 there were 185 buildings which have applied for rehabilitation and 165 concluded contracts between Gabrovo Municipality and associations of owners.

4.5.5 Explaining linkages, lessons and shortcomings

Gabrovo Municipality had the opportunity to establish new linkages and to share its experience with other organizations and municipalities adhering to the programs.
One of the main challenges was to overcome the prejudice about the programme and to promote active listening and constructive communication with the owners. During the implementation of the programme the technical team gained experience in this field and progressively improved interaction strategies and information tools.

4.6 Energy Wise, cross-country campaign "Energy Saving and Renewable Energy Sources" (Estonia)

Practice scorecard:

Title	Energy Wise, the campaign "Energy Saving and Renewable Energy Sources"
Place	Estonia, country-wide
Type of initiative (programme, policy, project)	Programme
Period	2009–2014
Sector(s) addressed	Energy efficiency, energy saving, renewable energy
Type of participatory process adopted	co-design & co-production
Contact person	Mr. Neeme Kärbo. Neeme.karbo@trea.ee

4.6.1 The context

Estonia is producing major share, close to 85 % of electricity from heavily polluting local energy carrier, oil shale. This has given the reason for seeking more sustainable ways of generating electricity, decrease the emissions of CO2 and other air pollutants, also save the land from future open-cast mining and sustain the natural environment. Due to extremely low final efficiency of using this fossil fuel for producing energy, the wider uptake of renewable energy sources, energy efficiency and energy saving gathered great popularity all over the country.

Figure 24 The country wide Energy Wise campaign covers entire Estonia, http://www.maps-of-europe.net/maps-of-estonia/

Energy efficiency has at least double edges. Beside of the improvement of energy generation efficiency and transformation from fossils to renewables, the consumption patterns are of extreme importance. Most of the energy is consumed for heating up the buildings. This is key issue in central and northern European countries. The majority of buildings in Estonia are still energy inefficient. Estonia uses two to three times more energy than the Nordic countries for buildings even though the average temperature in Estonia is somewhat higher. Based on the Energy Performance of Buildings Directive (EPBD, Directive 2010/31/EU) Estonia has the obligation to develop and implement measures to make the use of energy more efficient in existing buildings. Energy use is also, closely related with the behavioural habits of people. Widening the understanding of people about importance of energy saving via changing their every-day habits and taking care of their households' energy efficiency has been in the centre of attention of a number of institutions who were dealing with the issue separately from other similar organisations.

4.6.2 The energy efficiency policy campaign "Energy Saving and Renewable Energy Sources"

To merge the activities and efforts under the frame Energy Saving and Renewable Energy Sources (***Energy Wise***) an enthusiastic campaign was initially developed by The Credit and Export Guarantee Foundation KredEx[1] since late Fall 2008. The main campaign work under the Energy Wise was addressed to the introduction of grant guarantee conditions to housing associations for energetic refurbishment of multi-storey apartment houses. Kredex Energy Efficiency Consulting Centre carried out a two-week publicity campaign concerning energy efficiency "*Put your House In Order*!"

During the last decade many housing associations undertook the comprehensive improvement of their households with the financial assistance of KredEx. This has been the start for longer process all over the country. And the process is still ongoing! The Energy Wise activities have certain positive role to play in whole process. Since the start of campaigns many new directions of engagement of wider public were included to the agenda of the information dissemination campaign.

Figure 25 *Logo of the Energy Wise, the text on the logo says: saving energy is a smart act.*

Above all the activities of Energy Wise policy framework includes engagement of best energy generation experiences, information dissemination on modern alternative energy technologies, detailed buildings energetic refurbishment program, new isolation materials, ventilation systems to improve inner house environment, smart grids and smart sensors to save heat and electricity, monitoring of energy consumption in offices and at households, promotion of the use of renewable energy sources like biomass, wind and solar to make country-wide transformation to less carbon intensive economy.

KredEx asked a number of institutions to join the Energy Wise framework to spread the activities more widely and at the same time gather bright ideas for various activities all round a year. Each year some new stakeholders joined the Energy Wise activities. The participatory process has given positive results. This made the campaign challenging to people with the most different interests. Thus, the relatively wide engagement of people was performed. The campaign which started with some single week-long demonstration sessions only in some bigger towns in Estonia step-wise grew over to permanent information dissemination via the Internet based portal thus engaging more and more active followers.

One of the Energy Wise targets has been changing people's common habits in energy consumption and shifts their consumption patterns to more sustainable one.

The republican-wide campaign Energy Wise, "Energy saving and Renewable Energy Sources" is in good coherence with governmental energy and climate policy frameworks.

4.6.3 The participatory process features

The participatory process started in line with the opening of financial assistance by KredEx to housing associations in 2008. It hasn't been easy task to convince the dwellers of multi-storey

[1] KredEx, a governmental agency, provides grants for installing renewable energy generation installations for private households (solar panels, wind generators, heat pumps, etc.) and also, for energetic refurbishment, as well as guarantees for loans for reconstruction of multi-storey apartment houses to improve their energy efficiency. http://www.kredex.ee/en/apartment-association/toetused/rekonstrueerimise-toetus/

houses to accept the novel approach related to the comprehensive energetic refurbishment. Meetings of dwellers reflected the most different attitudes of the people living in the same block-house. However, to start the renovation, common position for making the decisions had to be achieved. This put a challenge to KredEx to get good specialists on board to get the people convinced in the necessity of renovation of the inefficient block-houses.

The main goal of the campaigns was to increase the awareness of people living in apartment buildings concerning energy saving via energy efficiency, drawing their attention to the fact that by renovating an apartment building one can significantly lower the heating expenses. Estonian building stock is in main part energetically inefficient. In form of seminars many civil engineers and scientists took floor and explained the urgent need for energetic refurbishment of multi-store houses. On the very first seminar in 2008 the lecturers were from the Tallinn University of Technology and from the Estonian Society of Heating and Ventilation Engineers[2]. From year to year the team of engineers and technically well-orienting people engaged in the Energy Wise campaign grew significantly. The same could be said about the various business stakeholders' engagement. Enterprises realised the endless field of business, and therefore very actively participated in the campaign to promote their products and know-how.

The current work in the frame of Energy Wise campaign has a specific feature, it is targeted to the engagement of a maximum number of stakeholders and beneficiaries. The maximum number of followers of the campaign issues is raising right before the week starts in late Fall.

The Energy Wise campaign week traditionally takes place in second week of November and from year to year the targeted sessions – seminars, competitions video shots, electrical cars and biomethane fuelled vehicles, solar panels, building energetic refurbishment demonstrations, etc., started to be permanent activities in the agendas of campaign sessions.

The campaign week usually is adjusted with the traditional republican conference TEUK (the full title in translation is - Investigation and Usage of Renewable Energy Sources) organised by Estonian University of Life Sciences in Tartu. The conference celebrates its' 19th anniversary in 2017. Each year one most acute issue at the time is chosen out to concentrate in particular, let it be energy or climate policy or just some specific range of topics e.g. wind or solar energy developments, EU renewable energy policy, building envelope energetic refurbishment, new energy efficient isolation materials, etc.

The proceedings of the conferences are printed and distributed free of charge to participants of the conference and are available also in web[3], Publishing the results on web is an efficient opportunity of engaging wide range of universities' and high schools' students to energy related topics. Massive engagement of younger generation has resulted in great interest to energy efficiency and renewable energy sources usage. University students receive their valuable knowledge about the real problems and solutions reflecting the latest trends in climate and energy policy and technological developments.

In the policy frame Energy Wise many sub-campaigns have been organised. One of the examples has been the campaign "*Back to school*", which became most popular amongst elementary school pupils also gymnasium students. Volunteers from Tallinn Technical University, electricity utility companies like Eesti Energia AS, environmental policy research institutes like SEI Tallinn, The Estonian Union of Co-operative Housing Associations, Tartu Regional Energy Agency, Tallinn Energy Agency, Swedbank (giving the loans to renovation works), Environmental Investment Fund

[2] Information on first campaigns on KredEx web-page at: http://www.kredex.ee/en/kredex/news/18258/
[3] See the web-page at: http://tek.emu.ee/teuk-konverentsid/teuk-kogumikud/.

et al. gave the 45 minutes lessons in schools all over the country. The latter initiated one more significant campaign in 2014 - the competition in basic schools “Energy saving in your school”.

The organising team of the campaign consists usually of around ten organisations’ representatives, see below:

At the same time many stakeholders could be listed who assist on the voluntary basis the Energy Wise campaign. E.g. in 2013 the stakeholders were:

Characteristics of the participatory process

- Very active guidance seminars, consultations and discussion sessions by technicians, economists and environmentalists have been involved since the very beginning of the Energy Wise practices. This formed a wide range of tasks related to the energy efficiency topics.
- Close cooperation with universities, technical experts, research institutions as well as businesses guaranteed the wide variety of important aspects related to energy efficiency;
- Involvement of the politicians helped to spread the major ideas of the renewable energy and energy efficiency policy basic ideas around wide circle of people all round the country as the politicians wanted to demonstrate the most novel positions for their success sake;

- Various information activities to introduce the comprehensive energetic refurbishment of buildings to housing associations dwellers' helped raised the level of understanding of the energy efficiency and involved more people to agree with the proposed plans;
- People started step-wise to understand the whole long term process of renovation of buildings and the positive results of it;
- Information dissemination on the energy efficiency and renewable energy policies involved all age groups of the population starting from kindergarten, basic schools, gymnasium, universities, dwellers and private house owners and elderly people. This could be considered one of the most considerable result of the Energy Wise program.

The participatory process used the following tools:

Communication campaigns	**X**
Involvement of technicians and experts in direct interactions with participants	**X**
Constitution of a stakeholders' steering committee to supervise the process	**X**
Adoption of the unanimity rule to take decisions into the participatory arenas	**X**
Facilitation and conduction of the process by external professionals	**X**
Involvement of politicians and elected officials in direct interactions with participants	**X**
Use of intrinsic rewards	**X**
Some kind of selection of participants (differentiation of target groups etc.)	**X**

4.6.4 The outcomes achieved

The challenge of the Energy Wise policy campaign has been to engage maximum number of potential participants, to disseminate the relevant information on renewable energy usage options, possibilities of energy saving and energy efficiency to most wide groups of habitants all over the country. To demonstrate the raise in active following the Energy Wise web page, the following diagram (see below) is presented from year 2013 during a week 9. – 19. November. On the horisontal axis the dates in November are exposed and on the vertical – the number of clicks to Energy Wise web page. During the 11th day the activity level of people was significantly higher compared to other days in the given period.

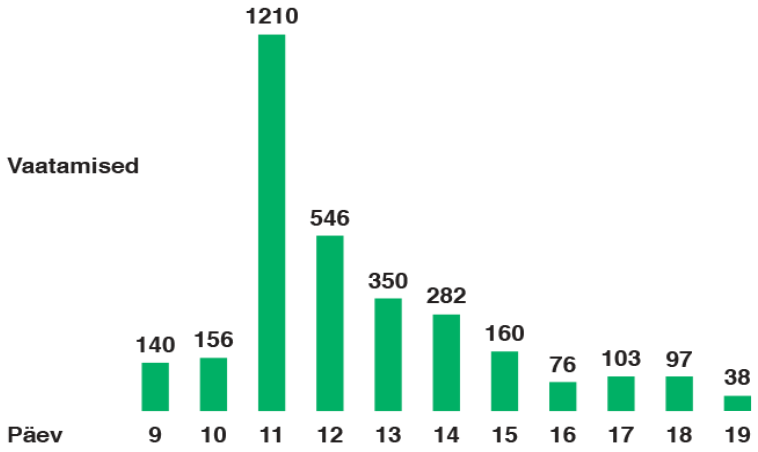

Figure 26 Source: Energitark.ee; website administrator access by Neeme Kärbo

The printed special issues on Energy Wise week have been popular. The print numbers reach as the following; in Estonian language – 50 thousand copies, in Russian – 18 thousand copies. A number of TV channels have been engaged with the topics, also radio channels and Facebook.

During approximately a decade a new generation of young people has grown up and today they carry forward these sustainable energy oriented ideas. In the photo below a young PhD student in Tallinn University of Technology being active participant of the renewable energy wide campaign,

built a solar PV panels based station with 177 kW rated power in his farm land in 2016. Many more positive examples of engagement gymnasium and university students could be brought.

Figure 27 Laastu Solar Energy Park, Photo by Tiit Kallaste

In Estonia the renewable energy wider uptake has been boosted nearly a decade ago. No doubt, its' positive role has also the Energy Wise policy framework. Via voluminous information dissemination work all round the year, weekly campaigns in each November, seminars and conferences, TV-, radio- and printed media involvement have activated both the private and public sectors. The renewable energy and energy efficiency started to be in the centre of attention of many people. The consumption of renewables based electricity generation comprises ~17% in 2017. Solar energy received the biggest challenge. Since 2011 when 0.2 MW of solar based generation was built, fast growth has been happened. In 2013 the number was 1.3 MW already, in 2014 – 3 MW, in 2015 – 7 MW and in 2016 – approximately close to 10 MW has been installed. 750 micro- and bigger generators receive the feed-in tariff. During the II quarter 2017 the generated and fed into grid 2.2 GWh of solar based electricity. The total generated electricity is estimated to be 4…5 times higher as the main share of electricity is consumed by the PV panels by themselves at site.

The first solar PV panels based electricity generation station with rated power of 107 kW, following the sun movement was built in Sõmerpalu, in South of Estonia in 2014. This has been an experimental solar station comprised of 11 *tracker* towers allowing 45% increased yield via using MLD Technology DEGER tracker compared to fixed frame of PV solar panels.

Figure 28 Solar Energy Park, Photo by Tiit Kallaste

These single examples serve like a good example of the information dissemination result where the most novel knowledge has picked up by enthusiastic stakeholders including also the young generation. It should be pointed out that the conceptual and organizational development of the Energy Wise incl. Energy Savings Week has been based fully on voluntary work. Wide engagement of stakeholders has guaranteed the successful participatory model.

Explaining linkages, lessons and shortcomings

The challenge of Energy Wise policy framework has been to involve maximum number of potential participants, to disseminate the relevant information on energy saving and energy efficiency to most wide groups of habitants all over the country. The conceptual and organizational development of the Energy Wise framework, incl. Energy Saving Weeks has been based fully on voluntary work. The organisers of the campaigns and energy saving week took the task enthusiastically and performed as well as they could. To demonstrate the big number of partners helping to conduct the energy saving week, see the web-page of Energy Wise; http://energiatark.ee/uritusedkaaskorraldajale2/energiasaastunadala-kaaskorraldajad/ where the partners are listed up. Thanks to high level of responsibility of organisers, these activities were always of great success and create a lot of new opportunities for people interested in those matters.

4.7 Renovation of Rakvere Rohuaia Kindergarten (Estonia)

Practice scorecard:

Title	Rakvere Rohuaia Kindergarten
Place	Rakvere city, Lääne-Viru county, Estonia
Type of initiative (programme, policy, project)	Project
Period	2014–2015
Sector(s) addressed	Energy efficiency of public buildings
Type of participatory process adopted	co-design
Contact person	Ene Nool, ene.nool@rla.edu.ee

4.7.1 The context

Rakvere is a town in northern Estonia and the county seat of Lääne-Viru County, 20 km south of the Gulf of Finland. Rakvere Rohuaia Kindergarten (formerly known as Rakvere City Elementary School) is located in Rakvere, Kukeküla district, Posti Street 29. After the renovation of the building to the nearly zero energy building (2013–2015), kindergarten operates as a 11-group kindergarten. The main activity is to keep children from 2–7 years of age and to enable early childhood education. The mission of the kindergarten is to create opportunities for the diverse and consistent development of children. Together with the parents, environment is created to raise vivid, rebellious and open minded people.

Figure 29 Location of Rakvere, https://et.wikipedia.org/wiki/Rakvere

4.7.2 The renovation project of Rakvere Rohuaia Kindergarten

The process of kindergarten renovation funding was started by The Rakvere town's administration. In 2009–2010 a project was drafted, which was submitted to Estonian-Swiss project collaboration contest[4]. In order to achieve the best results both structurally and functionally, the employees of the kindergarten were immediately involved to the process of the project. As this project was a renovation of an existent building, the facility was already known to people. During the planning phase, the employees could make suggestions about the function and location of the rooms. The aim of the Estonian-Swiss cooperation program was to support the

Figure 30 Rakvere Rohuaia Kindergarten, Source: http://www.te.ee/est/objektid/2015/rakvere-rohuaia-lasteaia-ehitustood

[4] More about this project: http://www.fin.ee/shveits

reconstruction of the Rakvere kindergarten in order to build an energy-efficient kindergarten building and as such:

- Reduce the CO2 emissions;
- Increase the energy efficiency of the building;
- Improve the human environment by promoting energy-efficient buildings.

The building was designed by A.V.R. Project OÜ, architect Raul Kull. On 7th of April 2014 public procurement was announced in order to find the main contractor for the construction of the Rohuaia nursery, which happened to be AS Tartu Ehitus. On 4th of August the construction works started.

4.7.3 The participatory process features

The kindergarten employees were included during the preparation phase and as such they could have their voice represented in the design phase of the building. Throughout the entire renovation process, information was shared to the people involved with the kindergarten (children, parents, citizens). The director of the kindergarten participated in the Estonian-Swiss collaboration programs` contract signing event. After signing the contract the director took part of planning and building meetings which were organised weekly. The project was introduced and information about the construction was presented by the director during the nurseries`` staff and parental meetings. Also, other nurseries and their employees were interested in this project e.g. 2013 visit form East-Virumaa nurseries' management (leaders).

Characteristics of the participatory process

- *Guidance from colleagues from other nurseries what to take into consideration and bring attention to;*
- *Staff meetings organized to specify the project (location/placing and functionality of the rooms);*
- *Parental meetings to introduce and engage parents into the process;*
- *Children went to 'study tours' to see the renovation process of the kindergarten;*
- *Colleagues from other educational institutions from Rakvere came to set the cornerstone during the opening event; whilst doing so, they got informed about this project as a low-energy efficient building.*

The participatory process used the following tools:

Communication campaigns	**X**
Election of delegates with control tasks	**X**
Involvement of politicians and elected officials in direct interactions with participants	**X**
Some kind of selection of participants (random sample, target groups etc.)	**X**

4.7.4 The outcomes achieved

The Rakvere town administration is satisfied as they now have a modern example of energy efficient innovative building, which provides professional service and brings a lot of visitors to the town. Thanks to the renovation of the kindergarten building, sustainability is part of the educational system. Through different events, organized for the kids and parents, community can be now reached as a whole. Kids are taught to act in a sustainable way (sort garbage, avoid using plastic dishes, grow plants, learn how to compost etc.) Plenty of events such as plant fairs, kids' cloths exchange events and flea markets are organized. Also Rakvere College of the Tallinn University and its' students are involved since they work in the kindergarten for communal involvement for their studies.

The kindergarten was one of the "sculpture kilometre" projects venue in summer 2016. The benefits of low-energy building are presented to numerous visitors (employees from other kindergartens, representatives of local governments, visitors of the town). The modern solutions make it possible to monitor the building's energy consumption from the computer. We have an overview on heath consumption, solar powered energy, ventilation system and water consumption. Technically advanced monitoring of the functioning of energy efficient building allows us to follow the whole energy system of the kindergarten and to make adjustments when necessary. The building sets an example as a "green educational institution" that through its activities can bring joy and benefit to both children and parents, and sets an example to other educational institutions.

The method of participatory process made the involved stakeholders satisfied. This 'satisfaction' was measured through a questionnaire filled in by parents and the employees in spring 2016. The employees of the kindergarten were pleased to be involved and engaged in the renovation process. They had an opportunity to express their opinion during the entire planning phase. Today, after the renovation has finished, the staff is emotionally more involved and are helping to introduce and present the building and functional rooms to numerous visitors. The parents are more engaged with the kindergarten because they know more about the condition of the building than other citizens. Some parents were even part of the building process of the kindergarten.

4.7.5 Explaining linkages, lessons and shortcomings

The building has a number of modern water saving options (photocell faucets, aerators) but at the same time the water is used to water the flower beds. The building does not have a cooling equipment (energy saving) and therefore the roof eaves are very wide. These in turn obscure the direct sunlight in the rooms of the second floor. According to the yard design, the flowerbeds were foreseen by the wall of the house. Yet due to the wide eaves, the rainwater does not reach the flowerbeds. In order to solve this, the rainwater collection and watering system needs to be developed. As for the future, a rather large database will be collected such as about the solar energy generation and consumption, the monitoring of water and heating (separate radiators, ventilation, floors) costs. The different ways on how to use this data will be evaluated (for instance for the students to study, comparison with the Rakvere Smart House Competence Centre etc). Excursions are held in the building during what the visitors can hear about the energy saving solutions. The next step could be a web application on a kindergarten website that provides information on the everyday saving solutions in the kindergarten building and references to the energy saving computer games.

4.8 Rõuge Parish Energy Development Plan 2020 (Estonia)

Practice scorecard:

Title	Rõuge Parish Energy Development Plan 2020
Place	Võru county, Rõuge parish, Estonia
Type of initiative (programme, policy, project)	Policy
Period	2011–2020
Sector(s) addressed	Wind energy/ Renewable energy
Type of participatory process adopted	co-design & co-production
Contact person	Viivika Nagel, viivika@rauge.ee

4.8.1 The context

Rõuge Parish is a rural municipality of Estonia located in Võru county. The area of the municipality is 263.7 km^2 (26 372 ha), including 5527 ha of arable land, 2246 ha of grassland and 15 235 ha of forest land.

Figure 31 Rõuge Parish, *https://en.wikipedia.org/wiki/R%C3%B5uge_Parish*

The need for preparing a new Rõuge Energy Plan arose because the previous energy strategy of Rõuge municipality was heavily out-dated (it was drawn up in 2002), consisting of old data and the goals in it being either fulfilled or outdated. The development of the Rõuge Energy development plan 2020 was initiated in 2010 within the INTERREG IV project „PEA – Public Energy Alternatives“ where Rõuge municipality participated among 21 different partners from Baltic Sea region.

4.8.2 Rõuge Energy Parish Development Plan 2020

The new energy strategy was developed between 2011–2012 and mapped the municipality's energy management from its development phase onward. It also sets the energy-related action plan for the future years up to 2020. One of the most important topics was the technical infrastructure; Rõuge municipality is open to new technologies and renewable energy resources that promote decent living and engage a wide range of population.

The other important expectation of the strategy was better planning and systematization of the whole energy sector in Rõuge municipality.

The new Rõuge Energy Strategy 2020 covers the entire municipality's energy management, description of energy resources, etc[5].

The development plan gives an overview of the Rõuge municipality energy systems, the investments what the local municipality has made in terms of the energy sector, an overview of the municipalities energy management (heating systems, electricity supply, street lighting), an overview of the energy potentials and renewable resources and the exact implementation guidelines of the Rõuge Energy Development Plan 2020.

4.8.3 The participatory process features

The Rõuge Energy Strategy 2020 was compiled in cooperation of the municipal government, the foundation Rõuge Energy Centre, the local communal utilities company, the village's leaders, housing associations, the foundation Tartu Regional Energy Agency, the Energy Department of University of Life Sciences etc. The expert from Tartu University, Antti Roose, was responsible for the whole process of writing the strategy.

The municipal government and the Tartu University expert were responsible for compiling and final editing the strategy; the others were included as members of working team. Their role was either to describe their experiences and needs (the locals), or advising and reflecting the situations as independent bystanders (the University of Life Sciences, the energy agency). Two public meetings for the municipality people were announced to collect the information and opinions, yet the participation was low. This was partly due to the fact that the working group of the development plan was already very wide-ranging consisting of different stakeholders such as the employees of the municipality who are at the board of the apartment associations; the employees of the OÜ Rõuge Public Utilities who are the house owners themselves etc.

The development plan was introduced to the public before its official adoption, however no additional proposal were made. Data was gathered from the local utility companies, less from the apartment associations. A big part of the data came from the subunits and institutions of the municipality. Whilst collecting the data, it was regularly admitted that the data should be gathered more regularly and systematically.

Characteristics of the participatory process

- Promoter was the Rõuge Municipal Government. In 2010−2012, a number of meetings were held, which according to their importance, involved either experts and the municipal government, or just the whole working group. The most effective method for collecting the data was on-spot visits and interviewing the stakeholders. Collecting the data by asking to fill in the forms or answer the e-mails, was not effective in that certain case.
- The participation process was promoted during the work group meetings; when preparing the document; collecting and transferring data.
- The involved parties were the people and institutions that predictably had the interest in that topic: Participation was also announced at the local newspaper.
- Actors involved were: Municipal government, the foundation Rõuge Energy Centre, the local communal utilities company, the village leaders, apartment associations, the foundation Tartu Regional Energy Agency, the Energy Class of University of Life Sciences etc. The expert from Tartu university, Antti Roose, was responsible for the whole process of writing the strategy.

The participatory process used the following tools:

Constitution of a stakeholders' steering committee to supervise the process	**X**
Facilitation and conduction of the process by external professionals	**X**

[5] http://rouge.kovtp.ee/documents/822972/3933747/R%C3%B5uge+valla+energia+arengukava+2020.pdf/02c9f4f5-002a-41ce-bbaf-310798bc97f0?version=1.0

Involvement of technicians and experts in direct interactions with participants	**X**
Involvement of politicians and elected officials in direct interactions with participants	**X**
Communication campaigns	**X**

4.8.4 The outcomes achieved

As a result of the process of preparing the plan, a sectoral development document covering the whole sector was prepared which gives the municipality directions in the field of energy. The development plan is the basis for the larger municipality energy development plan which will be formed after the administrative reform taking place at the end of this year. During the working process, a group of people from the municipality and the community were formed with whom energy related issues can be discussed also in the future and developing and implementing such projects. The activities fulfilled during the years 2012−2017 were:

- Renewing the heating systems of public buildings (The municipality government house is heated with ground source pumps since 2014);
- Installation of different renewable/sustainable energy devices (there is a 10 kW PV station which produces the electricity to municipality government house);
- Installation of solar collectors to provide warm water for public buildings (since 2012, the Rõuge nursing home is equipped with solar collectors);
- Reconstruction of the public lightning system at Rõuge village (2013);
- Installation of the public lightning at Rõuge Park (partly in 2013);
- Building and renewing the public lightning in Viitina village (2016);
- Installation of public lightning at Sänna village and Sänna Culture Manor (2017);
- Installation of public lightning at Nursi village (partly in 2016; to be continued in 2017);
- Developing the Energy Track and Energy Class, installation of new devices, purchasing new equipment (partly in 2013; an amount of activities is planned in Est-Lat ENPI Programme project in 2017−2018);
- Installation of underground electric cables and different voltage correction activities with the cooperation of national grid agency and electric company (continuous);
- Installation of electric cars charger (2013).

4.8.5 Explaining linkages, lessons and shortcomings

The main contradiction to point out was the fact that a big part of working team did not actually realize the need for such a document as they found that the topics were perfectly covered within Rõuge municipality's general development plan. Especially so as the municipality had already had an experience with such document for almost ten years earlier and they found that the previous strategy had not fulfilled its role as expected. In situations where the energy-related topics were successfully discussed within the municipal general development plan, it was challenging to explain the importance of composing such document to local stakeholders (except the municipal government).

The energy development plan has been revised and updated in every two years in a smaller working group, most of which is already presented in the general development plan of the municipality. In terms of the future obstacles, due to the administrative reform coming up at the end of this year, the municipality borders will be extended 2,5 times, meaning that most probably the development plan needs to be updated accordingly.

4.9 REFURB 2.0: REgional process innovations FoR Building renovation packages, opening markets to zero energy renovations (Estonia)

Practice scorecard:

Title	REFURB 2.0: REgional process innovations FoR Building renovation packages, opening markets to zero energy renovations
Place	City of Tartu, Estonia
Type of initiative (programme, policy, project)	Project
Period	2016–2021
Sector(s) addressed	Energy efficiency of private homes
Type of participatory process adopted	Co-design
Contact person	Mr Martin Kikas, Member of the Board, martin.kikas@trea.ee Mr Kalle Virkus, Energy Expert, kalle.virkus@trea.ee

4.9.1 The context

Tartu is the second largest city in Estonia, situated 186 kilometres southeast of Tallinn, the capital of Estonia. The biggest influence to Tartu's **housing sector** comes from moral and physical aging of multi-apartment buildings constructed in the Soviet era up to the beginning of 1990s.[6] The renovation of these buildings, now owned by apartment associations, is still in its early stages and it needs stronger support in order to maintain the constructional integrity of the houses and to increase their energy efficiency.

Figure 32 Location of Tartu

As these houses are privately owned, the city can facilitate the renovation via awareness raising, dissemination of best practices and providing better inspection and consultancy. This is also an underlying core principle of the **European Union Horizon 2020 project REFURB**[7] in which Tartu is one of the participating cities. The objective of the project is to **provide the homeowners an easy access to buildings renovation service** with all the necessary know-how on energy efficiency of buildings and to connect them with experts in all steps of the process.

Photo: Kalle Paalits, www.tartu.ee

The project contributes to the achievement of energy efficiency targets at the national as well as at the local level. The latter was set by Tartu when the city joined the Covenant of Mayors in 2014 – **to reduce 20% of energy consumption in the housing sector by 2020**. One of the

[6] Sustainable Energy and Dwelling Management Program of City of Tartu. Tartu Regional Energy Agency 2011, http://www.trea.ee/pagas/SEE_Programm_2011.pdf

[7] http://go-refurb.eu/

measures to reach the target is the renovation of houses, for which the city of Tartu has taken on a task to facilitate the renovation of housing to the energy efficiency level C or B.[8]

4.9.2 The project 'REgional process innovations FoR Building renovation packages, opening markets to zero energy renovations'

The main goal of the project 'REgional process innovations FoR Building renovation packages, opening markets to zero energy renovations' is **increasing energy performance of existing buildings through process and organisation innovations** and creating a market for deep renovation. The expected energy savings as a result of renovation and raising quality of houses would be at least 25 GWh/year per million EUR of EU support.[9]
However, European private housing sector is seriously lagging behind in increasing its energy efficiency. Since more than sufficient **technological solutions are available**, there is a need for removing non-technological barriers and bringing the supply side closer to the demand side.

According to the project summary, the main barriers in this market relate to fragmentation of the renovation offers, resulting in inefficient or only partial solutions. In addition to financial restrictions and unclear benefits, homeowners do not have a structured way to obtain all the necessary information related to renovation measures and they get lost along their journey towards a future-proof dream house, drop out and lose their interest in investing in their home.

In order to tackle these barriers, REFURB undertakes the following activities:

- Developing a **holistic approach to the renovation process** (so-called one-stop-shop for customers) in which technology combinations trigger step-by-step deep energy renovations towards Near Zero Energy Building standards.
- Accommodating the technology solutions to the decision-making psychology and 'language' of residential homeowners; this will provide the drivers for **empowerment and mobilization of homeowners** for deep renovation.
- Developing a **quality and performance protocol** to build trust on the demand side.

The project is financed from the coordination and support action funding scheme of Horizon 2020 programme and **managed by VITO**, Belgian research and technology organisation in the areas of cleantech and sustainable development.

4.9.3 The participatory process features

The participatory process was a voluntary activity during the mapping phase of the project. The promoter has been **TREA, Tartu Regional Energy Agency**, founded in 2009 to promote sustainable energy and energy management in the region, and who is the Estonian partner in the REFURB project.
Participatory activities aimed at including the demand side needs and expectations into the renovation service design. For that purpose discussions with apartment associations were organised. The focus of the project is on communication with the owners of apartment houses and advising them in full renovation of the houses.

[8] Action Plan for Sustainable Energy Management 2015–2020 for the City of Tartu, http://www.tartu.ee/sites/default/files/uploads/Linnavarad/Saastev_tartu/Energiamajanduse_tegevuskava(sisestamisekks).pdf
[9] REFURB Report Summary, http://cordis.europa.eu/result/rcn/196378_en.html

In Estonia, the requirement of full renovation is a condition for receiving financial support from the Estonian state-owned foundation Kredex. Therefore, the main role of REFURB support persons is to offer technical consultation for apartment associations.

In the next project phases, user satisfaction survey among the project target group will be carried out.

Characteristics of the participatory process within the project 'REFURB' in Tartu
The first phase started in the second half of 2015 when the supply and demand side of the buildings renovation was mapped and discussions with apartment associations were organised.
In the second phase, an analysis was carried out and basis of the service was developed.
In the third phase the participatory process will include user satisfaction survey.

The participatory process used the following tools:

Some kind of selection of participants (random sample, target groups etc.)	**X**
Involvement of technicians and experts in direct interactions with participants	**X**
Constitution of a technical task force to support the collaborative process	**X**
Communication campaign	**X**

4.9.4 The outcomes achieved

Since the project is not completed yet, it is too early to draw conclusions on the outcomes. However, it is already clear that Estonian and Central-European situation in the type and property of dwellings is totally different. In Estonia, 97% of dwelling is owned by private persons and 75% of homes are apartments. The needs and problems of these apartment buildings are quite similar all over Estonia. Hopefully the REFURB project experiences can be used in the renovation of other types of housing stock, such as detached houses and those apartment buildings for which private banks do not grant a loan and therefore are not eligible for the Kredex financial support.

4.9.5 Explaining linkages, lessons and shortcomings

Besides REFURB there are other projects and initiatives ongoing in Tartu in which the city is participating in order to transform the city centre into a smart, energy-efficient district – see also SmartEnCity project description. Thus, it has been possible to create synergy between the activities with similar aim – for example, the REFURB project could use the same housing energy data, which was gathered in the SmartEnCity project. The target group of the two projects are the same apartment buildings of Tartu (22 houses).

4.10 PANEL 2050: Partnership for New Energy Leadership 2050 (Estonia)

Practice scorecard:

Title	PANEL 2050: Partnership for New Energy Leadership 2050
Place	Estonia
Type of initiative (programme, policy, project)	Project
Period	2016–2019
Sector(s) addressed	Energy efficiency of public and private buildings
Type of participatory process adopted	Co-design & co-production
Contact person	Mr Marek Muiste, Project coordinator, marek.muiste@trea.ee

4.10.1 The context

The European Union is committed to reducing greenhouse gas emissions to 80–95% below 1990 levels by 2050. To reach this goal, the European Commission has developed the **Energy roadmap 2050**[10] **and the Roadmap for moving to a competitive low carbon economy in 2050**[11] which give directions towards a future European energy system and cost-efficient pathway to a cleaner, climate-friendly and competitive European economy.

Figure 33 Location of Tartu

The Commission invites Member States to develop national as well as regional policies for achieving the low carbon economy by 2050. The Energy Roadmap acknowledges that **the role of local organisations and cities** will be much greater in the energy systems of the future, since a shift in energy consumption towards low carbon and locally produced energy sources and renewable energy is needed. In Central and Eastern European (CEE) countries, however, the **networks of energy stakeholders at local level** are almost completely absent and therefore additional support is needed for the creation of the first successful networks that have a potential to set an example and a new standard for local energy road mapping in other local communities of the CEE region. Introducing stakeholder concept to energy planning will help generate sustainable energy policies and create more sustainable future for Europe.

4.10.2 The project 'Partnership for New Energy Leadership 2050'

The main goal of the PANEL 2050 project is to support CEE communities in transforming into low-carbon economy with the help of local frontrunners. The project helps partners to **create durable and replicable sustainable energy networks at local (municipality/community) level**, where relevant local stakeholders collaborate for the creation of local energy visions, strategies and action plans for the transition towards low carbon communities in 2050.[12]

[10] COM/2011/885, https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/2050-energy-strategy
[11] COM/2011/112, https://ec.europa.eu/clima/policies/strategies/2050_en#tab-0-0
[12] Project information on CORDIS, http://cordis.europa.eu/project/rcn/200158_en.html

These networks are created in a number of local communities in different CEE countries, serving as a replicable example that can be spread to other communities in CEE countries. The networks consist of **all relevant and available stakeholders related to sustainable energy at the local level** in order to involve them into the local policy development and implementation. The number and type of stakeholders, however, varies very much according to the local conditions. There are regions from few dozen thousand of inhabitants up to million inhabitants in the project. Also, as the regions have different needs in the process of decarbonisation, the regional partners have to adapt the methodology, including stakeholder egnagment methods, to meet the needs of local stakeholders. For example, in Estonia the target area for stakeholder engagement is the whole country (1.3 million inhabitants) while the roadmaps will be developed for more specific levels – local governments and organisations.

The output of the project PANEL 2050 are **local energy roadmaps for 2050 in 10 Eastern European regions**. The local roadmaps will describe a path towards low-carbon economy – a shift from using fossil fuels to renewable sources of energy. In Estonia, the focus will be on two sectors: energy and transport.

The project foresees the following main actions:

- Creating Central and Eastern Europe Sustainable Energy Network (CEESEN)13 to unite different energy actors in the region,
- Developing a methodology for engaging community into energy planning and providing training for the project partners,
- Preparation of local energy roadmaps.

The PANEL 2050 project is coordinated by Tartu Regional Energy Agency (TREA) who also initiated and prepared the project proposal. It is financed under the coordination and support action scheme of the EU Horizon 2020 framework programme. PANEL 2050 is implemented by 13 partners (energy agencies, NGOs, governmental institutions, regional governments, consultancy firms etc.) in 11 Central and Eastern European countries.

4.10.3 The participatory process features

The engagement process in each country is led by a regional partner. In Estonia the responsible partner for that is the Estonian University of Life Sciences. The engagement methodology for the PANEL 2050 project was developed by social scientists from the University of Tartu, who is also coordinating the implementation of the methods.

The project management consists of **two-level activities**. The engagement process is structured so that local organisations select a person who is responsible for the stakeholder engagement in a project partner country. The **Stakeholder Engagement Persons/Officers** are given training and tutorial by the university experts in how to identify and reach out the stakeholders.

Similarly, the stakeholders are supported in the process with training and guidance. For that purpose, several events will be organised: training courses and an international conference in Prague in autumn 2017 as well as a training camp in Hungary in 2018 (**Errore. L'origine riferimento non è stata trovata.**).

[13] PANEL 2050 project / CEESEN Network, https://ceesen.org/panel2050/

As the stakeholder engagement persons are in communication with the university experts on a regular basis, they form a communication channel between the two-layer engagement process agents.

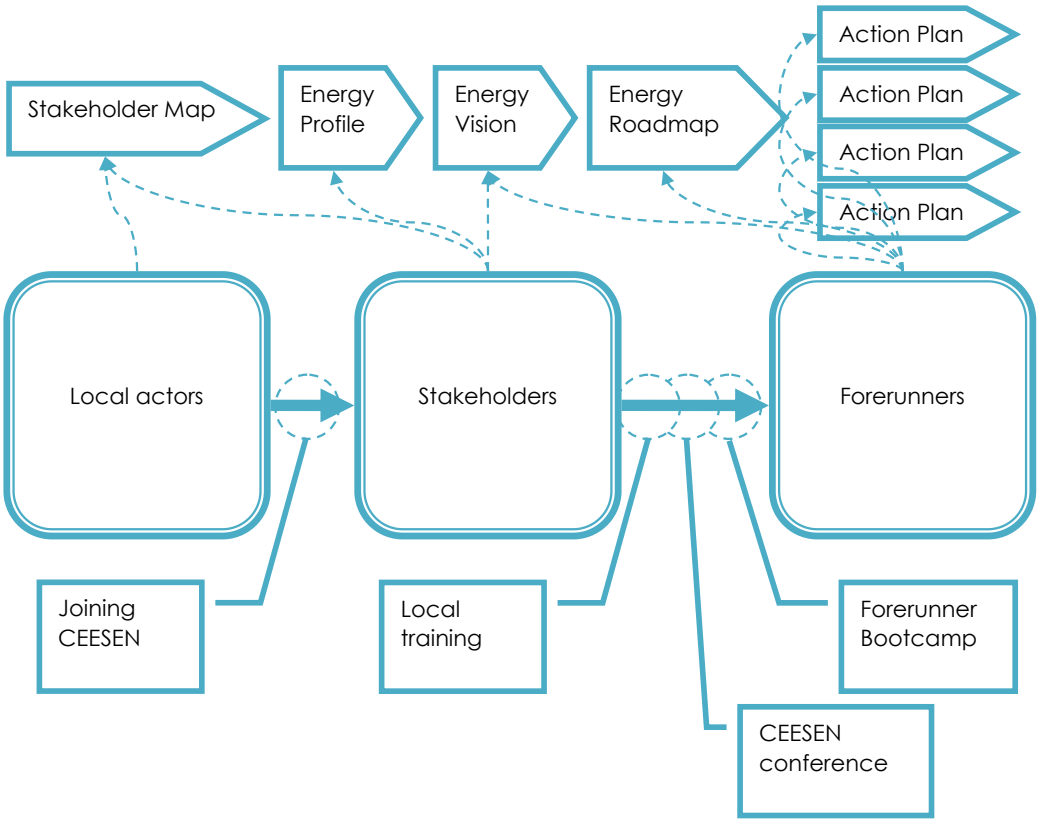

Figure 34. Road mapping and capacity building in PANEL 2050 project

Stakeholders are engaged in the preparation and implementation of roadmaps. They have been contacted directly – via emails, phone calls, face-to-face meetings, roundtables, conferences. The project communication has been active in creating the stakeholder networks, which included engagement via empowering the stakeholders and building their capacity for conducting and implementing the road mapping. This approach has provided a possibility for the project partners to reshape the motivation of local stakeholders to be committed to transit from fossil fuels to low carbons.

Stakeholders are from public, private and non-profit third sector: R&D organisations, higher education institutions, public agencies, SMEs, regulatory agencies, municipalities, including the categories from the energy value chain. In Estonia, about 20 organisations/persons are at present actively involved.

The next step will be forming the working groups who are going to develop energy roadmaps. The working groups adopt decisions by consensus. The stakeholders will implement the policy only if they approve the final document. If they are not happy with the outcome, the roadmap will not be implemented.

Characteristics of the participatory process within the project 'PANEL 2050' in Estonia

The first phase started in 2016 with stakeholder mapping.

The second phase begins in autumn 2017 when a training programme for stakeholders will be launched. Six training courses will be organised for Estonian stakeholders until spring 2018. The topics were selected in spring 2016 when a survey among the wide range of stakeholders was carried out and their expectations to the trainings identified. Since the majority of respondents wished training in technical issues, then these questions will be combined with other topics (project development, funding and management, public procurement, public-private partnership, communication, etc.).

In the third phase (2018) the working groups of stakeholders will be set up and the energy roadmaps will be developed.

The participatory process used the following tools:

Constitution of a steering committee to supervise the process	**X**
Some kind of selection of participants (random sample, target groups etc.)	**X**
Facilitation and conduction of the process by external professionals	**X**
Involvement of technicians and experts in direct interactions with participants	**X**
Constitution of a technical task force to support the collaborative process	**X**
Involvement of politicians and elected officials in direct interactions with participants	**X**
Election of delegates with control tasks	**X**
Communication campaign	**X**
other: Informed choice of stakeholders who are invited to participate in the project	**X**

4.10.4 The outcomes achieved

So far, the main outcomes are related with the stakeholder engagement and formation of the network. The engagement process was structured and systematized on the functional level. Common guidelines and communication channels between the leading partner for engagement and local stakeholder engagement persons have been developed. The engagement process has been documented. A crucial question has been how to find persons who are dedicated, forward-looking experts and pioneers in their field of activity and to bring them together around the table. There is no uniform effective model for that and each engagement process has to develop its own way.

4.10.5 Explaining linkages, lessons and shortcomings

The main challenge of the engagement is motivation of the stakeholders to participate in the process. People are busier than before and it is difficult to compete for attention of an interest group when several EU projects, national policy developments and local projects are running at the same time, targeting the same 40–60 people. Overflow of information and overambitious nature of many initiatives (promising more than delivering) may cause loss of interest of the audience.

In the PANEL 2050 project, the main motivation is providing know-how and new skills to stakeholders via the training programme and opportunities for international networking in Central and Eastern Europe. Capacity building and empowerment of forerunners will help them to act more effectively on a local level and bring further possibilities for energy transition in their local communities.

4.11 Project SmartEnCity (Estonia)

Practice scorecard:

Title	SmartEnCity
Place	Tartu town, Estonia
Type of initiative (programme, policy, project)	Project
Period	2016-2021
Sector(s) addressed	Energy efficiency of housing sector buildings
Type of participatory process adopted	co-design
Contact person	Mr. Raimond Tamm. Raimond.Tamm@raad.tartu.ee

4.11.1 The context

Tartu is a town in southern Estonia being the second biggest in Estonia with its' population close to 97 thousand habitants. Tartu is a university town with lively higher educational and cultural life. Tartu University was the first university established in Swedish Kingdom by the King Gustav II in 1632 under the name Academia Dorpatensis (also, Academia Gustaviana). Four other universities and colleges are located in Tartu.

Figure 35 Location of Tartu. Source: http://london.tartuhotels.ee/tartu/

After the Second World War in 1950'ies and 1960'ies many multistore houses were built in town. The buildings were built under the common standards of that time and the energy efficiency issues were out of question. No attention was paid to building envelope isolation and heat costs. This was due to low energy prices in former Soviet Union. Poor isolation of walls and roofs, double glazing windows and finally - not adequate central heat distribution (one pipe) system in these buildings caused a lot of problems and uncomfortableness for the dwellers. Tartu town government decided to initiate the overall improvement program of urban environment, and has successfully applied for EU H2020 research and development program. Tartu received funding support to create a new style of urban environment together with two other European cities. The project's name abbreviation has been agreed *SmartEnCity*, its' concept is defined, planned and implemented in the three Lighthouse demonstrator's cities; **Vitoria-Gasteiz in** Spain, **Tartu in** Estonia and **Sonderborg in** Denmark. The whole process of involvement of dwellers of old-fashion households and energetic refurbishment works will be **replicated** in the two so-called *Follower cities* of Lecce in Italy, and Asenovgrad in Bulgaria.

SmartEnCity is project partly funded from the European Union's Horizon 2020 research and innovation programme, it aims to develop a systemic approach for transforming European cities into sustainable, smart and resource-efficient urban environments in Europe. The project aims to develop highly adaptable strategies that can be replicated throughout Europe in order to: reduce energy demand and maximise renewable energy supply from various sources/energy carriers

available. Project started in February 2016 and will last for 5,5 years. The project's **vision** is to create Smart Zero Carbon Cities that are remarkably more sustainable and inclusive, improve citizens' quality of life, create jobs and wealth, and offer good growth opportunities to become healthy and dwellers-friendly urban environment[14]. The main objective of the project is a systemic approach for transforming European cities into sustainable, smart and resource-efficient urban environments. This will be achieved through the integrated planning and implementation of measures aimed at improving energy efficiency in main consuming sectors in cities, while increasing their supply of renewable energy and demonstrating the benefits.

4.11.2 The project Smart Energy City - Towards Smart Zero CO2 Cities across Europe

SmartEnCity is a unique cooperation project oriented towards reducing the footprint in urban environment via involvement of citizens, raising their knowledge, attitudes and habits of sustainable environment and energy use, widening the scope of renewable energy in housing and transport sectors, performing comprehensive energetic refurbishment of inefficient multistore buildings, transforming city transport to electrical vehicles and increasing the everyday use of bikes. There will be rent of e-bikes and charging stations for electrical cars in the city centre.

In Tartu introducing smart energy systems is one of the central issues in the project. Smart solutions will be introduced in the course of renovation works. A part of city territory, close to centre, where 5-stores old-fashion brick-houses are located, has been chosen as a target area. Information campaigns have been performed to involve maximum number of housing associations. Finally, the number of brick-houses which dwellers were eager to participate in the project, reached 22, which is also the maximum number of buildings that could be co-financed by the SmartEnCity project. After performing the energetic refurbishment of houses the analysis of the results achieved will be done by Tartu Regional Energy Agency experts.

Beside of the refurbishment of old-fashion brick-houses also the street lighting will be transformed to smart control systems based on various sensors monitoring the need for lighting. The sodium street lamps will be replaced by energy-efficient LED lamps. One of the actions in SmartEnCity is developing a system that uses old EV batteries for low –current charging plant based on the solar (PV) energy. The distant heating system with many boiler houses uses bioenergy, mainly woodchips. The heating company that has offered district heating service for Tartu for more than 20 years has started to offer district cooling service for some districts in Tartu. The first of these stations of district cooling combine using the relatively low temperature of the river flow, PV panels' energy and the residual heat of return water.

4.11.3 The participatory process features

The participatory process started in the grant application phase. Tartu City Government together with Institute of Baltic Studies and Tartu Regional Energy Agency (TREA) were the initiators of the project idea. They involved the significant number of enthusiasts to work on the design and in practical implementation of the project. Many consultations with target area housing associations' heads and also with dwellers including technical people, city planners, experts in transportation and construction were performed beforehand, during the application phase/period.

The project team in Tartu has done good work in communicating currently all activities they undertake. The latest news from the project belong to 10th of July 2017 what says that the SmartEnCity project activities in Tartu have inspired the conduction of several academic studies from two universities in Estonia – the Tallinn University of Technology and the Estonian University of Life Sciences in Tartu. Two Master thesis have been written. Firstly, "Application of the BIM

[14] See for more on the project website (http://smartencity.eu/).

technology in the SmartEnCity project: the example of Tiigi 8 apartment building reconstruction analyses and presents one of the SmartEnCity pilot area house renovation projects through the BIM methodology and is of methodological as well as practical value. Secondly, “Knowledge based engineering: nearly zero-energy apartment buildings in Tartu”. It analyses possible existing conditions and requirements for financing the apartment buildings reconstruction projects by the foundation KredEx grant and the SmartEnCity project. Master thesis gives recommendations on how to choose the optimal solutions before designing the construction where the costs of facade finishing materials and ventilation systems have been calculated.

Several information dissemination activities have been performed to introduce the project activities to wider public and in particular to the people living in target area multi-store houses. The approach chosen in SmartEnCity project, principles and participation requirements for housing associations have been presented and thorough discussions in the form question-answers were proceed. Dwellers have had different possibilities to ask all kind of questions concerning the project activities starting from solar panels and ending with isolation of building envelope or smart sensors for environmental and technical indicators.

Figure 36 Photos from Study Tour, http://tarktartu.ee/18mai_pildid/

Also, some study tours were conducted to demonstrate how the energetic refurbishment looks like in practice and how the solar PV-panels have been established on some housing associations dwellings’ roof-tops. As a result dwellers, interested in project in target area, were engaged and their voices heard.

Figure 37 Termography photos by Erkki Jõgi

Characteristics of the participatory process

- *A number of guidance sessions by technicians from most wide expertise has been involved already in the period of grant application. This created good basis for further close cooperation;*
- *Negotiations with the city government to choose out the project target area and specify the project scope were organized;*
- *Housing associations dwellers’ information activities to introduce the project vision and details to engage people into the whole long term process;*

- *Technical experts in smart energy, electrical transportation and energetic refurbishment have been engaged in meetings with citizens;*

- *Information dissemination on the project has been performed with the rest of SmartEnCity partners, Sondenborg and* **Vitoria-Gasteiz***. Also, with the two Followers – Asenovgrad and Lecce.*

The participatory process used the following tools:

Communication campaigns	**X**
Involvement of technicians and experts in direct interactions with participants	**X**
Election of delegates with control tasks	**X**
Involvement of politicians and elected officials in direct interactions with participants	**X**
Some kind of selection of participants (random sample, target groups etc.)	**X**

4.11.4 The outcomes to be achieved

The Tartu town administration has been an active partner to the project and elaborates in every possible way to give the long-term project good start. A number of town administration department employees are involved in planning, advising and implementation of different project activities. In the circle of stakeholders of the project it is titled as Smart Tartu. SmartEnCity corresponds well to Action Plan for Sustainable Energy Management 2015–2020 for the City of Tartu[15].

The project is generously assisted by housing associations and several companies: Fortum Tartu AS, Takso OÜ, Cityntel OÜ and Telia Eesti AS. In fact the financial contribution from the housing associations and business sector reaches 16 MEUR and grant from Horizon 2020 research and innovation program is 8 MEUR. Up till present time the local government and the project team have done huge work in citizens' engagement in the project. Regular information is published in local information channels, also on project web-page and in social media.

4.11.5 Explaining linkages, lessons and shortcomings

The project is very close to another Horizon 2020 project REFURB[16]. Continuous information exchange has been established between these two energy efficiency oriented international projects. In SmartEnCity project both approaches, the participatory actions and networking with most various stakeholders' groups have been performed to promote the innovative vision of smart, energy efficient and modern urban environment for better living of citizens. The vision also serves to foster behavioural change and attitudes to more sustainable ways of energy consumption and generation.

[15] Action Plan for Sustainable Energy Management 2015–2020 for the City of Tartu, http://www.tartu.ee/sites/default/files/uploads/Linnavarad/Saastev_tartu/Energiamajanduse_tegevuskava(sisestamisekks).pdf

[16] REFURB, see Report Summary, http://cordis.europa.eu/result/rcn/196378_en.html

4.12 Tooma II Windpark (Estonia)

Practice scorecard:

Title	Tooma II Windpark
Place	Lääne county, Hanila township, Esivere village, Estonia
Type of initiative (programme, policy, project)	Project
Period	2012–2016
Sector(s) addressed	Renewable energy
Type of participatory process adopted	co-design
Contact person	Arno Peksar, Arno.Peksar@hanila.ee

4.12.1 The context

Tooma Windpark is located in Lääne county, Hanila township, Esivere village. Tooma I Windpark was established in 2009. The first windmill was connected to the electricity network in December 2009. The first round of the Windpark achieved its full power in February 2010. The establishment of the second Tooma Windpark started in 2012 when the development plan was officially accepted and was finalised in 2016. The land occupied by the Tooma II Windpark is an area of about 42.92 hectares.

Figure 38 https://www.4energia.ee/projektid/tooma-ii-tuulepark

4.12.2 The establishment of Tooma II Windpark

Estonia has given its concrete renewable energy targets to the EU. Differently from the other EU countries, Estonia has not taken any specific regulations on wind energy. The development of wind energy in Estonia takes mainly place through planning processes. For instance, Tooma II wind park was realized thanks to the detailed planning process (national planning system) initiated in particular for the windpark[17].

Estonia fixed its target by 2020 to have 20% of the energy produced out of renewables. The Hanila county was the first county where the developers started to install modern wind generators from 2002 onward. The first 3 wind generators were constructed in Virtsu area. Subsequently a number

[17] Detailed planned of Tooma Windpark can be accessed on: http://www.hanila.ee/detailplaneeringud/-/asset_publisher/aHtrW0NPQQ4E/content/esivere-kulas-tooma-ii-detailplaneering-kehtestatud-?redirect=http%3A%2F%2Fwww.hanila.ee%2Fdetailplaneeringud%3Fp_p_id%3D101_INSTANCE_aHtrW0NPQQ4E%26p_p_lifecycle%3D0%26p_p_state%3Dnormal%26p_p_mode%3Dview%26p_p_col_id%3Dcolumn-2%26p_p_col_count%3D2

of wind farm projects followed. By the end of 2016, Hanila county had 29 wind generators in total with the installed electrical capacity of 29.45 MW.

Figure 39 Tooma Windpark, Photo by Tiit Kallaste

The Tooma II wind park consisting of 4 wind generators was launched with the establishment of the detailed planning procedure in 30.09.2010 (official start). The planning processes lasted for 2.5 years and the detailed plan was officially accepted by the Hanila county council on 27.09.2012.

On a bigger scale, the aim of the wind park is to reduce the CO_2 emissions and adopt additional renewable energy resources. The wind park with the installed electrical capacity of 7.05 MW gives an important input for the contribution of the Estonian renewable energy target set by EC. Within a year, at least ten thousand tons of CO_2 emissions are avoided and it will continue to do so within the entire 20-year life-cycle of the wind park[18]. According to the regulations it was possible for the developers to set up a wind park through a process of detailed planning since it was the only way to get the building permits.

The developer of the wind farm is a private enterprise whose aim is to sell electricity generated based on wind energy. The electricity is sold to main grid owner Elering AS who pays agreed price for a MWh. Together with the financial support from the state (so-called feed-in tariff, based on Electricity Market Law to support green electricity) the wind park is a profitable business.

4.12.3 The participatory process features

The detailed planning process always proceeds through a public participation, the so-called public hearings. If the detailed plan starts up based on the initiative of a developer, the role of local government is to control whether regulations and all steps of the process comply with the certain regulations. The role of the local is to also inform directly all the relevant institutions and individuals living in the impact zone of the planned wind park. Through public communication channels, also wider public is being informed.

The detailed planning and the environmental impact assessments are done by the experts with relevant licenses. Their task is to evaluate possible impacts and to find solutions which would be needed in order to ensure the required final results. The detailed planning process involves all the authorities who must confirm the plan, also the environmental impact assessment. The authorities have the right to submit proposals for possible improvements and indicate the circumstances which are not in line with the specific regulations and norms. The process also involves landowners whose property is bordered by the planned area, so that they could keep their eye on the development and whether this would not infringe their rights.

The person in charge of the development plan has the responsibility to get the signed agreements from all the farmhouse owners within 1 km distance from the planning area. Everyone who feels that his/her rights are somehow infringed or that the plan needs in some aspects certain improvements, could appeal and propose their ideas during the public meetings. The process of public hearings has mandatory obligation to have written memos of each meeting held.

[18] From that age onward, it is the most likely that some parts of the windmill needs to be replaced. In theory, the part with the longest lifetime is the post where it is standing, approximately 40 years.

Every development includes possible conflicts among the wishes of neighbouring property owners, residents and other developers. In order to avoid the conflict of interests among the above mentioned circle of persons, the representatives of the developers and the planning documentation composers search for the optimal solutions. All in all, the best solution was found since no objections were submitted during the planning procedures as the developer in this case did a lot of research before the public hearings started.

The entire detailed planning process from its start to final submission took around 2.5 years. Within each of the internal phase, relevant stakeholders and the public in general were informed about the next planning phase. People with a direct impact on their land were invited on individual requests. Informing took place via electronic channels or in a written order. The information with the general public was shared through the media channels (local county newspapers and the website of the local council). The responsibility of the local council is to prove afterwards that the information was indeed shared to all stakeholders. The meetings were recorded and stored within the project documentation. As such, all the discussions, objections and suggestions can be proved since these are stored in a written form.

Characteristics of the participatory process

- The participation took place during two and half years when the planning process was carried out. By the time of the implementation, the agreement between all the parties was achieved. The requirement of the county council was that written agreements need to be signed by all the house owners who are located within 0.5-1 km distance from the planned wind generators. Planning wind generators closer than 0,5 km from the houses was forbidden.
- When the planning process was initiated, relevant organizations, residents and authorities had to be individually handled, i.e. in terms of specific people who certainly must be informed and involved during the planning process.
- The authorities had to submit their approvals before the development plan was published. The third persons had the right to make suggestions or objections only during the period of disclosure. However, suggestions were allowed to be made during the entire planning process.
- There is a minimum circle of persons set by the regulations, who must be certainly involved. However, through the public process, everyone has the right to participate and make either objections or propose improvements.
- The organizer of the public participation process within the planning process is always the local council. The local council must ensure that all the relevant residents and stakeholders are well informed about the planning process and that they have their opportunity to submit their objections and suggestions at the right time.

The participatory process used the following tools:

Use of normative appeals	**X**
Election of delegates with control tasks	**X**
Vote as tool to take decisions into the participatory arenas	**X**
Communication campaign	**X**
Final referendum to confirm or reject the outcome of the process	**X**

Use of intrinsic rewards	**X**
Some kind of selection of participants (random sample, target groups etc.)	**X**
Facilitation and conduction of the process by external professionals	**X**
Involvement of technicians and experts in direct interactions with participants	**X**
Constitution of a technical task force to support the collaborative process	**X**
Involvement of politicians and elected officials in direct interactions with participants	**X**

4.12.4 The outcomes achieved

3 wind generators foreseen within the development plan of Tooma II wind park have been set and provide renewable energy. These also help to reduce the total volume of carbon emissions emitted by the state. A forth generator which is planned, is yet in reserve, since a connection system in a larger energy system is yet non-sufficient. Since the process of setting up the previous wind generators was successful, 4th one is assumed to be successful as well. The environmental effects have remained within the computational levels (noise, shadows etc), though visual display might interfere specific people but in Tooma II wind park case there was no people living within 1km radius. No challenges were encountered during the participation process since it followed very concrete guidelines and the opinions of the people were taken into consideration. It was a successful process considering the fact that wind generators are objects what are not placed everywhere; people prefer to not have something “new” near their houses. If there would be a new but similar development plan implemented in the area, it might not be as successful as such, since Hanila county council already has a number of wind generators in the area.

4.12.5 Explaining linkages, lessons and shortcomings

The positive aspect of the project was that since the developer had discussions and made agreements with all the relevant stakeholders from a very early stage of the project, then no objections neither protests were made against the project. This proves that satisfactory compromises for all parties can be achieved with a proper preparatory work.

In terms of the future, it becomes more and more clear that people do not want anything to be built near them, either it is a development of their neighbour or a bigger development. This is the so called not in my backyard attitude, “do it, but not in the range of my vision”.

4.13 Construction of Väätsa retirement home (Estonia)

Practice scorecard:

Title	Construction of Väätsa elderly care home
Place	Väätsa parish, Järva county, Estonia
Type of initiative (programme, policy, project)	Project
Period	2014–2016
Sector(s) addressed	Energy efficiency of public buildings
Type of participatory process adopted	Co-design & co-production
Contact person	Mr Lauri Läänemets, Mayor of the Municipality of Väätsa, lauri.laanemets@vaatsa.ee

4.13.1 The context

By the end of 2018, all the new public buildings, built in the European Union, must be **nearly zero-energy buildings** which have very high energy performance and the low amount of energy that these buildings require comes mostly from renewable sources.[19]
Energy saving and reduction of greenhouse gases have been one of the objectives of the **Estonian-Swiss Cooperation Programme** via which Switzerland supported the improvement of Estonian environment and modernisation of infrastructure within the enlarged European Union.

Figure 40 Location of Väätsa

In 2010, a **call for proposals was opened for local governments** to support the energy-efficient renovation and construction of public buildings. Within the framework of the cooperation programme, four buildings in public use were reconstructed and two were built, as an example, to increase the awareness of people of low energy buildings and to test new energy performance standards during the project preparation stage.

From Väätsa, two applications were selected for the support: **construction of energy efficient house for the elderly** and **reconstruction of Väätsa Basic School into a low-energy building**. Before that there was no home for aged people in Väätsa parish and the schoolhouse, built in 1977, did not meet today's requirements any more.

Increasing the use of renewable energy and energy saving are the goals agreed in the development plan of Väätsa parish „**Digital and energy-smart Väätsa 2014–2023**". The two new nearly zero-energy buildings are the first big steps towards an energy-smart parish which Väätsa aims to become.

[19] Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings

4.13.2 The project 'Construction of Väätsa elderly care home'

The home for elderly people is located in Väätsa rural municipality, Central Estonia. The retirement home has space for 38 people. It is designed according to the energy efficiency principles and classified as a low-energy house. The building is equipped with solar PV-panels (output 10,5 kW) and thermal collectors (output 17,5 kW) as well as with a local heating system based on pellet boiler.

Figure 41 *Figure 1. Väätsa elderly home, http://vaatsa.kovtp.ee*

The total construction cost was 1.4 million euros, of which 1.1 million euros was funded by the cooperation programme.

4.13.3 The participatory process features

The promoter of the participatory process in the construction of the elderly home has been **Väätsa parish government** who prepared the project and coordinated its implementation.

The building of the elderly home was decided during the **preparation of the development plan** of Väätsa parish. The requirement for public engagement in this process is laid down in the Local Government Organisation Act which foresees that a local government shall organise the involvement of all interested persons in the preparation of a development plan through **public discussions**. Hence, everyone should have the opportunity to propose development ideas or recommendations during the so-called standard process of updating the development plan each year. Furthermore, in a small parish such as Väätsa, which has 1300 inhabitants, the mayor is capable to communicate personally with almost everybody.

When a call of proposals for local governments was opened in the Estonian-Swiss cooperation programme, it was an excellent opportunity to apply for financial and knowledge support in order to build an energy-efficient and comfortable home for elderly people in Väätsa parish. The project proposal was prepared by the local government specialists.

In the project design phase, after positive decision from the cooperation programme, external experts were involved into the process, such as researchers from Tallinn University of Technology and Estonian University of Life Sciences who advised on the technical details of construction. Public involvement in this phase is regulated by the Planning Act, according to which a **public discussion** was organised in order to introduce the initial planning outline of the elderly home in September 2011. There was no need to organise another public discussion when the detailed spatial plan was completed, since no written opinions were submitted on the plan during the time it was on public display.

Opening of a modern, low-energy elderly home was a great event for a small Väätsa parish and it received a lot of media attention locally, regionally as well as nationally. The parish government has organised **study excursions** to the elderly home for local people and is planning to provide local bus stops by the end of the year with **informational stickers** which summarise the main features of renewable energy and energy savings.

Characteristics of the participatory process within the project 'Construction of Väätsa elderly care home'

The first phase started in the beginning of 2010 when the development plan for Väätsa parish was prepared and the building of elderly home was decided.

In the second phase, project proposal was submitted to the Estonian-Swiss cooperation programme in April 2010. Successful projects were announced in December 2010.

The third phase, design and construction of the elderly home, started in March 2011 when Väätsa parish council initiated the preparation of a detailed plan for the elderly home. In this phase, the participatory process included a public discussion on the initial planning outline. The construction began in June 2014.

The fourth phase covers the opening of the elderly home in June 2015 and the following ongoing communication and awareness raising activities in the field of energy efficiency and renewable energy.

The participatory process used the following tools:

Involvement of technicians and experts in direct interactions with participants	**X**
Involvement of politicians and elected officials in direct interactions with participants	**X**
Communication campaign	**X**

4.13.4 The outcomes achieved

After the first two successful energy efficiency projects in Väätsa – construction of the elderly home and renovation of a local schoolhouse – there are now next projects in preparation which contribute to Väätsa`s aim of becoming an energy-smart parish. In Väätsa manor house, which is situated just between the elderly home and the basic school, a smart energy scientific centre will be established, targeted for both schoolchildren and elderly people as well as for the wider public. Also, a local community house is planned to renovate as nearly zero-energy building.

In addition, three local apartment buildings are going to submit application to the Estonian state-owned foundation Kredex in order to get financial support for the renovation of the houses and transferring their energy systems to the use of solar water heating system. Thus it can be evaluated that increase in awareness has been noticeable. According to the feedback received so far, anything related to the topic of energy efficiency or energy saving has received very positive attention. Väätsa is certainly now among the top 10 Estonian municipalities in terms of awareness on energy efficiency. Yet, further interest needs to be raised among the parish community.

4.13.5 Explaining linkages, lessons and shortcomings

Active efforts need to be made in order to involve stakeholders and public to the local development planning as well as to raise awareness on energy efficiency and renewable energy. Involving the users of the buildings has been an important part of both projects in Väätsa since achieving the energy reduction targets largely depend on the consumer habits (such as the time of using domestic appliances, e.g. washing machines, which can operate on solar energy in the daytime).

4.14 Reconstruction of Alu Educational Centre (Estonia)

Practice scorecard:

Title	Reconstruction of Alu Educational Centre
Place	Estonia, Rapla county, Rapla township, Alu borough
Type of initiative (programme, policy, project)	Project
Period	2015–2017
Sector(s) addressed	Energy efficiency of public buildings
Type of participatory process adopted	Co-design & co-production
Contact person	Ms Cerly-Marko Järvela, municipality architect

4.14.1 The context

Figure 42 Alu Education Centre, https://rapla.kovtp.ee/valla-objektid/-/asset_publisher/*3MIzwFNc9tuM/content/alu-hariduskeskus*

Alu is a small borough located in Rapla Parish, Rapla County, Estonia. From Rapla city it is situated about 3 km northwest of the town. It has a population of around 950 people. Alu Educational Centre (kindergarten-elementary school) is an educational institution where beside regular classes, special attention is paid on the aesthetic education of children and students through drama, music, dance and art. Their mission is to teach the person who can cope with the rapidly changing world and is capabale to direct the lifes of other people as well in the future.

Alu school has 4 classes and has total of 54 students and 6 teachers. The kindergarten part has 4 groups – 2 armor groups and 2 garden groups. There are 78 children in the kindergarten, yet maxium volume of 80 kids could be taken. The kindergarten has 10 teachers and 4 teacher assistants.[20] The idea to modernize Alu Educational Centre was discussed long time ago before it finally took place since it badly needed renovation as it was dating back to 1970s. Variety of upgrading versions were considered such as reconstruction to one-story building, complete demoliton of the building and construction of a totally new one and construction of a new compact building next to the old building.

4.14.2 The reconstruction project of Alu Educational Centre

In 2014, The Alu Education Centre qualified for funding under the Estonian-Swiss Cooperation Program[21]. The cooperation program is based on the framework agreement between the

[20] http://alulakool.edu.ee/

[21] More about that program: http://www.fin.ee/estonian-swiss-cooperation-programme

Government of the Republic of Estonia and the Swiss Federal Council since 2007. Rapla County has signed a grant agreement with the Ministry of Economic Affairs and Communications, the latter which in turn cooperates with the Ministry of Finance. The objective was to achieve low energy consumption; the achieved level aimed for was „nearly zero".
The project was launched in autumn 2014. The reconstruction project of the building was prepared by OÜ Paide EKE Projekt (project manager Tasu Kordemets, architect Merike Kordemets, constructor Mati Hürenen, water – sewerage-, heating and ventilation engineer Enn Kuuspere). Under the external contracts RR Elekter OÜ (high voltage electrical installation engineer Rain Randmaa), OÜ Teleprojekt (low voltage electrical installation engineer Jaana Rubin) and Termopilt company (energy simulation Tõnu Tiit) participated in the project. The geodetic ground plan was prepared by OÜ Rapla Maamõõdubüroo (geodete Ago Luhaorg).[22]

The construction contract was announced on 30.09. 2015. The deadline for submission of tenders was 28.12.2015. 8 bids were received, 5 of which were found to match. AS Parmeron tender turned out to be the most successful one. The construction contract was then signed on January 26, 2016; and in March the demolition works started. During the following months, major construction works started. In December moving in took place already and in January 2017, kindergarten, primary school and library started operating. The opening ceremony of Alu Education Centre took place on January 20, 2017 together with a mini-conference dedicated to energy efficiency of buildings. [23]

The cooperation program funds the construction measures meant for the improvement of the energy efficiency. The rest of the costs were covered by the Rapla County. Alu Educational Centre renovation cost was approximately € 2 million, about a half of which was covered by the cooperation programme. The total budget of the cooperation programme was approximately € 5,4 million. The total budget of the Estonian-Swiss framework agreement was approximately € 33 million.

4.14.3 The participatory process features

The participation has been promoted throughout the implementation of the entire project. The delivery phase promotion included a ceremony with a mini-conference with invited guests.
There were both mandatory and voluntary elements. The regulatory framework established the terms of the public presentation, current legislation sets some of the terms. Yet voluntary meetings and discussions were also held with participating bodies.

Participation of the program was promoted by the ministry of economic affairs. Local participation was promoted by the local township government. Local actors involved the township council, the administration, the school and kindergarten board as well as the community and the public.

The school and the kindergarten board as well as the library administration provided input to the building design phase. A couple of public meetings were held to discuss project related matters. Updates on the project were published in the township monthly and the county weekly papers, as well as in the township web pages.

Characteristics of the participatory process

Discussion on getting the building upgraded started in 2010 when first sketches were made for renovating the building as a whole. Professionals were involved to make the sketches. The design task was generated by the township government together with the institutions that were housed in the building. There was no record of community involvement back then.

[22] https://rapla.kovtp.ee/valla-objektid/-/asset_publisher/3MIzwFNc9tuM/content/alu-hariduskeskus
[23] https://rapla.kovtp.ee/valla-objektid/-/asset_publisher/3MIzwFNc9tuM/content/alu-hariduskeskus

Starting from fall 2013, a number of meetings involving the school and kindergarten board, the township council members and the local community were held where different options for upgrading the education centre were discussed. There are records of public presentations that to some extent indicate the public participation.

The design process for the finally executed version of the design commenced in the late 2014. Discussions for framing the design task were held prior to getting started, involving the school and kindergarten managers as well as the township council committees and the township government. Throughout the design phase meetings with the school and kindergarten administration were held to discuss design related topics. The township government and the council were provided with reports on the state of affairs. In December 2015 before the construction launched, a public meeting was organized to discuss the project as well as the state of affairs during the construction period that gave valuable feedback from the parents. The parents had a chance to participate through the school and kindergarten board.

The Estonian-Swiss co-operation programme included some mandatory elements of informing the public as well, for instance publicity in local papers and the township web page that was organized by the township government. Regular meetings of the steering committee of the co-operation programme took place that were organized by the Ministry of Economic Affairs and Communications. The steering committee included representatives from the ministries involved as well as members from each municipality taking part.

The participatory process used the following tools:

Constitution of a steering committee to supervise the process	**X**
Facilitation and conduction of the process by external professionals	**X**
Involvement of technicians and experts in direct interactions with participants	**X**
Involvement of politicians and elected officials in direct interactions with participants	**X**

4.14.4 The outcomes achieved

The main outcomes of the project were:

a) *The building can now produce about half of the electricity needed with roof mounted solar cells;*

b) *Alu Educational Centre is the first nearly zero energy public building in Rapla township;*

c) The educational centre consisting of a kindergarten for 88 kids, a primary school for 54 pupils and a public library is functional again, providing services for the local community.

In terms of the participation processes, the end users in the design phase clearly dedicated to better outcome. The updates on the state of affairs prevented possible information shortage problems with the township council and the community.

4.14.5 Explaining linkages, lessons and shortcomings

Promotion in the delivery phase was partially a failure due to the opening ceremony been incidentally scheduled for the day of the American Presidential elections resulting in no coverage by the national media. The participation process in general contributed to positive outcomes, yet as far as all wishes can never be met, some participating bodies may consider the outcome lacking their input.

4.15 ELMO Estonian Electromobility Program (Estonia)

Practice scorecard:

Title	ELMO Estonian Electromobility Program
Place	Estonia
Type of initiative (programme, policy, project)	Programme
Period	2011-2014
Sector(s) addressed	Energy efficiency in transport sector
Type of participatory process adopted	Co-design & co-production
Contact person	Juku Paulus, Transport Development and Investment Department of the Estonian Ministry of Communication and Economic Affairs, Juku.Paulus@mkm.ee

4.15.1 The context

Estonia is the first country in the world constructing a charging network of electric cars. E-mobility program ELMO was developed within the context of regulation of Ambient Air Protection Act. The policy was started once the government decided to invest the funds obtained from selling the CO_2-quota (AAUs under Kyoto protocol) to energy efficiency and CO2 emission reduction projects. Various programmes were proposed to possible CO_2 quota buyers and one of them (Mitsubishi Corp.) was interested in proposed electromobility project.

Figure 43 ELMO car network, http://elmo.ee/home/

4.15.2 The Estonian electromobility program ELMO

In March 2011, the Government of the Republic of Estonia signed a contract with Mitsubishi Corporation for the sale of AAUs in the amount of 10 million AAUs to start the Estonian electrical mobility programme. The goal of the programme is to speed up the commissioning of electric cars in Estonia, and facilitate the achievement of the goal undertaken by the state to increase the use of renewable energy by 2020. The program consisted of three parts: 507 Mitsubishi iMiev electric cars were commissioned by the Ministry of Social Affairs as an example, the Ministry of Economic Affairs and Communications developed a support system for natural and legal persons for acquisition of electric cars, and infrastructure for charging electric

Figure 44 ELMO cars, http://elmo.ee/home/

cars was created to cover the whole country. Distribution of the purchase grant and the administration of the quick charging network is organised by Foundation KredEx.[24] Since November 2012, the purchase of plug-charged hybrid vehicles has also been supported and it was possible to apply for the grant to purchase electric cars from 18 July 2011 until to the 07.08.2014. The quick charging network of electric cars was constructed in Estonia by ABB. The programme period was 2011–2014, corresponding to the trade period of AAUs according to the Kyoto Protocol.

4.15.3 The participatory process features

The participation process in terms of gathering the working group started on very early stage of the project. The ELMO program was initiated by the Ministry of Economic Affairs and Communication and all the rest of the actors (Ministry of Social Affairs; Ministry of Environment, Government agency KredEx, Government Office, ABB, Elektrilevi, G4S, NOW! Innovations) got involved on the bases of need throughout the project implementation. The involvement of public started later when the program was more or less established.

Since ELMO program was a rather new thing for Estonia, the promotion of it was actually easier due to its novelty. The tools included a larger media channels (for instance TV show Ringvaade, news channels) several newspapers, ELMO website, seminars etc.

Characteristics of the participatory process

- Stakeholder involvement based on the need of the project implementation
- Involvement of public took place after the program was more or less established
- The novelty of the project made the stakeholder involvement somewhat easier

The participatory process used the following tools:

Constitution of a steering committee to supervise the process	**X**
Involvement of technicians and experts in direct interactions with participants	**X**
Constitution of a political task force to keep politicians updated	**X**
Communication campaign	**X**

4.15.4 The outcomes achieved

167 quick chargers network has been placed all around Estonia. ELMO Rental has 12 rental centres, 10 of which are in Tallinn and 2 in Tartu. ELMO program has about 700 users by now. The participation process impacted the final outcome (ELMO car sharing was something that was

4.15.5 Explaining linkages, lessons and shortcomings

Perhaps the main challenge was the fact that the program was new for Estonia and everything had to be developed in 'learning by doing' method.

a) extreme timescale for planning and implementation of the project;
b) had to be robust and decisive;
c) how to gain public support;
d) mixed public opinion, lot of discussions about EV in cold climate, range/price seen as main problem;
e) users feedback – need for quicker chargers (time is money), too few chargers in the area where taxi drivers use also electricity for their vehicle.

[24] http://elmo.ee/elmo/

4.16 Eco-Quartier – participatory housing in Strasbourg (France)

Practice scorecard:

Title	Eco-Quartier – participatory housing in Strasbourg
Place	France, Strasbourg
Type of initiative (programme, policy, project)	Project
Period	2009-2015
Sector(s) addressed	Participatory housing and sustainability
Type of participatory process adopted	Co-design
Contact person	Anne Debarre, Association d'histoire de l'architecture and Hélène Steinmetz, Université du Havr

4.16.1 The context

The city of Strasbourg, one of the major metropolitan areas of France, decided in 2009 to make participatory housing a central component of its public policy in the 4th Eurometropole Local Housing Programme (2009) and in its "eco-neighbourhood" approach in favour of sustainable planning and housing. The fact that the same elected representative is in charge of both the city's energy strategy and participatory housing also contributes to reinforcing the links between the two. The city is aiming at reaching sustainability in planning and building of housing units, by using renewable energy sources, managing water efficiently, and relying on sustainable and energy-efficient materials.

Figure 45 ***Figure 1 Strasbourg, France_ panorama and location***

Participatory housing refers to a number of alternative and collective methods for designing, building and managing one's own residence: housing cooperatives, self-development, cohousing, grouped housing. In France, the term includes all existing initiatives that involve inhabitants in the production or co-production and the everyday management of their living environment under the same banner, regardless of the method used. It has become a way of objecting to increased commodification and individualism in society and regaining control of one's place of residence by integrating economic, social and environmental aspects. Participatory housing is radically different from the standardised offer of conventional property developers because it enables residents to integrate their own choices and values into their future residence. Participatory housing usually involves sharing space and costs, but may also include other features such as the use of environmentally-friendly materials, kitchen gardens, the availability of social housing units or public space for neighbourhood activities.

In Strasbourg, the original incentive came from the Ecoquartier association, which took up work in 2009 to realise a first eco-neighbourhood project. Unsatisfied with the political response up to date, the association had purchased a plot of land from the municipality to form the foundation of an environmentally-friendly, participatory housing project. After this successful reference project, the city of Strasbourg launched the first call for participatory housing projects in the country, and consequently selected the projects to be realised starting in April 2010.

4.16.2 *The project participatory housing in Strasbourg*

The objective of the project was to engage citizens in the creation of their own urban living spaces, and to promote sustainable solutions in residential construction. The city encouraged compliance with sustainability principles. Much emphasis was laid on encouraging high energy efficiency standards, renewable energy sources, healthy and environmentally-friendly materials, and effective water management. Moreover, attention was paid to social factors such as encouraging social diversity and a functional mix in the future housing, as well as economic aspects such as improved building environmental performance, and architectural and constructive innovation aimed at controlling construction costs. In the beginning of the project, financial support was offered for the acquisition of land plots to encourage initiative. The experiment now being well under way, the on-going consultation (2015) no longer uses this environmental scale but continues to assess and select groups based on their environmental and social commitments.

4.16.3 *The participatory process features*

The city planned five consultation sessions during what the projects would be chosen. The sessions were open to the public and attended by regular citizens, notaries, banks, urban planners, property developers and architects. The projects were selected based on three components: group composition, group motivation and environmental and social commitment.

4.16.4 *The outcomes achieved*

The proposals came up to expectations: all the projects met low energy building or passive standards. Most of the applicants also opted for local renewable energy production solutions like thermal solar, wood-pellet
boilers, or heat pumps.
So far, 20 projects have been realised in the city of Strasbourg, of which approximately one third are completed, one third is under construction and the remainder is in the planning process. The realised projects have lived up to their expectations of being built including energy-saving and efficient material and meeting high standards of green energy.

Figure 46 **The Eco-logis project, EnergyCities**

4.16.5 Explaining linkages, lessons and shortcomings

The main difficulties the project faced were due to a lack of adequate knowledge and even a certain mistrust towards participatory housing by most of the stakeholders involved. Since participatory housing is an experimental object and unknown to most stakeholders, difficulties
arised during discussions. The city of Strasbourg has put a lot of effort into communication, not only internally, with its technical departments, but also with notaries, banks, urban planners, property developers, architects and citizen groups. The idea was first and foremost to reassure and obtain the involvement of citizens by proposing and explaining the operational frameworks designed to facilitate project realisation.
Most conventional property developers, for instance, perceived the participatory housing approach to be challenging their own function. Bankers thought the projects were too risky. Architects felt threatened by the project's requirement to hire a project consultant next to the official architect who should council community groups on the financial feasibility of their project idea. The city countered this situation by intensive and frequent dialogue with all stakeholders; such as notaries, banks, urban planners, property developers, architects and regular citizens.

Assistance and time are two key factors when it comes to increasing the chances of seeing the results of construction projects. Significant support was also provided to applicant groups and then

to consultation winners: assistance in making sure that the financial reality has been taken into account, obligation to seek professional project management assistance, etc. During the consultation process, the city of Strasbourg makes sure that the various groups involved do communicate (applicant groups, interested citizens, Ecodistrict association, architects, project consultants, consultancy firms, general contractors, etc.). It also provides advice on the financial arrangements of the project.

Every two months, the main local stakeholders attend a steering committee meeting: SERS, the social landlord involved (Habitat d'Ill), *Conseil d'architecture d'urbanisme et de l'environnement* (non-profit consulting organisation in architecture, urbanism and environment), elected representatives, practitioners, the Ecodistrict association etc. The main challenge is to create a common culture and to continue to reinforce the partnership momentum. More generally speaking, financially viable projects completed within the allowed timeframe generate consensus on the benefits of participatory housing and contribute to the dissemination of similar initiatives and consultation processes.

With time, stakeholder relations improved and some elements of participatory housing, like shared terraces, are now being embraced by promoters. Landlords and urban planners, too, could won over for experimental projects.

Another problem relates to time management. Quite often, more time than anticipated was required for steps of the project, resulting in the need to hurry decision making through the majority vote instead of taking the discussion time required to achieve unanimity. This weakened the internal cohesion of some groups and even led to some members leaving. On the other hand, the arrival of new members and their ideas often re-stabilized the group.

This case study uses information and pictures from the report "The Energy Transition: New dialogues between cities & local stakeholders", prepared by Energy Cities with the support of ADEME, published in May 2016.

4.17 Step by Step (France)

Practice scorecard:

Title	Step by Step
Place	France (leader)
Type of initiative	Project
Period	2015-ongoing
Sector(s) addressed	Household energy saving
Type of participatory process adopted	Co-production
Contact person	Letizia Portera, project manager, letizia.portera@cesie.org

4.17.1 The context

The Step by Step project was developed as part of the H2020 framework programme of the European Union for energy efficiency. The programme aims at funding innovative approaches to maximize individual energy saving opportunities. The project was launched targeting 18,000 households in four European cities: Cefalù (Italy), Ghent (Belgium), Alcudia (Spain) and Warsaw (Poland). This provided a large variety in building types, demographics and socio- economic backgrounds of the residents. Furthermore, each city chose a different approach on how to manage the project on a daily basis, for instance by charging a local NGO with the activities to be implemented.

4.17.2 The project

The project had five main objectives: to educate households about energy savings, to motivate households to engage them in energy saving techniques, to increase interaction between households in a community willing to invest in renewable energy products, to develop an understanding of the behavioural patterns underlying energy saving, and to promote the concept of Step by Step with European local authorities. After establishing initial contact with the households by door-to-door visits, they are receiving personalised energy-saving advice through a web-based system that is complemented by monthly telephone calls that collect feedback on the household's behaviour and implemented commitments. Each household receives personalised information and advice based on their background, motivation and lifestyle. It targeted both short-term actions and long-term behavioural change towards more energy savings.

4.17.3 The participatory process features

As a first step, a database with all the households invited to participate was established and information about the project was sent out.

Advisors then moved from door to door to administer questionnaires about the households' energy behaviour and their motivation to participate in the project. Around 50% of the targeted households, those most in need, then received an energy-saving kit including, for instance, LED light bulbs and draught-excluders for windows. About six weeks after registration, households started to receive monthly follow-ups on their actions and new proposals for gradually more difficult commitments to make. Several collective challenges have also been organised to increase the community's sense of pursuing a common goal.

Constitution of a stakeholders' steering committee to supervise the process	**X**
Some kind of selection of participants (random sample, target groups etc.)	**X**
Involvement of technicians and experts in direct interactions with participants	**X**
Constitution of a technical task force to support the collaborative process	**X**
Involvement of politicians and elected officials in direct interactions with participants	**X**
Communication campaigns	**X**
Other: collective challenges on energy savings	

4.17.4 The outcomes achieved

So far, over 6,600 households have benefited from the personal energy coaching which continued until summer of 2017. The project was well-received; the average household committed to 3.9 energy-saving missions and thereby reduced their own energy consumption.

Targeted households were overall very motivated to participate in the project for a long term and to engage in the regular coaching option. Local initiatives in the energy field could bring new tools and know-how to complement the project action.

4.17.5 Explaining linkages, lessons and shortcomings

So far, the evaluation of the project progress, showed the effectiveness of door-to-door interviews in educating and encouraging more energy saving. On average, 80% agreed to implement some energy-saving method during the interview, and 60% succeeded to keep their commitments. Follow - up has high importance for sustainable change of behaviour, so more information can be shared over time and more incentive is given to try the energy saving tips.

After initially relying more heavily on email contact, the project team noticed that response rate was very low and telephone calls were a lot more effective to reach participants. While some participants seemed to eagerly await the calls, others signalled increased boredom with the follow- up. Therefore, it is important to adapt the calling frequency and content of conversations to the expectations of the households to ensure long-term commitment to the project.

Generally, to gain interest and support of people it is crucial to demonstrate how a project would personally benefit them and address their concerns. The project team also found it effective to communicate collective results (i.e. like results gained from participation) in a neighbourhood, to further spur engagement of individual households. Especially in multicultural areas, households' must be able to understand the project's language and if necessary, adaptations must be made.

4.18 GE.COO.FOR project Gestione Coordinata delle Foreste (Italy)

Practice scorecard:

Title	GE.COO.FOR Gestione Coordinata delle Foreste (Coordinated Forest Management)
Place	Comunità Montana Lario Intelvese, Come Lake, Lombardy
Type of initiative (programme, policy, project)	Project
Period	2015–2016
Sector(s) addressed	Forestry sector – sustainable biomass production
Type of participatory process adopted	Co-production
Contact person	Daniele Piazza: piazzadaniele.dp@gmail.com
Website	http://www.cflint.it/

4.18.1 The context

The Consorzio Forestale Lario-Intelvese (CFLI), the Mountain community of Lario Intelvese and the Laglio Municipality are the promoters of the GE.COO.FOR project (Gestione COOrdinata delle FOReste – Coordinated Forest Management), a two-year initiative with the goal of better management of forest resources.
The Municipality of Laglio, 899 inhabitants, is located on the shore of Lake Como (northern Italy), but a relevant part of its territory is mountainous. The Mountain community is a second-level administration, instituted by law to coordinate municipalities located in mountain areas. The Mountain community of Lario Intelvese is composed by 24 municipalities, including Laglio.

Figure 47 A view of Laglio municipality, on the shore of Lake Como

The same municipalities and the Mountain community constituted in 2002 Forest Consortium (Consorzio Forestale Lario-Intelvese - CFLI), a public-private association tasked with forest management. Various problems explained the necessity of creating Forest Consortium: the diminished role of forests as a source of income for the inhabitants of the area; the extreme fragmentation of forest properties leading to a very complex management of wooded resources;

high hydro-geological risks connected to the abandonment of forest in the mountains[25], with serious consequences also for the municipalities aboard the lake characterized by high-value real estate and a strong tourist vocation.

The forest consortium provides diverse services, such as forest restoration interventions, hydraulic regimentation, maintenance of agricultural roads, tourism promotion, and the promotion of a more sustainable economy interlinked with available forest resources and forms of energy supply.

As regard to the latter point, CFLI is the "full service" manager of the local forest/wood/energy chain through a certified PEFC protocol, both for forest management and the chain of custody. The PEFC protocol involves various local companies. CFLI can ensure its associates that woodland is managed effectively, from the planning phase to the utilisation of forest resources and to the supply of certified quality woodchips, combined with training and information-awareness activities. To date, CFLI runs 6 biomass boilers and heat networks serving public buildings which are powered by fuel from timber. CFLI directly produces biofuel from sustainably managed public forests and, after the Ge.COO.FOR project, also on some private plots.

Figure 48 Geographical location and landscape of the Mountain Community of Lario Intelvese (Como, Italy)

As a matter of fact, only 2,800 hectares of public forests (equivalent to 19% of the total forest area of the Mountain community of Laglio) are managed by CFLI. Up to 80% of the forests are private woods lacking an effective and comprehensive management, thus leading to a loss of potential economic development, provision of ecosystem services and sustainable energy production. It was therefore necessary to engage local forest owners in a coordinated strategy.

4.18.2 The project GE.COO.FOR

The GE.COO.FOR project has been awarded by the programme '*Resilient communities*' promoted by Fondazione Cariplo, a bank foundation fostering territorial development in the Lombardy Region and dealing with various policy domains. The project also received funding from the Regional Administration fostering the rural, agro-food and silvo-pastoral system of Lombardy. The total funding of the project amounted to circa 400,000 euros.

The project GE.COO.FOR aims at involving small private forest owners in a local forest management strategy, focusing on sustainable biomass production together with mitigation of environmental risks (mainly of hydrogeological type). The strategy for achieving the goal has been mainly bottom-up, with intense involvement of stakeholders through participatory activities.

[25] In 2011 a flood severely damaged various parts of northern Italy, including the municipalities of Briennio and Laglio, both of them belong to the Mountain community.

The specific objectives of the project have been:

- To map all the private properties within the forest area,
- To encourage and engage private forest owners in coordinated forms of forest management;
- To increase the portion of woodland certified by the organization of forest certification – PEFC,
- To promote active forest management in order to prevent hydrogeological risk associated with abandoned forests, by? using biomass production as a leverage factor,
- To increase the convenience of biomass production for private forest owners,
- To raise awareness and build capacity of local stakeholders (citizens, forest owners, firms and SMEs).

Figure 49 Forest management in the GECOOFOR project

The duration of the project was of 2 years, from 2015 to 2016. A crucial part of the project GE.COO.FOR was the activation of a participatory process to engage local forest owners, to renovate the interest in the forestry-energy sector and contribute to a coordinated strategy.

The project was effectively implemented. It produced:

- Large amount of information and awareness raising campaign;
- Definition of a pilot agreement with private forest owners and creation of an accredited planning and management pathway for a sample private forest area;
- Extensive GIS and WEB mapping of forest properties all over the territory (in total 23.000 ha);
- Involvement of nearly 200 hectares of private forests into a new planning scheme;
- 2 pilot projects to mitigate the hydrogeological risk linked to unmanaged forests, with the involvement of small private forest properties and production of forest biomass for local heat networks.

Further development of the GE.COO.FOR project is aimed at testing ways of re-investing savings generated from using forest biomass in public buildings, through specific action plans relating to hydrogeological instability, both locally and more widely.

4.18.3 The participatory process features

CFLI as project coordinator was the promoter of the participatory process. The participative process conducted within the GE.COO.FOR project engaged local public administrations (municipalities), private forest owners, citizens, associations and local SMEs, in order to promote a model of resilient community based on:

- Mitigation of environmental risks;
- Adaptation and resilience;
- Increase of the potential of local energy production from wood biofuels.

The participatory process consisted of the following activities:

- Mapping the private forest properties;
- Thematic workshops and meetings during the whole project, targeted to raise the awareness of citizens, experts, public administrations and SMEs;
- Setting up of info points and advisory services in collaboration with the local municipalities;
- Bilateral meetings between CFLI and private forest owners before defining the agreements;
- Networking with other European projects in order to collect suggestions and best practices.

A group of experts supported the project during the management, awareness raising and communication phases. A few hundreds of private owners were contacted, including through a communication campaign with itinerant informative counters on the territory. The project actively involved about 50 owners in the implementation of the project, engaging a selection process among those owning larger plots of land in order to reach more quickly the critical mass needed to achieve the project goals. Some beneficial contractual solutions have been proposed to the private owners, such as the management of the forests by CFLI and the purchase of cut wood at very advantageous prices. The rest of the wood cut was used by CFLI to power the biomass boilers in the local public buildings, with relevant energy savings for the community. The installation of boilers was mostly financed by EARDF. Moreover, the private owners have been involved by CFLI into the planning of the forestry within the PEFC schemes. Around 200 more hectares of land has been added to the PEFC management of CFLI.

The project GE.COO.FOR has also foreseen international networking in the context of the Arco Latino programme[26] with the involvement of administrations, research institutes and firms from Spain, Italy, France. The networking explored public-private synergies in the field of biomass fuel and it originated from various European projects at the interregional level. The most important participatory tools have been the following:

- The selection of participants to the implementation of the project, with a major involvement of forest owners of larger plots of territory
- Facilitation and conduction of the participation? process by external consultants,
- Involvement of technicians and politicians to support the goals and the implementation of the project,
- Communication activity which continues after the project termination.

4.18.4 The outcomes achieved

The participatory process achieved the goal of increased awareness about local and regional policy towards the issue of unmanaged private forests, which cover large surface all over the Lombardy region. At the end of the project, a further 200 hectares of private forests entered into the new planning scheme of sustainable forest management.

Moreover, the intervention of CFLI definitely helped private owners to overcome some critical situations, in particular related to the lack of forest management capacity.

[26] http://en.arcolatino.org/

Finally, a large amount of local wood resources have become available to power the biomass boilers in the public buildings. The future idea is to extend the strategy to private energy consumers (e.g. hotels, rest homes, etc). In general, the process was appreciated by private forest owners as a means to give “new life” to neglected properties. In some cases, the project allowed the exploitation of the economic potential of unmanaged woods through economies of scale, provided by association of small property owners in the coordinated scheme. The potential of sustainable biomass production in associated small private properties is yet to be investigated as it offers great possibilities for development, especially in remote areas.

4.18.5 Explaining linkages, lessons and shortcomings

The GE.COO.FOR project has been promoted in the context of a more general policy fostering planning and certification schemes for sustainable forestry. The area where the project was implemented is in fact characterized by highly fragmented forest properties, abandonment and hydraulic risks, and lack of exploitation of existing resources, such as biomass energy.

The participatory process in the project aimed at raising the awareness of private forest owners about the risks of unmanaged forest areas and the opportunities of a common strategy. Two mechanisms appear most important in this case: the provision of a direct incentive for the private owners to join the common management scheme of the forests; and a selection of participants in early stages of the project from among larger properties and prominent stakeholders of the region, in order to reach a threshold of participants who provide the project with a good visibility.

It must be pointed out, anyway, that GE.COO.FOR was a pilot initiative, launching an innovative approach to forest management and biomass production as a means to tackle other environmental problems and this has a great potential of replicability across various regions.

4.19 Developing the renewable energy sources and capacities of the Madonie Green Community' (Italy)

Practice scorecard:

Title	Developing the renewable energy sources and capacities of the Madonie Green Community
Place	Italy, Madonie area
Type of initiative (programme, policy, project)	Policy
Period	2007–ongoing
Sector(s) addressed	Renewable energy, energy efficiency in public and private buildings and public lights, green communities
Type of participatory process adopted	Co-design & co-production
Contact person	Alessandro Ficile, SOSVIMA president, sosvima@gmail.com
Website	http://madoniearealinterna.it/

4.19.1 The context

Figure 50 Madonie area: panoramic view and location

The Madonie is a mountainous area located in the inner part of Sicily, the largest island of Italy. For many years 21 municipalities of the area, most of them remote and sparsely populated, have cooperated in various fields, such as economic development, transport, environment, energy, education. Some of these policy areas are coordinated by the Society for the Development of the Madonie - SOSVIMA), created in 1997.

The strategy 'Developing the renewable energy sources and the capacities of the Madonie Green Community' is a section of a broader programme issued in January 2017 and called **'Resilient Madonie: a laboratory of future'**, which aims at reversing de-population by the improvement of fundamental services, such as education, health and mobility for the inhabitants of the area.

The Programme 'Resilient Madonie' has been promoted under the framework of the 'National Programme for the Inner Areas'[27] (Strategia Nazionale per le Aree Interne – SNAI), which envisages place-based policies for peripheral areas, i.e., areas characterised by population decrease and distance from basic public services. The national programme is awards the best strategies presented by territories with *ad hoc* funding. The Madonie area submitted its own candidacy – with the support of SOSVIMA – and it has been selected to take part in the national programme on Inner Areas. The

[27] Materiali UVAL, A Strategy for Inner Areas in Italy: definition, objectives, tools and governance, Issue 31, Year 2014, http://www.agenziacoesione.gov.it/opencms/export/sites/dps/it/documentazione/servizi/materiali_uval/Documenti/MUVAL_31_Aree_interne_ENG.pdf

implementation of the territorial strategy will be sustained by financial resources from both the national budget and European Regional Development Funds. The Programme Resilient Madonie is coherent with other relevant policy frameworks: Europe 2020 Strategy, in relation with climate change and energy, the National Energyl Strategy (2013) as well as the ERDF Regional Operative Plan 2014-2020, which envisages some intervention priorities for the marginal areas of Sicily.

4.19.2 The energy policy 'Developing the renewable energy sources and the capacities of the Green Community'

The main goal of the strategy 'Developing the renewable energy sources and the capacities of the Green Community' is to experiment an innovative energy model, which includes **energy savings and energy production issues** within the general framework of establishing a local Green Community. The strategy envisages holistic approach to reach the target of 100% of renewable energy in the next 10 years. Today, around 52% of electricity is provided by renewable energy in the Madonie area.

The Green Communities are rural or mountain territories with a particular focus on renewable energy and energy savings, such as integrated and certified management of agro-forestry heritage and water resources, energy efficiency of buildings, sustainable tourism, etc.[28] Even though the government is still preparing the national strategy for Green communities[29], Madonie is already piloting a similar approach. The strategy 'Developing the renewable energy sources and the capacities of the Green Community' foresees the following actions and outputs:

- Interventions of energy efficiency within public buildings (€4.329.000) and public lighting €2.108.000)
- Integrated interventions of energy efficiency within public hospital (€950.000) and sports complex (€614.450) in Petralia Sottana, by the hybridization of biomass and solar sources
- 6 biomass processing platforms for wood pellet production (€3.000.000)
- Interventions of energy efficiency within the school building which host Energy Fablabs (€800.000)
- Foundation of a network of energy FabLabs within the smart school programme of the Madonie School Network (€1.224.662)
- Empowerment of the Madonie Living Lab (€1.414.000), a territorial living lab, devoted to energy, agrofood and natural/cultural heritage that is part of the European Network of Living Labs.

The social and cultural innovation process emphasizes the need of strengthening both the identity of the Madonie and the governance, overcoming the municipal level. To this end, the local municipalities have entrusted the governance of energy policy to the Union of Madonie Municipalities. The Union of Municipalities will coordinate the implementation of the Sustainable Energy Action Plans (SEAPs) adopted by the municipalities and several other initiatives, such as green public procurements and renewable energy investments, especially in solar power generation and agro-forestry biomass transformation. Moreover, the Union will promote a building regulation on energy efficiency both for public and private buildings, and participatory business models for energy generation plants.

[28] Article 72 of Law n.221/2015.
[29] Synthesis Document (in italian): http://www.affariregionali.it/media/170272/a-sintesi-consultazione-pubblica-sulla-strategia-nazionale-delle-green-community.pdf

The strategy ‘Developing the renewable energy sources and the capacities of the Green Community’ origins from the experience of Structural Funds 2000-2006, when local actors fostered the construction of a diffused photovoltaic park, which consists of14 little plants in degraded public areas in order to avoid land consumption. Other projects were, for example: a common SEAP of 28 municipalities, aimed to define and realize integrated actions for reducing GHG emissions; interventions for photovoltaic plants in schools; public lighting with LED technology.

4.19.3 The participatory process features

The strategy foresees a participatory approach among the 21 local communities of the Madonie. The core idea is that the diffusion of green technologies needs to be accompanied by social innovation in local communities. The strategy hence involves local public administrations, entrepreneurs, families, schools and citizens' associations: everybody can contribute to the challenge of cultural change of the Madonie horizon. All the local actors are involved as ‘*prosumers*’: both producers and consumers of energy services, interested to reduce the consumption and the costs as well as to improve the quality of environment and life. Participation was a mandatory requirement for the programme ‘Resilient Madonie’ to be funded by the national government and was thus conducted since the preparation of the candidacy. Participatory activities aimed to enlarge the contribution of local communities. A public call was announced to collect expressions of interest from citizens, associations and institutions for participating in policy design activities, in different phases of the process.

Characteristics of the participatory process within the Programme ‘Resilient Madonie’

The first phase started in September 2014 with a focus group where representatives of regional and national authorities and actors of local communities (mayors, experts, university professors, school managers, students, entrepreneurs of various economic sectors, labor unions) participated.

In the second phase, after the selection of Peripheral Area of Sicily Region as a prototype, a public call was activated in order to collect expressions of interest for voluntary participation without payment in the project activities. Five thematic working groups were established; one of them for renewable energy. The working group produced the first draft strategy which was approved on 27 November 2015.

In the third phase, the participatory process included thematic meetings and seminars at different levels in order to define the preliminary strategy, finally approved on 12 July 2016.

In the fourth phase, the activities of co-design among the local, regional and national authorities resulted in the final strategy, approved on 9 February 2017.

In this fourth phase SO.SVI.MA. activated public calls in order to collect expressions of interest for voluntary participation of schools and associations in Madonie School Network. The activities performed in the four phases are published on the website Madonieareainterna.it

The promoter of the process has been the Società di Sviluppo delle Madonie (SO.SVI.MA.), the local development agency, established in 1997, which coordinated the candidacy of the programme “Resilient Madonie” to the National Programme for Inner Areas. SO.SVI.MA. organised many activities in order to enlarge the participation of local actors in working groups, thematic seminars, public meetings and conferences. In relation with specific themes the promoter encouraged the participation of qualified “competence centers” who were able to contribute in appropriate way to find the best solutions. A strong contribution was given by the Consortium ARCA, a center for innovation, applied research and business incubation, in partnership with the University of Palermo.

Moreover, experts of National Research Center and professors of Palermo University departments as well as the representatives of regional and national authorities participated in the technical panels and working groups. Results from several EU-funded projects (STS-Med, Zero Plus, Smart Gems, FoTTRIS, Forbioenergy) have been capitalized. Best practices have been identified, shared and discussed as a key part of the capacity building activities.

Many local administrators, municipal technicians, researchers, academicians, entrepreneurs, schools and environmental associations were involved in the programme through seminars, workshops and conferences. Moreover, the municipalities encouraged energy efficiency initiatives both for public institutions, private citizens and economic operators to instal photovoltaic panels for the boilers and heating. Some local entrepreneurs started to produce renewable energy from biogas of breeding farms or within the process of organic fertilizer production. Many people have turned to use wood stoves fuelled by pellet. Pellet production from local agro-forestry resources has been tested and experiences gained.

The Madonie School Network, in which all the schools from primary to high levels participate with around 18.000 students, will be the host of the energy FabLabs. The network has been very important in relation with its capability to involve families and local associations together with experts and entrepreneurs in the training process. 27 local associations, selected by a public call, decided to actively cooperate with the Network.

Figure 51 The wind energy plant, built in the area at the beginning of 2000

It is worth to mention that the call for expression of interest has been launched in different areas promoted by the strategy. In particular, a call directed to the 21 municipalities has been published in order to identify areas which are interested to offer location for small recycling/biomass processing plants. 8 candidacies have been collected and 6 areas have been selected. By the large participatory process these energy policy initiatives obtained a broad consensus between the municipalities and local communities. This differs from the experience whith building 8 wind farms in the area, which raised conflicts due to the centralized decision making and the environmental impacts on the natural landscape.

The participatory process used the following tools:

Constitution of a stakeholders' steering committee to supervise the process	**X**
Some kind of selection of participants (random sample, target groups etc.)	**X**
Facilitation and conduction of the process by external professionals	**X**
Involvement of technicians and experts in direct interactions with participants	**X**
Constitution of a technical task force to support the collaborative process	**X**
Involvement of politicians and elected officials in direct interactions with participants	**X**
Constitution of a politicians' task force to supervise the process	**X**

4.19.4 The outcomes achieved

Positive results of the participatory process were registered on the side of effectiveness, sustainability and legitimacy. As for effectiveness, the impact was positive as participation contributed to the shaping of the 'Resilient Madonie' Programme, including the creation of a Green community. As for legitimacy and sustainability, the participatory process was positively perceived by the actors involved, and contributed to solve potential conflicts, such as in the case of the site selection for the biomass processing plants.

4.19.5 Explaining linkages, lessons and shortcomings

The policy for a more sustainable community of the Madonie has been framed under a larger national programme, which aims at developing and funding the strategies of sparsely populated and under-developed areas of the inner parts of Italy. The participatory process was a mandatory requirement for the candidacy, however the Madonie made participation as a core element of the

strategy, by involving stakeholders (institutions, experts, schools, business actors, citizens) both in the definition of the programme, as well as in its implementation. The calls for interest have been a participatory tool for engaging partners but also for preventing conflicts on land use: this was the case of the construction of 6 small recycling/biomass processing plants. At the same time participatory and networking actions have been implemented to promote the establishment of innovative energy FabLabs in the schools and the territorial Madonie Living Lab.

The participatory process was also devoted to foster behavioural transition and adopt more sustainable means of energy use and production. An example is the adoption of pellet stoves by citizens and the production of pellets by the exploitation of forestry and rural resources.

4.20 NordEstSudOvest – EU Sustainable Energy Week and Sustainable Action Plan in Venice area (Italy)

Practice scorecard:

Title	NordEstSudOvest – EU Sustainable Energy Week and Sustainable Action Plan in Venice area
Place	Venice, Italy
Type of initiative (programme, policy, project)	Programme
Period	2011–ongoing
Sector(s) addressed	Sustainable energy and energy efficiency
Type of participatory process adopted	Co-design; co-evaluation
Contact person	Pierantonio Belcaro info@nordestsudovest.org Associazione Nord Est Sud Ovest
Website	http://www.nordestsudovest.org/

1.1.1 The context

In Italy and especially in Veneto (the region where the events take place) many municipalities have been engaged in the achievement of the energy goals and participated to the Covenant of Mayors initiative[30]. This initiative has brought together thousands of local and regional authorities who have voluntarily committed to implement EU climate and energy objectives on their territory. New signatories now pledge to reduce CO_2 emissions by at least 40% by 2030 and to adopt an integrated approach to tackle mitigation and adaptation of climate change.

Figure 52 The location of Venice, Italy

In Italy at least 3,265 municipalities (about the 40% of the total) have signed the Covenant of Mayors in order to achieve the 2020 goals. In the Veneto Region the proportion is higher and has reached 64% of the municipalities.

Moreover, the former Province, now Metropolitan City of Venice, has issued a Sustainable Energy Action Plan (SEAP) which act as a coordinating framework for the SEAPs of the 43 out of 44 municipalities which have adhered to it. More than 30 municipalities have adopted SEAP. The SEAP of the Metropolitan City of Venice foresees a monitoring process to check periodically the results achieved which led towards the sustainable energy goals.

The Association NordEstSudOvest is a nonprofit entity founded in 2010 in Venice (Veneto Region). Among its statutory objectives, there are also the participation of citizens to the cultural and political debates and the promotion and protection of the environment and the territory.

[30] http://www.covenantofmayors.eu

Since 2011, the Association organizes several activities in the context of the European Union Sustainable Energy Week. This is an initiative of the EU dedicated to sustainable energy policy issues, which also grant awards to the most innovative and effective practices[31]. The Sustainable Week organized by the NordEstSudOvest association has been united with the initiative of the Covenant of Mayors for Climate and Energy. The goal was to provide a platform for the monitoring of the results achieved and the exchange of practices among the various stakeholders involved in the SEAP of Venice and in other practices in the Region.

4.20.1 The EU Sustainable Energy Week and Sustainable Action Plan in Venice area (Italy)

The Sustainable Energy Action plan of the Metropolitan City of Venice, periodicallly monitors the degree of the achievement of the goals, gainedby the SEAP of the municipalities adherent to it.

The Sustainable Energy Week organized by the Association NordEstSudOvest aimed at creating a permanent platform to monitor the results which would led towards the energy goals.

Figure 53 The 'people mover': an elevated infrastructure for public transport of people (source: SEAP of the Municipality of Venice)

In this context, the participants of the Sustainable Energy Week - municipalities, politicians, stakeholders, citizens' associations, professionals, universities and schools - have had the chance to exchange good practices also in the participatory field.

Some of the experiences discussed during the Sustainable Energy Week were in fact characterized by various forms of citizen and stakeholder engagement. This has been an occasion of presenting the different ways in which the participation has been promoted towards the achievement of sustainable energy goals.

4.20.2 The participatory process features

The participatory processes have been fostered within the different SEAPs of the municipalities involved, with different goals and features. Most of the times, the participatory processes have been promoted before the adoption of the policy decision, sometimes also during the implementation phase and during the evaluation of the results achieved.

Figure 54 The presentation of the ENLARGE project during the Energy Sustainable Week in Mestre, 2017

Participatory processes have been largely voluntary, even though they have been strongly recommended by the guidelines adopted by the coordination bodies (both at the EU level, and at local level).

Different types of stakeholders have been involved: local administrations, citizens associations, enterprises, universities, schools.

4.20.3 The outcomes achieved

The participatory processes conducted within the SEAPs of the various municipalities have achieved different results and, in some cases, they have been able to influence the energy policy of the promoter.

[31] http://www.eusew.eu/

As an example, in the SEAP (Sustainable Energy Action Plan) of Venice a consultation concerning the localization of a biomass plant in Mestre-Venezia has been promoted. As a result of the consultation process, the plant has been deleted from the Venice SEAP.

4.20.4 Explaining linkages, lessons and shortcomings

The sustainable week in Mestre, organized each year by the association of NordEstSudOvest is an interesting process, which aims to provide space for discussions and exchange of practices among different stakeholders, within the general context of the first Metropolitan SEAP of Venice, involving more than 30 municipalities. Even though no particular techniques of participation have been used in this context, the experience has represented a voluntary process of 'participatory monitoring' of the energy policies and projects carried on.

4.21 "Sustainable Santorso. Towards an integrated and sustainable local community" (Italy)

Practice scorecard:

Title	'Sustainable Santorso. Towards an integrated and sustainable local community'
Place	Italy, Santorso Municipality
Type of initiative (programme, policy, project)	Project
Period	2014 - 2015
Sector(s) addressed	Renewable energy, energy efficiency in private buildings
Type of participatory process adopted	Co-design & co-production
Contact person	Marco Palma, civil servant, marco.palma@comune.santorso.vi.it

4.21.1 The context

Santorso is a municipality in the Province of Vicenza, in the Italian region of Veneto, one of the richest and more industrialized regions in Europe.

The project 'Sustainable Santorso. Towards an integrated and sustainable local community' concerns the implementation of the SEAP, which was adopted in 2014 and aims at reducing CO_2 emissions in the municipal territory, in particular those emissions produced by heating, renewable energy systems and energy saving technologies.

Figure 55 Santorso, Veneto: panorama

The SEAP (Sustainable Energy Action Plan) framework lies within the Covenant of Mayors, a voluntary pact between mayors, promoted by the European Commission, through which municipalities decide to reach common 2030 goals in the field of energy efficiency, energy saving, sustainable energies and climate change. The Covenant of Mayors foresees the formulation of the inventory of local emissions and the adoption of an action plan. The Municipality of Santorso formulated a plan with 41 actions and the goal to cut 28% of the emissions.

4.21.2 The project 'Sustainable Santorso. Towards an integrated and sustainable local community'

The main goal of the project was to reduce the CO_2 emissions in the municipal territory, in particular those emissions produced by heating, renewable energy systems and energy saving technologies. No specific quantifications and deadlines for the objectives were established. Two main decisions that emerged from the participatory process were:

- The opening of an Energy Help Desk, for which the municipality found a room and bought some furniture. The Energy Help Desk opened in October 2015. It has been working as a consultancy office for citizens directly managed by the ordinary citizens. It was open once a week and everyone interested could come and ask questions about energy (like "I have this energy – invoice: is it expensive or not?"; or "I would like to buy a photovoltaic system: what do I have to do?" etc.).

- The organization of a **purchasing group**, namely a group of families which gather to buy energy technologies together, in order to lower the costs.

During the participatory phase, about 20 - 25 citizens took part of the workshops and The Future Search Conference (see below). During the first year, the Energy Help Desk met more than 100 families. 57 families decided to be involved in the "buying group" and 31 decided to buy new energy-related technologies: in particular, more than 92 photovoltaic kW were installed. The estimated amount of CO_2 that would be avoided, is about 56 tons per year. The total amount of the private investment was 140.000, € + VAT. The Energy Help Desk organized also 9 public initiatives which promote energy saving. In total it was open 42 times, which makes 84 hours.
The constitution and running the Help Desk costed about 6,300 € for one year. The whole project costed about 8,000 €. The Santorso municipality covered it from its own budget.

4.21.3 The participatory process features

The project started in September 2014. The participatory activities were organized through: a) a study for getting to know the local context; b) public meetings to share the research results and to propose the participation approach; c) workshops and trainings to raise the citizen knowledge; the priority decisions between the local authority and citizens. The
project has involved Local Public Administrations, citizens, associations and experts in the design phase, in particular:

- Citizens have been involved in public events and workshops to decide on which priority choices and directions the strategies and actions should concentrate;
- Local associations have been involved to promote awareness of their members and to favour participant recruitment;
- Experts have been involved in open seminars and workshops and in the participatory process in order to inform participants.

Participation was a suggested requirement by the Covenant of Mayors.

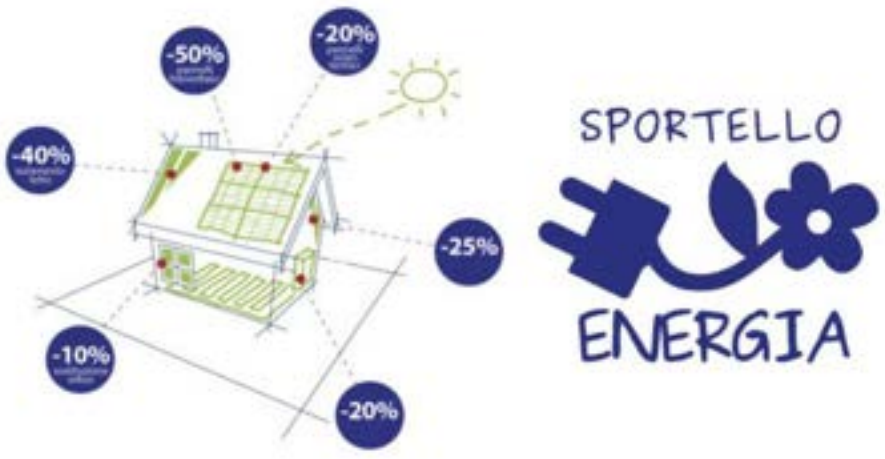

Figure 56 The logos of the Energy Help-desk and the Purchasing group

Characteristics of the participatory process within the project 'Sustainable Santorso'

The project started in September 2014. Firstly, a group of 4 environmental engineering students started a collaboration with the municipality in order to raise awareness on sustainable energy

issues. They were involved along the whole process. The participatory activities were organized through:

a) a study for getting to know the local context (30 in-depth interviews and a survey with 50 citizens conducted by the 4 aforementioned students);
b) public meetings to share the results of the study and to propose a participatory approach (2 months);
c) workshops and trainings to raise the knowledge of citizens and brochure for citizens about the best-practices in energy savings (2 months);
d) a co-design process between the local authority and citizens about the format of a Future Search Conferences (FSC); for this aim an expert on participatory tools met civil servants and the four students who mobilized at the beginning, in order to train on facilitation methods and techniques. The FSC was finally managed by the trained civil servants and the four students (1 month);
e) the implementation phase during which participants realized the Energy Help Desk (10 months)
f) the monitoring phase for verifying the outputs of the purchasing group through the collection of data (2 months).

The promoter of the process was the Municipality of Santorso, which also coordinated the candidacy of the project “Sustainable Santorso” for the EUSEW grant for sustainable energy. The project was shortlisted with other two (Paris and Dublin) for the final step.

Among all the involved categories, the four students proved to be fundamental for the good working of the whole process: they were the real activators of the community during the interviewing phase and their presence during the whole process made citizens feel that the process was not merely institutional and top-down but really participatory.

The participatory process used the following tools:

Constitution of stakeholders’ steering committee to supervise the process	**X**
Some kind of selection of participants (random sample, target groups etc)	**X**
Facilitation and conduction of the process by external professionals	**X**
Involvement of technicians and experts in direct interactions with participants	**X**
Constitution of technical task force to support the collaborative process	**X**
Involvement of politicians and elected officials in direct interactions with participants	**X**
Vote as tool to take decisions into the participatory arenas	**X**
Communication campaigns	**X**

There was no stakeholders committee. Participants were not selected and the participatory arena was open to all who decided to take part. There was no task-force of municipality technicians. There was no specific involvement of politicians in the organization and/or supervision of the process. The Future Search Conference that was facilitated by trained civil servants, worked as follows:

- 6 two-hours-long seminars on energy issues (inventory of local emissions, opportunities of energy savings): one hour presentation and one hour for discussions;
- 6 discussion meetings in roundtables, facilitated-by the civil servants in order to formulate some common goals.

Voting was used to choose the firm from whom to buy the plants. After the NGO Legambiente (League for the Environment, one of the most widespread environmental organizations in Italy) had written the 'terms of reference', the municipality had sent it to several firms and received 11 offers. A commission consisting of 5 participants established the evaluation criteria and listed a ranking of 11 offers. Citizens who enrolled in the purchasing group could vote among the 11 offers ranked, but all confirmed the suggestion of the commission. The process was made visible in the community through the word of mouth.

4.21.4 The outcomes achieved

The average spare of the families for the purchase of the plants (confronting with market prices) was about 15%. No impact assessment has been conducted on the citizens' behaviour to reduce energy consumption.

4.21.5 Explaining linkages, lessons and shortcomings

The project helped many local authorities of the Altovicentino area on recognizing the value of an Energy Help Desk and to work on a common project. The Altovicentino area has many small and medium towns. It had a long history in the field of textiles and clothing industry. During the second year of the project, other municipalities decided to participate and now the Energy Help Desk is promoted by 11 local authorities (more information on www.sportelloenergiaaltovicentino.it). The same municipalities are discussing for promoting new common projects.
Two main challenges emerged in the process:

- To generate trust among citizens, to weaken their scepticism towards fear of being involved instrumentally, while decisions were already made
- During the discussion meetings, participants changed often and this fluctuation and porosity of the arena made it very difficult to structure an incremental process of shared formulation of policy tools

4.22 "*énostra*, l'energia buona" società cooperativa (Italy)

Practice scorecard:

Title	"*énostra,* l'energia buona" società cooperativa
Place	Milano
Type of initiative (programme, policy, project)	Project
Period	2012-ongoing
Sector(s) addressed	Energy supply and involvement of citizens in the transition to a low carbon economy and society
Type of participatory process adopted	Co-production
Contact person	Sara Capuzzo, vice-president of énostra, info@enostra.it

4.22.1 The context

The EU RESCOOP Horizon 2020 project started in 2012 and ended in 2015. It involved 12 EU countries, Italy among them. The Italian partner of the project, Avanzi s.r.l. (a consulting entity on innovation, sustainable economy and including society), is located in Milano. The main goals of the project were to foster the consumption of sustainable energy, to raise awareness of consumers and citizens toward the topic of energy and its impacts on the environment, to address virtuous behaviours in the way to consume, to spread information and tools about how to consume whilst avoiding energy waste.

Cases of direct involvement of citizens in the energy sector of each country were collected and analyzed in order to learn lessons, which would be useful to start new initiatives. This first part of the project highlighted that in Italy there were some production cooperatives (ownership of renewable energy power plants), but there was a lack of collective entities regarding the supply sector. The second part of the project was devoted to found ***ènostra***, a cooperative society. It was developed by Avanzi s.r.l. together with other three partners: Energo Club (nonprofit energy and environment related organization), Retenergie (a cooperative created in 2012 to promote collective ownership of renewable power plants) and Forgreen (a for profit society in the field of renewable energy).

4.22.2 The project ènostra

ènostra was founded in 2014. It is the first nonprofit cooperative company in Italy that supplies renewable and sustainable energy to its associates.

Figure 57 ènostra logo

Private citizens, nonprofit and for-profit organizations can become associates of the cooperative by buying a limited number of shares (5 shares of 25 Euro each before 2017; 2 shares of 25 Euro each, starting from 2017). The shares are deposits that will be reimbursed in case of withdrawals.

A participative approach was adopted for two aims: to develop its own evaluation tool in order to make sure that the energy which is sold to the members is both renewable and sustainable; to extend the number of associates within the cooperative.

ènostra was started at the beginning of 2016, in order to sell renewable and sustainable energy. At the same year, one of the founder organizations (Forgreen) decided to withdraw from the cooperative. In 2017 *ènostra* and Retenergie (one of the founders of *ènostra*) started a process of fusion in order to create a wider non profit organization which would be able to act both on the production and on the supply side of renewable and sustainable energy.

4.22.3 The participatory process features

The promoters of the participatory process were the founders of *ènostra*. A technical team composed by members of the four founder organizations of *ènostra*, and a scientific committee composed by experts were formed. The technical team and the scientific committee organised several work sessions in order to share and analyse other experiences of particular interest and to define a specific "sustainability matrix" which would be useful to select the energy producers who would be involve in the project.

Based on the principle of ethical finance and the social enterprise assessment, the technical team, supervised by the Scientific Committee, identified a matrix consisting of several indicators related to the type of energy plants, environmental and social responsibility, the transparency and management of the energy producers. Moreover the following exceptions have been fixed: the producer cannot be involved in fossil pnergy production, nor has it any economic connection or interests in fossil fuels. The sustainability matrix were shared by three over the four founders (Avanzi, Energo Club and Retenergie), but not by Forgreen was withdrawn from the cooperative.
The *ènostra* founder has promoted four public conferences on the topic of renewable energy in four Italian cities (Civitavecchia, La Spezia, Brindisi, Reggio Calabria) in order to stimulate the wider adhesion to the cooperative. Furthermore, *ènostra* promoted a communicative campaign involving Banca Etica, a subsidiary of ethical finance and Radio Popolare, an independent radio station based in Milano known for its progressive and environmentalist orientation.

While the public conferences were not useful in stimulating new adhesions to the cooperative, the communicative campaign has proved to be effective in this regard.

The participatory activities were organized through:

a) A technical team supervised by a scientific committee aiming to define a sustainability matrix useful to select energy producers;
b) Public conferences on renewable energy;
c) Communication campaign.

Summing up, the participatory tools were the following:

Constitution of a stakeholders' steering committee to supervise the process	**X**
Involvement of technicians and experts in direct interactions with participants	**X**
Vote as tool to take decisions into the participatory arenas	**X**
Communication campaigns	**X**

4.22.4 The outcomes achieved

The first two years of *ènostra* activities have been loss-making. At the same time the number of associates has increased from 300 in 2015 to 1100 in 2017. Currently staff consists of 6 units; the energy per year supplied to the associated is 1,27GWh.

4.22.5 Explaining linkages, lessons and shortcomings

ènostra has established linkages with the following cooperatives in the field: Ecopower (Belgium, 47,000 associated), Middelgrunden Wind Turbine Cooperative (Denmark, 40,500 associated), Greenpeace Energy (Germany, 23,000 associated), Som Energia (Spain, 20,000 associated), Enercoop (France, 18,000 associated), Energy4All (United Kingdom, 1350 associated).

One of the main challenges is to attract new associates. In the context of supplying renewable energy in Italy, where currently there is no mass demand for such energy from consumers, the context is not particularly favourable for *ènostra*, which is the first energy cooperative focused on supplying renewable energy in Italy. It is therefore necessary to stimulate adherence by niche consumers who are just sensitive and interested on environmental issues.

4.23 Project on the decarbonisation of Puglia (Italy)

Practice scorecard:

Title	Project on the decarbonisation of Puglia
Place	Italy, Puglia Region
Type of initiative (programme, policy, project)	Project
Period	2016
Sector(s) addressed	Energy and steel production
Type of participatory process adopted	None of the participatory categories applied
Contact person	Barbara Valenzano, Environmental Department Director b.valenzano@regione.puglia.it Francesco Corvace, Executive, f.corvace@regione.puglia.it, supportoprogetti.ambiente@regione.puglia.it

4.23.1 The context

Puglia is a region in the South East of Italy that counts more than 4 millions of inhabitants. Its economy is characterized by a mix of small and medium-sized firms on agriculture and services and highly capital-intensive large-scale plants in the industry. Two of them are particularly relevant: the Enel power plant in Brindisi, the second power plant in Italy (Figure 52) and the Ilva plant in Taranto, one of the larger steel producers in Europe (Figure 53). Both of them are coal plants. Since their polluting emissions are very larger, they have been an object of consistent contestations from environmentalists and citizens committees in the last years.

Figure 59 Ilva plant, Taranto

Figure 58 Enel power plant, Brindisi

Another relevant and ongoing territorial conflict in Puglia regards the Trans-Adriatic Pipeline (TAP), a pipeline project to transport natural gas starting from Greece, via Albania and the Adriatic Sea to Puglia and further to Western Europe (Figure 59).

4.23.2 The road map on the decarbonisation

In order to reduce the pollution and to solve the territorial conflicts the Regional Administration has elaborated a road map on the decarbonisation. The main points of the road map are the following:

Figure 60 Trans-Adriatic Pipeline

- The reformulation of the current layout of the Trans-Adriatic Pipeline, in order to reach Brindisi and Taranto;
- The transformation of the production process of steel of Ilva plant in Taranto, converting the existing coal plant to a natural gas plant;
- The transformation of the energy production of the Enel power plant in Brindisi, converting the existing coal plant to a natural gas plant.

4.23.3 The participatory process features

The road map on the decarbonisation has been elaborated by the Regional Administration and it is not the output of a participatory process.

It has been an object of communication action and advocacy through the participation of the Regional Administration within the following conferences:

- Conference “Reconsidering the Italian Steel Industry: Ilva Factory - current situation and future prospects” organised by the Regional Administration with The National Professional Association of the Engineers in Taranto on 10th of October 2016. The discussion has focused on the future of Ilva plant and has stressed the need to introduce a radical change as regards production-cycles in the Taranto’s installations;
- Conference “Towards a decarbonisation road-map: the testing proposal of Puglia. Defining the modus operandi for transferring Science Information from technicians to policy-makers” organised by the Regional Administration, the National Council of Engineer and ALDA (European Association for local democracy) in Rome on 24th of October 2016. During the conference, two important figures have spoken: Paul Wilkinson, international expert of decarbonisation from UK and Maria Neira, WHO (World Health Organisation) director;
- “Climate Change Conference” organized by United Nations in Marrakech in November 2016. The president of Puglia Region, Michele Emiliano, has presented the road map on the decarbonisation;
- Conference “Puglia’s road map for the decarbonisation”, organised by the Regional Administration with The National Professional Association of the Engineers and ALDA in Rome on 25th of November 2016. The aim has been to promote the road map for the decarbonisation in Puglia as a regional testing experience. During the meeting, a set of different carbon-free technologies for the production of steel and energy were been presented.

4.23.4 The outcomes achieved

In terms of the public decisions, no outcomes have been achieved so far.

4.23.5 Explaining linkages, lessons and shortcomings

The communication action and advocacy promoted by the Regional Administration has involved the National Council of Engineer and ALDA.

Three main challenges have to be faced:

- The national government is currently in favour of the current layout of the Trans-Adriatic Pipeline;
- The revised layout of the Trans-Adriatic Pipeline advanced by Regional Administration could be an object of local contestations, as well as the current layout;

At the moment the owners of the plants in Taranto and in Brindisi have not adhered to the decarbonisation road map.

4.24 "Developing the renewable energies sources and the capacities of the Green Community" (Italy)

Practice scorecard:

Title	'Developing the renewable energies sources and the capacities of the Green Community'
Place	Italy, Sardinia, Union of the municipalities of the Montiferru-Sinis
Type of initiative (programme, policy, project)	Programme
Period	2013 ongoing
Sector(s) addressed	Waste reduction, recycling
Type of participatory process adopted	Co-production
Contact person	Stefania Carletti, Union of the Municipalities of Montiferru-Sinis, Project Manager, info@unionemontiferrusinis.it

4.24.1 The context

The Union of Municipalities of Montiferru Sinis is an inter-institutional governing body in the province of Oristano, in the region of Sardinia in Italy. Presently, the Union is composed of the following 9 municipalities: Bauladu, Bonarcado, Cuglieri, Milis, Nurachi, Santu Lussurgiu, Seneghe, Tramatza, Zeddiani. The territory comprises mountainous areas – such as the Montiferru, an extinct volcanic region – woods and shores – as in the Sinis area, north of Oristano – volcanic cliffs, springs and a major river (the Rio Mannu). The economy is mainly rural, based on pastoral and agricultural activities, but tourism is an important source of income (in particular in the coastal area). The territory is sparsely populated, with 20427 inhabitants for an area of 513 km^2.

Figure 61 Montiferru-Sinis: The area and project leaflet

The Union is in charge of managing some public services on behalf of the 9 municipalities, such as social assistance, student transport, public libraries, territorial marketing, and waste collection. The latter was the object of a reform programme dedicated to dry non-recyclable waste. The programme introduced a user-recognition system based on a barcode and UHF code on waste bins.

The practice is in line with the EU legislation (European Directive 2008/98/CE; Commission Decision 2014/955/UE) and national laws (see law 221/2015), and consistent with the Regional Plan for Municipal Waste Management (see regional

deliberation 69/15)[32]. In particular, the Regional Plan promoted door-to-door collection and acknowledges the importance of electronic codes for the management of non-recyclable dry waste. The Provincial government, the Montiferru-Sinis Union, the individual municipalities, and the company managing waste collection have formal responsibility for the policy.

4.24.2 Improving waste collection in Montiferru-Sinis

The aim of the programme was to increase the amount of recyclable waste, improve the quality of non-recyclable dry waste and reduce its quantity. Concerning sustainable energy, the system would decrease the amount of energy for collecting and disposing waste, increasing its quality and its suitability to reuse.

As mentioned, the system is based on the provision of codes (barcode and UHF code) to be applied on existing bins, or – when the user had no bin already – on the provision of electronically coded bins. The coding system permits the exact identification of users and the precise quantification of their waste. The system is meant to refine the calculation of fees as a precise proportion of the ratio of non-recycled waste produced. The innovation regards both residential and commercial waste, and concerns in particular 9513 residential users.

The system was introduced in 2014 as part of a general effort by the Union to improve waste collection and recycling. It is in fact only in 2011 that the Union took charge of waste collection for all the municipalities part of the Union, and that waste collection was finally dealt with in a consistent way across its territory. The coding system comes with other improvements, such as a new system for collecting disused oils and disused clothes (this latter formerly part of dry waste), an experimental system based on the distribution of bags dedicated to tourists, and – most importantly – the opening of 8 centres where users can easily take those wastes that are not included in the door-to-door collection. Overall, in fact, the reduction and quality-improvement of non-recyclable dry waste depends not only on how it is collected (the coding system), but on the capacity to effectively intercept waste fractions otherwise part of dry waste.

Mainly, the programme included the following actions:

- Distribution of codes and coded bins for non-recyclable dry waste: this was done through public meetings in 2014 and 2015, and is now the responsibility of individual municipalities for residual users.
- Individual visits to commercial activities in order to get a clearer picture of their needs and production habits.
- Communication and education campaigns involving schools and libraries.
- The experimental running of the coding system to fine-tune the service.

The main problem with the implementation of the programme was how to tackle waste production trends, which are tightly linked to extreme fluctuations due to tourism in the coastal area of the Union, in particular in the marine town of Cuglieri. To get an idea of such fluctuations, in 2014, dry waste amounted at about 89 thousand kilos in February but reached 179 thousand kilos in August (+101%)[33]. This problem is due both to seasonal commercial activities linked to tourism (such as a major camping site, hotels and restaurants) and the high number of houses used for vacations only (or rented to tourists).

[32] See https://www.regione.sardegna.it/documenti/1_274_20161227144158.pdf
[33] See http://www.team3r.it/gallery/unione%20del%20montiferru%20-%20opuscolo%20informativo.pdf

The implementation of the system is still to be completed. While almost all residential users have been coded, the system for commercial users has been set up only recently and will be available within months (the tender for coded bins for commercial activity is being prepared and will be launched soon). The coding system for residential users will be connected to the tariff in 2018.

4.24.3 The participatory/co-production process features

In order to reduce the amount of waste and ensure good waste quality (both recyclable and non-recyclable), active citizen participation must be applied. The activities for citizens' involvement put in place in Montiferru-Sinis aimed at communicating the new system, sharing the goals of the programme, collecting knowledge on users' habits and needs, and raise awareness on the problems and opportunities related to waste production and collection.

The tools used in the participatory process were the following:

Constitution of a stakeholders' steering committee to supervise the process	**X**
Facilitation and conduction of the process by external professionals	**X**
Involvement of technicians and experts in direct interactions with participants	**X**
Constitution of a technical task force to support the collaborative process	**X**
Involvement of politicians and elected officials in direct interactions with participants	**X**
Communication campaigns	**X**
Use of incentives to favour participation (specify which kinds…)	**X**

Whilst preparing for the policy implementation, several meetings in the individual municipalities were organised. These meetings began in 2013 and are still ongoing, as part of an explicit strategy for continuous (and not one-shot) communication on waste reduction (also to deal with a rapidly-changing legal context and subsequent changes in waste collection). The typical meeting is open to all citizens and is led by the mayor of the municipality, the representative of the Union and the representative of the managing company. The focus is on good practices for waste collection.

As a way of helping users in co-producing the service – beyond the typical leaflets explaining how to differentiate waste (unfortunately not yet translated from Italian) – the distribution of codes was organised in a participatory way. Both in 2014 and 2015, the Union organised public events for distributing codes, where the new system was presented and discussed by politicians, civil servants and company managers, and citizens could raise questions and put forward their doubts. After the first meeting in 2014, the Union sent a letter to all users who did not participate in the first meeting and had not yet received their codes , inviting them explicitly to the second public event. This was organised in 2015 with the same format of the first. From 2016, users without codes were then invited to collect them individually at their local municipalities.

The final fine-tuning was done with commercial users (which are mostly seasonal activities). The managing company organised individual visits with technical experts in order to have precise cognition of commercial waste production and be able to set up a dedicated coding system. Finally, in collaboration with the library service, the nursery and primary school network, the European service and the waste managing company, the Union promoted two projects for raising awareness on proper waste collection, targeting children. The first, "The history of a piece of paper", was an education project that was successfully replicated every year since 2014 and was based on reusing used pieces of paper in class. The second "Awareness home composting project" included schools in composting activities.

4.24.4 The outcomes achieved

During the course of different activities for setting up the new system, learning and development of trust were reported as relevant outcomes. Concerning the first, the service provider had the possibility to fine-tune the system significantly by collecting several insights on how to re-design waste collection for both the non-recyclable and recyclable fraction (for instance, changes in the way clothes and oils were collected followed the interaction with citizens). As for the trust development, citizens were highly sceptical of the coding, which was perceived as a form of control by public bodies. However, the open meetings and distribution events were effective in convincing them that the innovation was worth doing, that the new system is fair ('the polluter pays') and that the new variable tariff could deliver monetary rewards.

Expected outcomes for the full implementation of the coding system are the reduction of the total amount of waste (in particular the non-recyclable fraction) and energy savings for waste collection and disposal.

4.24.5 Explaining linkages, lessons and shortcomings

The coding system is waiting to be implemented in 2018, so that lessons can only be provisional. However, in order to fine-tune the system and get citizens used to it, the Union is running the coding experimentally (i.e., without connecting the quantity of dry waste to the variable tariff). The experimental application revealed a progressive learning by the citizens, who start adjusting their behaviour responding to the greater identification made available by the coding system.

At the moment, however, they still do not use bins at maximum capacity (they still expose semi-empty bins, using the collection service twice a week when they could ration their use further). It is expected that – when coding will be connected to the tariff – citizens' behaviour will respond to the incentive and users will start rationing the service and reducing quantities further (so that a once-a-week frequency will be finally implemented). Hence, in the hypothesis, the mix of tools for an effective implementation would certainly include facilitators and normative appeals (such as leaflets, campaigns and public meetings, the distribution of bins, and so forth), but would need sanctions and rewards to push co-production further.

Concerning shortcomings, the Union is still struggling with managing tourists, whose short presence is not suitable for the lengthy socialisation process that was used for stable residents and where sanctions or rewards would be harder to be implemented. A 'tourist kit' (with bags for differentiating waste) and its widespread diffusion (i.e. a further effort on simplifying and facilitating co-production) was experimented this year and will be probably institutionalised in the near future.

4.25 Renovating district heating and thermoinsulation in Liepaja (Latvia)

Practice scorecard:

Title	Renovating district heating and thermoinsulation
Place	Latvia, Liepaja municipality
Type of initiative (programme, policy, project)	Project
Period	2004 - ongoing
Sector(s) addressed	Energy consumption, production and supply
Type of participatory process adopted	Co-design, co-production
Contact person	Andris Akermanis, Latvian association of Local and Regional Governments, andris.akermanis@lps.lv

4.25.1 The context

With about 80 thousand inhabitants, Liepaja is the third largest city in Latvia, after Riga and Daugavpils. The city lies between the Baltic sea and the Liepaja Lake and has an important ice-free port. Traditional industrial sectors include metalworking, textile industry, production of construction materials, food processing, shipbuilding, cargo transportation and handling. Increasing tourism is a recent goal for the city, in particular to re-establish Liepaja's status as a spa resort city and location for health tourism.

Figure 62 Liepaja: location and panorama

Liepaja experience with energy policy has involved multiple projects, addressing energy production, supply, consumption, and audit. The first step towards increasing energy efficiency was the transformation in 2004 of the former municipal energy company into a limited company (100% publicly owned, but business-oriented and with some independence from the municipality).

In 2009, the City Council decided to improve energy efficiency in public buildings (64 in total, 57 already renovated in 2011). The municipality implemented a major renovation of the buildings, including window and door replacement, thermal insulation, renovation of heating and ventilation system, and installation of solar collectors. In addition to such renovation measures, the city introduced an intelligent system for energy audit based on data loggers able to monitor temperature, humidity and CO2.

Notwithstanding such efforts, several problems related to energy efficiency plagued the city. First, the municipal district heating system was in need of renovation, as its pipelines were responsible of major heat losses. Second, gas costs were rising and significantly affected overall energy bills. Third – and most importantly – the city has several large multi-flat buildings from the soviet era (mainly from the 1970s and 1980s), which absorb huge amounts of energy for heating and are inefficiently insulated. Worsening such conditions, Liepaja is characterised by cold winters and is known as 'the city of winds'. In consequence of the above, energy tariffs were high and several

residents had decided to disconnect from the municipal district heating (DH) system. There was – hence – a pressing need for increasing energy efficiency and subsequently decreasing energy tariffs.

4.25.2 Reducing energy consumption in Liepaja: District heating and thermal insulation

As mentioned above, Liepaja moved its first steps towards reducing consumption as soon as 2004, through reforming the municipal company and beginning renovation in public buildings. The progressive steps towards energy reduction took an important leap thanks to being admitted to EU co-funding of Liepaja energy strategy.

In 2012, Liepaja committed to the Covenant of Mayors targeting a 35% reduction in CO2-emissions by 2020. The Sustainable plan ncluded actions regarded street-lighting, energy supply, and – most importantly – the renovation of multi-flat residential buildings.

Concerning energy supply, in 2013, the main action was the switch from gas to biomass. The project started with the implementation of a biomass boiler house with a 30-MWth thermal capacity the same year. The total thermal capacity installed at Liepaja plants reached 236 MWth and the electrical capacity increased to 6 Mwel. The EU Cohesion Fund co-funded this project with €5,8 million. In 2014, four gas boiler houses were shut down and a heating main was built to switch consumers over to the new 30 MW biomass boiler house, thanks to an additional €400,000 co-funding from the EU Cohesion Fund. The new system permitted to use local fuel – i.e. woodchips – instead of imported gas, in so reducing the bills significantly.

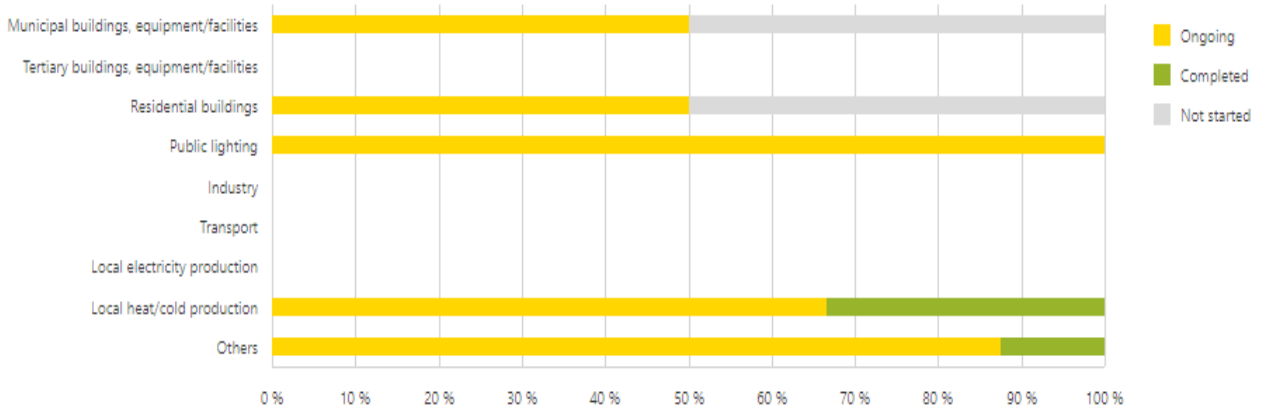

Figure 63 The implementation of SEAP actions in 2017. Source: http://www.covenantofmayors.eu

The renovation of the municipal DH system entailed changing most pipelines and improving energy monitoring, in particular thanks to an online monitoring system installed in 2015. After the renovation of the municipal infrastructure for DH system, the next step was to renovate residential buildings, which were possibly the most serious energy problem and the hardest to tackle. The strategy for multi-flat soviet buildings includes thermal insulation and the renovation of the heating and hot water system.

4.25.3 The participatory process features

The plan for renovating the municipal DH system was promoted publicly and discussed in public meetings by experts and municipal representatives. Concerning the switch to biomass, the pipeline reconstruction, and all renovation works, however, citizens' involvement was limited and participation equated mainly an information campaign.

The plan was considered a highly technical policy and citizens did not participate to its design. However, the renovation works were done in parallel with the organisation of public events for explaining the ongoing projects. Citizens' information was considered necessary to avoid that

further residents disconnected from the municipal DH system. In this respect, meetings and public events were mostly focused on the future advantages in terms of lower tariffs. In this respect, a first decrease in costs came quite quickly – in about one year – and these helped convincing citizens that renovation was improving the system.

In contrast, the actions planned for residential buildings entailed greater citizen engagement, contacting owners individually, building per building. In fact, according to legislation, the renovation needed approval of 2/3 of owners. In this process, the participatory approach was certainly unescapable and decisive. The municipality made a great effort in convincing owners, by organising meetings with each building targeted by the plan and facilitating discussion among owners. The typical meeting was organised in the building by the municipal housing company and was participated by representatives of the municipality, of the DH company “Liepajas energija”, of the municipal housing company “Liepajas namu apsaimniekotajs” and by experts. The housing company – in charge of the maintenance of buildings – made sure that the majority of owners were present to the discussion, even by promoting the meeting door to door.

This process started in 2010, well before signing the SEAP. The beginning of the process was hard. There was much distrust towards the municipality, both regarding the actual decrease of costs and the availability and modes of credit. Hence, first meetings were characterised by strong conflicts and the municipality had difficulties in convincing owners. Some buildings even refused to start the discussion. Sometimes, however, the promoters managed to find residents in favour of the project who acted as activists and helped convincing their neighbours.

The main worries regarded actual decrease of costs and how the credit for renovation was going to be paid back. The municipality stated that heating costs were not going to rise, since credit repayment was going to be compensated by the decrease in heating tariffs. Residents were generally not convinced that what the municipality was promising was real. Overall, however, people engagement and consent became progressively easier once the first renovations were completed. This permitted to compare actual energy tariffs of renovated and non-renovated buildings and communication among citizens favoured the reception of the project.

4.25.4 The outcomes achieved

The policy was certainly a success in terms of increasing efficiency, with regard to both the renovation of the DH system and the residential thermo-insulation. Concerning the first, preliminary results are as follows:

- Thanks to renovation of pipelines, heat losses were reduced from 34 to 17%.
- The construction of boiler houses based on woodchips reduced the use of natural gas by 80%.
- New facilities for energy production based on cogeneration meant less costs and lowest tariffs.

Concerning thermoinsulation, the main result was a strong decrease in heat consumption, together with a general improvement of the physical structure (and hence, market value) of the buildings. Finally, with regard to the participatory process, while very light in DH renovation, it was considered fundamental in the case of building renovations, especially in the starting phase.

4.25.5 Explaining linkages, lessons and shortcomings

The experience in Liepaja would suggest that energy decisions are highly technical, and hence hard to explain and communicate. In this respect, the main advice for prospective implementers would be to organize massive communication campaigns in order to promote such projects and explain their advantages. Such campaigns can avoid general misconceptions and prepare to a more targeted work of people engagement.

In the case of Liepaja, however, the main trigger for winning people consent regarded the promised financial advantages in terms of reduced energy bills. The financial argument was particularly relevant to Liepaja, since heating costs were generally considered high and felt as a problem. Notice, however, that there should also be some complementary work in winning people distrust, since – if the municipality is not considered trustworthy – people hesitate to compromise in view of future advantages.

4.26 Sustainable home-school trips: Oscar, Traffic Snake Game (Romania)

Practice scorecard:

Title	Sustainable home-school trips: Oscar, Traffic Snake Game
Place	Ramnicu Valcea municipality, Valcea County, Romania
Type of initiative (programme, policy, project)	Project
Period	2014-ongoing
Sector(s) addressed	Sustainable mobility
Type of participatory process adopted	Co-production
Contact person	Name/Surname: Simona/ILIESCU Role in the organisation: Inspector, the Communication and PR Bureau Email: simona.iliescu@primariavl.ro, primaria@primariavl.ro

4.26.1 The context

The project targets schoolchildren aged between 7 and 10 years. It is promoted in the wider context of the European project *Traffic Snake Game*, financed by the EU programme Intelligent Energy Europe 2014–2017.

The EU project 'Traffic Snake Game' is a sustainable mobility campaign that promotes walking and cycling to school for primary school children, for their teachers and parents. The Traffic Snake Game is played two weeks a year. Generally, it takes place during the EU sustainable mobility week. During the two weeks, children receive a sustainable mobility sticker that they have to place on a banner each time they walk, cycle, use public transport or share a car journey to school. By 2017, the project has involved 19 EU countries, 507 cities, 1,192 schools and 8,209 classes (TSG Network, 2017).

Figure 64 Countries involved in the EU project Traffic Snake Game, TSG Network, 2017

From an organisational point of view, the EU project foresees:

- A Traffic Snake Game (TSG) Network, led by Mobiel 21 (BE), that coordinates the project at EU level and favours continuous exchanges of experiences between the various schools and cities involved in the project in 19 countries;

- National Focal Points who promote the project within the respective countries, disseminate information about the project and lead its implementation at country level. In Romania, The Energy Cities Association is the National Focal Point of the project;
- A TSG city coordinator who promotes the project at local level, disseminates information on the campaign and coordinates its implementation at local level. In Ramnicu Valcea city, the Municipality of Ramnicu Valcea is the TSG city coordinator.
- A TSG school coordinator who ensures the good implementation of the project in the participating schools.

In Romania, 24 cities and 183 schools, comprising 33,218 students, have been involved in the project by the end of 2016 (TSG Network, 2017) and 'Oscar' is the name assigned to the snake.

Ramnicu Valcea is one of the Romanian cities participating in the EU project. The municipality of Ramnicu Valcea is capital City of Valcea County and is located in the southern-central part of Romania.

As of 2015, the municipality of Ramnicu Valcea counts 8 primary and secondary schools (INSSE, 2017). 5,029 students attended primary schools, who are the project target in Ramnicu Valcea (INSSE, 2017).

Figure 65 Geographical position of the Municipality of Ramnicu Valcea, http://www.primariavl.ro/localizare-geografica

4.26.2 The introduction and evolution of the Traffic Snake Game project in Ramnicu Valcea

Municipality of Ramnicu Valcea started the Traffic Snake Game project in 2014 with a twofold aim.

1) to reduce traffic jams and air pollution in the city.

Air pollution has been one of the major challenges to environmental quality of the city in the last 10 years, as detailed by the 2016 Sustainable Urban Mobility Plan and sustained by project interviews. According to the Plan, air pollution has been growing in the last years, resulting in frequent exceedance of the PM10 limits established at EU level. The Plan specifies that traffic has been one of the main air polluters in Ramnicu Valcea due to:

- Increase in the number of private cars after 1989 (at least one car owned by 75% of the population);
- Increase in the number of old cars with no systems for reducing pollution;
- Increase in the use of private cars for short journeys even within the same neighbourhood, in particular for school and work reasons;
- Outdated transport infrastructure and public transport means;
- Intense traffic in the centre of the city and in some specific areas of the city.[34]

As detailed by the 2016 Sustainable Urban Mobility Plan of the city, private cars are especially used for work or school journeys and the traffic is mostly concentrated in the morning, when people

[34] Ramnicu Valcea Municipality, Sustainable Mobility Plan, 2016-

go to school or work, and in the afternoon when they come back. According to the Plan, 56% of the journeys between the different areas of the city were made by car in 2015.[35]

2) To educate citizens on sustainable transport

The project focuses on schoolchildren on the one hand in order to educate future generations on sustainable means of transport (walking, cycling and public transport) and on the other hand in order to reach a wider public not always aware of and sensible to air quality. As sustained by the interviewees, children are the best teachers for the adults and other children, educating entire families to use sustainable means of transport to the detriment of the private cars.

The project is coherent with the wider strategies of the Municipality of Ramnicu Valcea for reducing air pollution and improving the environmental quality of the city:

- Integrated Urban Development Strategy of the Municipality of Ramnicu Valcea 2014–2020: environmental quality is one of the main development pillars of the strategy.[36]
- Sustainable Mobility Urban Plan of the Municipality of Ramnicu Valcea aims to reduce traffic jams, the need for journeys and their negative impact on the environment; and to increase the use of sustainable transport means (bicycles, public transport, walking).

The main phases of the project implementation between 2014 and 2016 were:

1. *Acceptance of the invitation to join the project.* In 2014, the Municipality accepted the invitation of the Romanian Energy Cities Association to join the EU project. Once with the project acceptance, the municipality staff attended a specific training on the project tools and wider framework organised by the Romanian Energy Cities Association.

2. *Launch of a call for expression of interest to primary schools in the city*, with the support of the School Inspectorate. In 2014, 4 schools responded to the call. However, during the years the number of schools interested in the project has increased continuously: 7 in 2015 and 8 in 2016.

3. *Designing the project implementation with the schools and teachers involved and training the trainers (teachers).* According to case interviewees, at the beginning schools seemed rather reluctant to participate in the project. However, after discussing with teachers the objectives and the tools of the project, they acknowledged its great potential for solving the increasing parking problems that the schools had been facing due to a large number of parents taking their children to schools by private cars. Besides designing the project implementation directly with the schools involved, the project also included a specific training for teachers on the sustainable mobility and benefits of sustainable transport as well as on the project tools. The training targeted all teachers of the classes involved in the project.

4. *Implementing the Traffic Snake Game in schools.* The first step of the game consisted of meetings with both children and teachers to explain the project purposes, the effects on the local environment of the private use of cars for city travel, the benefits of sustainable transport at individual and city level and the steps of the game. Teachers trained previously held these meetings. They also held meetings with students to discuss about their option to use the bus or the bike when travelling long distances into the city and to walk when moving on shorter distances. Together with the local police, they also showed to the

[35] Ramnicu Valcea Municipality, Sustainable Mobility Plan, 2016.
[36] Ramnicu Valcea Municipality, Strategia de dezvoltare a municipiului Râmnicu Vâlcea 2014-2020.

children how to walk safely in town (how to cross the road, what the colours of the traffic lights mean, etc), how to go by bike and how to take the bus.

Between 2014 and 2016, the schools played the Traffic Snake Game for two weeks in September, of which one corresponded to the EU Sustainable Mobility Week. During this period, children received a sticker that they had to place on a banner each time they walked, cycled, used public transport or shared a car journey to school and they were enhanced to travel to school in a sustainable way. Each week the teachers had to register how children had travelled to school. After the end of the two weeks, children received bonuses (i.e. free entrance to the city Zoo, etc) to continue sustainable mobility. Between 2014 and 2016, the municipality adopted a series of complementary measures to enhance people, and, in particular, those involved in the project, to use sustainable transport means:

- The municipality closed the Dem Radulescu Boulevard to motor traffic and together with the Valcea's Inspectorate for Schools organized the Ramnicu Valcea's Car Free Day there. The municipality organized drawing contests, bikes and rollerblading contests.
- In 2015, the Ramnicu Valcea Local Council approved the extension of the public transport bus line, which links the north and south parts of the town, created four new bus line stations in the south part of Ramnicu Valcea, especially on Dem Radulescu Boulevard. This is an artery of the city that tends to be more circulated because of the new housing estate buildings, supermarkets and hospitals area there. The south part of the town is also a recreation area, with the Municipal Zoo and the public swimming pool.
- The Municipality of Ramnicu Valcea implemented an EU funded project for the rehabilitation and modernization of Zavoi Park. The rehabilitation and upgrading works started in 2014 and aimed among others, at the construction of fitness areas, skate trails and roller park areas and playgrounds for children.

Even though the EU funding ended in 2016, the municipal representative sustains that the municipality of Ramnicu Valcea will continue the project implementation in 2017. The project will be funded from the local budget and will be implemented during the European Mobility Week. Furthermore, the municipality intends to support schools that wish to implement the project also in other periods of the year.

4.26.3 The participatory process features

The project foresees a participatory approach, especially in the implementation phase. While the wider EU project framework had set the general rules of the project, its implementation in the schools was designed directly with the participating teachers. The project used a cascade meeting/training approach.

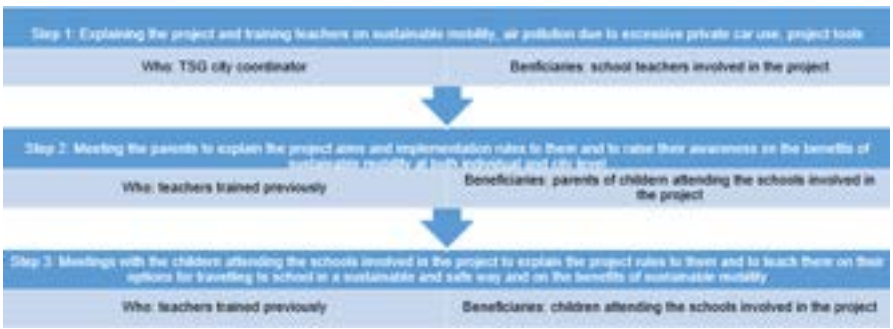

Figure 66 Participatory approach of the Traffic Snake Game project in Ramnicu Valcea

Even though it was not foreseen by the project, **parents organised car-sharing groups** in one of the participating schools to accompany their children to school in a more sustainable way during the two weeks of the game.

Characteristics of the participatory process

- Implementation of the participatory approach in all three years of the project
- The Municipality of Ramnicu Valcea (TSG city coordinator) steered the participatory process together with TSG coordinators of the schools
- Adoption of a participatory and a cascade meeting/training approach, targeting teachers, parents and children, especially in the delivery phase through the design of the game implementation. Furthermore, in one of the participating schools parents created car-sharing groups to accompany children to school in a more sustainable way
- Use of incentives (i.e. free entrance to the local zoo, participation certificates, public rewards) and adoption of infrastructural support measures (i.e. refurbishment of a park with playing areas, extension of a bus line, etc) to favour children's participation in the game
- Adoption of a mixed participatory approach (public meetings combined with engagement initiatives, such as Car Free Day which included drawing, biking and rollerblading contests related to the project issues)

The participatory process used the following tools:

Election of delegates with control tasks	X
Communication campaign	X
Use of intrinsic rewards	X
Some kind of selection of participants (random sample, target groups etc.)	X
Involvement of technicians and experts in direct interactions with participants	X
Constitution of a technical task force to support the collaborative process	X

4.26.4 The outcomes achieved

The number of students involved increased from 259 in 2014, at the beginning of the project, to 984 in 2016, at its end, while the number of schools doubled (from 4 to 8). Overall, in three years of the project, the participating students saved 2,168 kg of CO_2 and travelled 12,608 km less by car. The figure below details the project results for each project year.

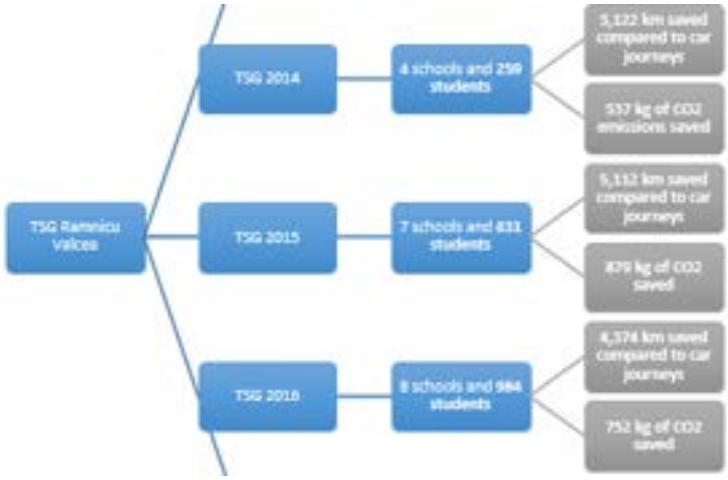

Figure 67 **Results of the Traffic Snake Game in Ramnicu Valcea between 2014 and 2016**

According to the 2016 project evaluation, the number of sustainable journeys has increased, from 75% in 2014 to 89% in 2016. At the same time, the private car use has been reduced from 25% in 2014 to 11% in 2016 (see figures below).

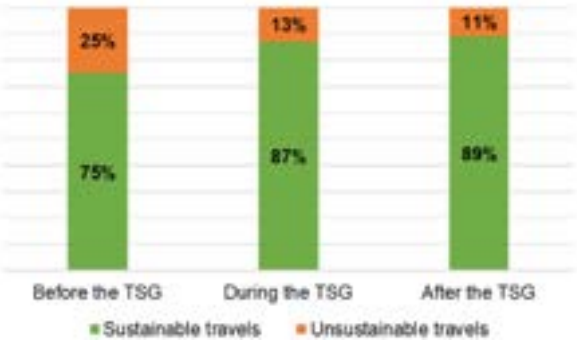

Figure 68 Sustainable and unsustainable city journeys of TSG participants in 2016

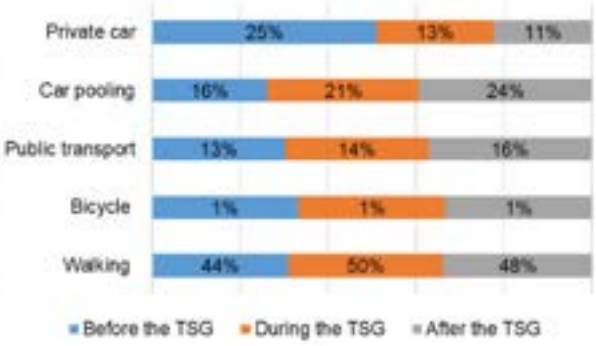

Figure 69 TSG participants' mode of travelling in the city in 2016

The project implementation will continue in the following years, despite the ending of the EU funding. The Municipality of Ramnicu Valcea will fund it from its own budget, as it is considered a strategic project for developing sustainable mobility at local level.

4.26.5 Explaining linkages, lessons and shortcomings

The project was implemented in the framework of the EU project Traffic Snake Game and of the strategies for sustainable development and mobility of the Municipality of Ramnicu Valcea. The project adopted a participatory approach since the very beginning. Participation occurred mainly in the delivery stage, as the general rules of the project had been decided within the wider EU project. However, teachers were involved in the design of the project implementation within their schools. In the implementation stage, the project adopted a cascade meeting/training approach that put teachers at its centre.

According to the case interviews, the participatory approach allowed the project to overcome the initial reluctance of both teachers and parents. Furthermore, the project evaluation and case study interviews underline that the use of incentives (i.e. free entrance to the zoo, public rewards for participating schools, teachers and students) favoured participation in the project.

The project evaluation points out that the creation of a pyramidal organisation (TSG national, city and school coordinators) allowed an effective management of the project partnership, favouring the involvement of schools. Considering the relevant results achieved by the project in terms of CO_2 reduction (i.e. 2,168 kg of CO_2 saved), the Municipality of Ramnicu Valcea will continue its implementation from its own budget.

4.27 Towards more sustainable heating system in the city of Niš (Serbia)

Practice scorecard:

Title	Towards more sustainable heating system in the city of Niš, Serbia
Place	Serbia, Niš
Type of initiative (programme, policy, project)	Programme
Period	2014-2030
Sector(s) addressed	Sustainable heating
Type of participatory process adopted	Co-design
Contact person	Bojan Gajić, Adviser, gbojan@gu.ni.rs

4.27.1 The context

Niš is one of the oldest cities in the Balkans, and an important industrial centre in Serbia. The city has committed to reduce their CO_2 emissions, setting a target of 21% by 2020 (as compared to 2010). Moreover, an energy transition plan until the year 2050 has been put into place, and the topic of sustainable energy in the city's agenda has high importance. The municipality initiated a study on sustainable heating solutions for the city covering the years until 2030.

Figure 70 **Niš, Serbia: panorama and location**

The study was developed as a part of the "SD Train" project, which started in Niš in March 2014 with the objective to train public authority officials in environmental expertise, and generally promote the development of sustainable infrastructure solutions across the Balkans. A participatory back - casting framework was used in the "SD Train" project, with the support of KTH Stockholm University, who had developed the framework. The motivation for the study came from dissatisfaction with the city's current heating systems, concerning energy dependency on foreign sources, low efficiency and the negative environmental impact of the heating sources used.

4.27.2 The project "Towards a more sustainable heating system"

The project aimed to study possible solutions for a more sustainable heating system in the city. In an initial phase, a heating system model was developed using a participatory back - casting framework. The goal of this approach was to develop a long-term strategy which would regulate the city's heating system until 2030. The plan that was developed with LEAP software - Long Range Energy Alternatives Planning, was then shared with the stakeholders during a creativity workshop, in order to receive their feedback. Further elements which were not yet covered by the plan were discussed. The final model which was adapted, was therefore a combination of the previously developed model and the input from the stakeholders.

4.27.3 The participatory process features

The participatory back - casting process involved a variety of stakeholders and it was split into two phases: First, direct interviews were conducted with almost 40 participants, and second, two consecutive creativity workshops were held. The stakeholders involved in the process included representatives of two consumer organisations (Center for Consumer Protection, and the

organization of consumers of the district heating system); local production companies; NGOs; the district heating company; the city administration; the municipality; city council; the energy efficiency council of Niš, the university, and of civil society - including both district heating consumers and consumers of more traditional energy sources such as coal.

During the workshops, guest researchers from KTH & TU Delft presented existing experience and ideas for an approach. Researchers of University of Belgrade and University of Kragujevac presented the problem at hand. Stakeholders then had the opportunity to discuss system boundaries, an elaborated joint vision and the criteria for it, analyse trends and uncertainties and, finally, co-create a draft solution for achieving the desired vision.

Participatory tools used in this experience have been:

Some kind of selection of participants (random sample, target groups etc.)	**X**
Facilitation and conduction of the process by external professionals	**X**
Involvement of technicians and experts in direct interactions with participants	**X**

4.27.4 The outcomes achieved

The project showed that participation of stakeholders to policy development processes can be successful and improve decision-making. The participatory back - casting process was positively evaluated by the city council as well as the stakeholders who were involved during interviews and questionnaires which were administered following the process. The elaborated future vision and an action plan were supposed to be considered by the city for approval, however it never did.

4.27.5 Explaining linkages, lessons and shortcomings

During the process, it was important to maintain a high-quality level of communication with all stakeholders involved and to visualise the results of analyses conducted.

4.28 Energy policy of the city of Šabac (Serbia)

Practice scorecard:

Title	Energy policy of the city of Šabac
Place	Serbia, City of Šabac
Type of initiative (programme, policy, project)	Policy
Period	2016 - ongoing
Sector(s) addressed	District heating, thermo-insulation, energy production.
Type of participatory process adopted	Co-design & co-production
Contact person	Slobodan Jerotić, Municipal Energy Manager, slobodan.jerotic@sabac.org

4.28.1 The context

Situated in Western Serbia on the Sava River, Šabac is a mid-sized city of more than 110 thousand inhabitants, of which about 50 thousand are located in its urban areas. Subsequent to the international sanctions to Yugoslavia in the 1990s, the industrial economy of the city suffered great losses, with many industries forced to shut down. However, Šabac still has a lively business environment, provided with the largest industrial complex in Serbia and a free customs zone. Agriculture and food processing are key sectors, with about 70% of Šabac territory composed of agricultural land.

Figure 71 Location of Šabac

Heat production in the city is mainly based on natural gas (93% of capacity), whereas only a small part is produced out of fuel oil (7%). The average age of the heating network and substations is 20-25 years. In the early 2000s, public concerns emerged on the high costs of gas, the scant development of renewables and the inefficiency in production, transmission and use of energy. Hence, being first among Serbian cities, Šabac started its journey into improving energy performance, and is now a reference city for Serbia.

It was only in 2017 that the city approved an official energy strategy. However, before that, several projects for reforming the energy system had been successfully implemented, including changes in the tariff, buildings renovations, a greater use of greener (and local) sources, and a more reliable audit system. Beyond decreasing costs, energy reforms aim at rising environmental standards (such as decreasing CO_2), and boost local development through the creation of a market for biomass and renewables.

Although the responsibility for energy is mainly local, the policy is consistent with national strategies and legislations. In fact, in line with the Directive 2009/28/EC and Energy Community Ministerial Council Decision of 18 October 2012 (D/2012/04/MC-EnC), Serbia committed to a binding goal of achieving a 27% share of renewable energy sources in gross final energy consumption by 2020. Such commitment pushed Serbia towards reforming energy regulations in 2013 through the approval of the Energy Efficiency Law and the establishment of a National Renewable Energy Action Plan. The 2013 law established several technical requirements for heat production and distribution, and requirements to improve energy efficiency.

4.28.2 Reducing energy consumption in Šabac: A Serbian best practice

As mentioned, a formal energy policy started in 2017 with the approval of the document "Energy policy of the City of Šabac". The document set a number of priorities, such as the reduction of heating costs, the increase of sustainable energy and the development of energy services. In addition, congruent with the Law on the efficient use of energy, the local DH company committed to reach a 1% yearly decrease in primary energy consumption.

Although recent, the 2017 document is based on several actions started during the previous ten-fifteen years. In 2001, there was a first attempt to modernise the DHC system. This modernisation made a significant progress during 2014 and 2015, when 110 heating substations were constructed or modernised, recuperation units to increase efficiency were installed in three 14MW gas boilers and – in 2016 – a major reconstruction of the DH network was started.

During the period of 2010-2015, the effort towards energy efficiency included a major renovation project for residential buildings. This resulted in 34 buildings refurbished, i.e.1108 apartments and 22 one-apartment houses insulated (with a total insulated area of 66000 m2). Since 2011, the municipality started co-financing the insulation of residential buildings, substantively pushing forward the policy. So far, the renovation has included 60000 square metres (out of 480000 m^2) connected to the public heating network, which corresponds to about 20% of the total multi-family residential buildings. The typical renovation includes facades, windows and entrance doors.

Such first actions – although useful in tackling energy efficiency – did not correspond to a coordinated approach to the problem of energy inefficiency. The DH company had made some restructuring of its network, the maintenance company had refurbished some buildings, and the water company had made some renovation projects to reduce water losses. In 2014, however, Šabac Mayor proposed a new integrated approach, where all public bodies were required to join in an overall planning for energy savings and efficiency improvements. Hence, a proper energy management and measurement system was set up and in 2016 an energy manager was appointed and a special fund for energy efficiency was made available.

While the renovation of buildings is going on consistently with the financial possibility of co-financing, Šabac started the installation of LED lights in the public lighting system in both the city centre and all 51 villages in the outskirts. The plan is to replace altogether about 7500 mercury-vapour lamps with LED lights. The investment is expected to pay-off in just about 30 months.

Finally, the city has also planned several projects to be implemented in the near future, in particular regarding energy production from renewables. The most important is possibly the already approved construction of a 20 MW biomass power plant, which should be built in 2018. This is supposed to reduce gas consumption of about 70%, thus producing significant cuts in the costs of energy. A second project worth mentioning regards the development of a small scale modular DHC, using renewables (especially biomass) to be installed in suburban and rural areas.

4.28.3 The participatory process features

When the energy management system was set up and a new integrated approach to improve the energy efficiency started, the municipality established the Group for communication with citizens. The group is participated by members of the City Council, the municipal energy manager, representatives of the DH company, maintenance company, real estate and NGOs. The Group is responsible for publicly communicating energy efficiency- and the planned and ongoing energy projects. The establishment of the Group set the beginning of an explicit promotion and campaigning over energy issues. Accordingly, all projects eventually contributing to the 2017 strategy were communicated and discussed publicly before adoption.

The bulk of participation, however, regarded the renovation of residential buildings. In 2010 – 2011, Šabac pioneered an important reform changing the energy bill to be based on actual energy consumption. This new system led to higher bills, which were particularly heavy on citizens' expenses. The proposed solution aimed at reducing consumption, mainly through the modernisation of the DH system and the co-financing of thermo-insulation.

For this latter project, citizens' consent and participation was a key. The municipal budget permits to provide a financial incentive given by a 50% co-financing, and several credit options were made available depending on individual situations. However, economic incentives were not considered enough for convincing owners.

Citizens were contacted and in each building a variable number of representatives of the municipality or of municipal companies presented the project and facilitated discussions among the owners.

The meetings became progressively easier after the first buildings accepted renovation and the project (and benefits) became apparent. However, it is reported that renovations were well received from the start, and – even for buildings where no agreement was reached – people were generally well-disposed towards the project. Comparative thermographs as in Figure 58 – showing before and after heat dispersion – were considered an effective tool for communicating the future results of renovation.

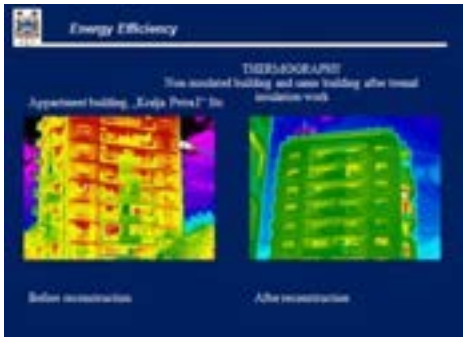

Figure 72 Comparative thermograph

Participatory tools were the following:

Some kind of selection of participants (random sample, target groups etc.)	**X**
Facilitation and conduction of the process by external professionals	**X**
Involvement of technicians and experts in direct interactions with participants	**X**

4.28.4 The outcomes achieved

The different projects implemented delivered significant results in terms of reducing consumption and decreasing costs. These results were gained due to the modernisation of the system, the new management and measurement approach, and the new public lighting network based on led lights. Additional progress will come when the new production facilities based on biomass will be fully operational.

Concerning thermal-insulation, through the period 2010-2016, more than 80 thousand m^2 of existing buildings were thermally insulated, corresponding to about 1.4 million euros spent in buildings renovation. The 2017 budget established co-financing for 6 additional buildings, i.e. more than additional 10 thousand m^2. In buildings where thermal insulation was completed, heat

consumption ranges between 68 and 90 kWh/m^2, depending on weather conditions. Considering that the average consumption for the entire system (comprising both insulated and non-insulated buildings) is between 107 and 117 kWh/m^2, it amounted at more than 145 kWh/m^2 before the renovation started.

The participatory process was considered particularly effective for the thermal-insulation renovations. Although people were generally well-disposed, getting the agreement of the majority of owners and dealing with the varied individual needs of residents, it would have been impossible without such an individualised participatory approach. Especially with respect to the first phase – the number of declining buildings would have been higher if the discussions would not have been facilitated by the municipal experts.

4.28.5 Explaining linkages, lessons and shortcomings

The overall judgement of the experience is positive. However, some complaints were reported about the need for tighter cooperation between the local and national governments, in particular for more support by the national government. In many respects, however, the city of Šabac was a pioneer of energy policy and hence started the policy in a less clear legislative environment.

Another problem regarded financing. The success of the policy means that – although efficiency measures are paying back – there is possibly more interest in thermal insulation than what the municipality can provide in terms of co-financing.

Concerning possible lessons, the invisibility of energy is something to be thought of when communicating with citizens. Regarding the Šabac experience, the use of infrared images helped visualising energy, pointing in particular to energy dispersion. Effective communication was effectively complemented by the financial argument of reducing costs and by the financial incentive provided by co-financing.

4.29 "Beenergi. Bundling sustainable energy investments for Girona's municipalities" (Spain)

Practice scorecard:

Title	'Beenergi. Bundling sustainable energy investments for Girona's municipalities'
Place	Spain, Province of Girona, Catalonia
Type of initiative (programme, policy, project)	Project
Period	2015 - ongoing
Sector(s) addressed	Energy efficiency in public lighting and in municipal buildings (which includes creating sustainable local biomass district heating networks)
Type of participatory process adopted	Co-design & co-production
Contact person	Anna Camp Casanovas, Beenergi project coordinator, acamp@ddgi.cat

4.29.1 The context

The Province of Girona is a Spanish province that gathers 221 municipalities in a territory of about 6000 km2 and a population of about 700,000 inhabitants.

Figure 73 Panorama view of Girona Province, Catalonia

The project 'Beenergi. Bundling sustainable energy investments for Girona's municipalities' is being developed under the EU Framework Programme for Research and Innovation, Horizon 2020 (Grant Agreement No. 649789). The objectives of the project are to materialize some specific actions envisaged in the Sustainable Energy Action Plans (SEAPs) approved by 206 out of 221 local authorities under the Covenant of Mayors framework. The Covenant of Mayors is a voluntary pact between mayors, promoted by the European Commission, through which municipalities agree to reach some common goals in the fields of energy efficiency, energy saving, sustainable energies and resilience to climate change before 2030. The Covenant consists more precisely in the inventory of local emissions and in the adoption of an Action plan.

The Beenergi project sets its goal in providing technical, legal and financial support to the 75 municipalities that included investments in street lighting, energy efficiency of public buildings, heat networks and Joint Purchase in their SEAPs. In 2017, 15.88 M€ have been mobilized, of which

6.48 M€ will serve to increase street lighting efficiency in 65 municipalities, and 9.40 M€ in energy efficiency of 85 public buildings.

4.29.2 The project 'Beenergi. Bundling sustainable energy investments for Girona's municipalities'

The main goal of the project is to reduce CO_2 emissions by 40% in the provincial territory before 2030. The Province is tasked with providing local authorities technical and legal assistance plus innovative tendering processes (joint procurement and bundled investments into different pooled investment packages). Some of the main problems to be addressed in the project were: the complexity of legal and technical administrative procedures; the absence of technical or financial capacy of some small municipalities to carry out sustainable energy investments; the dispersion of related public tenders thus losing opportunities for economies of scale; the lack of knowledge and understanding about models of Energy Service Companies (ESCO), Energy Performance Contracts (EPC) and Energy Supply Contracts (ESC), and the insufficient transparency in regard of publication and availability of energy consumption data.

Energy consumption and saving data is monitored by the project and will be publicly and digitally accessible through an open and standardized way. The Beenergi project is being effectively implemented by assisting 118 projects (mostly in rural municipalities). In two years, 73 municipalities have been served (32.12% from a total number of 221 municipalities in Girona), many of whom have a population of less than 5,000 inhabitants. Sustainable energy investments have been launched in a total amount of 23.95 M€ for street lighting and public buildings in Girona (as of February 2017), while the original objective was 15.88 M€. Investments are being mobilized through innovative schemes achieving a reduction of 5,569 tons of CO_2 emissions per year, 1.5 M€ in economies annually and an energy saving of 6,567 MWh per year.

Specifically for street lighting investments, an economic saving of 1,081,792 € per year will be achieved, thanks to an investment of 15.592 M€ (originally aimed at 6.48 M€). This makes possible the creation of 19 workplaces, an energy saving of 9,014 MWh/year and a CO_2 emission reduction of 3,330 tons per year. For public buildings investments, an economic saving of 527,000 € per year will be achieved, thanks to an investment of 8.4 M€ (originally aimed at 9.40 M€). This makes possible the creation of 14 workplaces, a renewable energy production of 7,553 MWh/year and a CO_2 emission reduction of 2,239 tons per year. Besides, biomass up to 6,400 tons will be managed, that is a management of 8,000 hectares. Many of the produced resources and materials are publicly accessible at: http://beenergi.ddgi.cat/en/resources/.

4.29.3 The multi-level governance process

The project started in 2015 and it has been involving five categories of actors:

- public administration personnel (managers of municipal energy facilities, maintainers of facilities, representatives of municipal energy, waste and public transportation companies),
- companies (installers and electricians of Energy Service Companies – ESCO-, local private investors, companies of building sector, real estate and private transportation),
- economic interest groups like businesses and tourism associations, representatives of the tertiary sector that have a significant weight in the economy of the towns
- civil society representatives (NGOs, neighborhood associations)
- experts

Characteristics of the multi-level governance process

The project started in 2015. The role of the Girona Province is mainly to coordinate actions of the municipalities in order to reach its goals in the investments of street lighting and heat networks. The Province organizes and manages meetings with the municipalities, the energy agencies and the stakeholders when an impasse or some conflicts occur.

The promoter of the process is the Province of Girona, but all municipalities promoted their own SEAPs autonomously. The process was more a multi-level governance case than a proper example of public participation. No specific participatory tools have been promoted at this stage, such as stakeholders committees, task-forces of municipality technicians, or professional facilitation.

4.29.4 The outcomes achieved

No data are available yet.

4.29.5 Explaining linkages, lessons and shortcomings

No particular challenges emerged in the process.

4.30 Plymouth Energy Community (UK)

Practice scorecard:

Title	'Plymouth Energy Community' - PEC
Place	UK, Plymouth Municipality
Type of initiative (programme, policy, project)	Policy
Period	2013 - ongoing
Sector(s) addressed	Renewable energy, energy efficiency in private buildings
Type of participatory process adopted	Co-production
Contact person	Alistair Macpherson, civil servant alistair.Macpherson@plymouth.gov.uk

4.30.1 The context

Plymouth is a medium-sized municipality in Devon county, South-West England, one of the few shipbuilding industry city in the UK.

Figure 74 Panorama view of Plymouth, UK

The city council started tackling the issue of fuel poverty in the city, with special concern to the housing sector. The short-term goal was to help householders reduce their bills. In a long-term perspective, the city council aimed at giving more decision-making power to the community by establishing a community benefit society dedicated to energy, thus transforming the way Plymouth citizens buy, use and generate power. The establishment of a community organisation that provides services thus had also the aims of empowering local citizens and stimulating the economy. The policy was also favoured by the framework of the national programme of energy company obligations (eco). the eco programme launched by the government created a legal obligation on large gas and electricity companies to finance energy efficiency measures for the most vulnerable households: insulation, connection to a district heating system, boiler repair schemes, etc.

4.30.2 The policy 'Plymouth Energy Community'

The main goal of the project was to tackle fuel poverty in the urban area and to reduce energy consumption. During the formulation of the policy, the main actors involved were municipality staff members working together within a low carbon city team, set up by the municipality itself. The team identified community energy as a great way to involve citizens, empower them and transform energy-related services. Subsequently, a decision was made to create a "community benefit society" based on cooperative values so that local citizens could benefit from local renewable energy potential.

Figure 75 The logos of PEC and some of its activities

The Plymouth Energy Community (PEC) was established in June 2013 for addressing fuel poverty and was rapidly followed by Plymouth Energy Community Renewables (PEC-R), another community benefit society for renewable energy production. In both societies five full-time employees and five employees shared with the council were involved.

Therefore, it was only in the implementation phase that the participatory process was fully effective, thanks to the cooperatives structure of both organisations. They indeed belong to and are managed by their members and their structure is subject to British legislation on cooperatives. Their governance is very similar to that of a cooperative: all board members are elected by the society members, except one who is elected by the city council. Moreover, commercial partners are involved in the strategy formulation, in order to make the activities more effective. For example, PEC developed a partnership with British Gas under the ECO scheme to help people with energy debts. As part of this fuel debt advice service, grants from the British Gas Energy Trust allowed £110,000 of energy bill arrears to be cleared in 14 months.

Today, PEC has 1,000 members and PEC-R 330 investors, i.e. 1,200 individual members in total. Once a year, the 330 members of PEC-R get together at the annual general meeting of shareholders. The members of both societies meet approx. 4 times a year for conferences or in working groups. The PEC team also attends a number of community events to raise people's awareness of energy issues and PEC services. In 2014, the sale of society shares to 144 investors generated £602,000 in seven weeks, completed by a £500,000 municipal loan. The sale enabled PEC-R to install photovoltaic panels on 18 schools and 3 community buildings free of charge between May and November 2014. A second share offer took place more recently and generated about £850,000, completed by another £500,000 municipal loan, for the production of 2 MWh of solar energy. A third offer is being planned to finance a solar farm with a potential of 4.1 MWh, currently awaiting planning permission.

PEC and PEC-R projects were mainly financed by city council, with a starting investment of 65.000 pounds for the establishment of the two organizations and then 500.000 pounds for the first investments and other 600,000 pounds in stakes. Still, many PEC activities receive support from partners as well as subsidies.

4.30.3 The co-production process features

PEC and PEC-R were established by the city council, thus the process of policy formulation was not participatory, but citizens can join PEC and PEC-R by buying their stakes. Membership is very broad: in general, they are people interested in environmental issues, but the social background is various, since the minimum investment required to become member is 50 pounds. The range of the investments goes from 50 pounds to 100,000 pounds.

Besides stake holding and participation to the annual general meeting, few members also act voluntarily to provide some services, like diffusing information among the community.

Specific working groups help the organization work on the ground, recruit members, favour exchanges of information between membership and the board and discuss about particular projects.The local cabinet, that supported always the policy and had a clear vision of the environmental policy they wanted to implement, was fundamental in guaranteeing the necessary political support to the policy. The co-production process did not use any particular tool or strategy to involve citizens except public campaigns through the website.

4.30.4 The outcomes achieved

3,153 MWh of clean electricity have been produced and 1,558 tonnes of carbon emissions have been saved thanks to the actions and initiatives promoted by the two organizations.

4.30.5 Explaining linkages, lessons and shortcomings

Following the implementation of the policy, other municipalities in the UK have launched similar initiatives as well. The participatory process has encountered several difficulties, occurring mainly during dialogue with commercial partners. For example, as part of its switching service, PEC first partnered a small tariff comparing company whose business model was focused on ensuring rapid switching. This model was suitable for internet-savvy customers or those with experience in switching suppliers but was not suited to the needs of more disadvantaged citizens who really needed help. PEC then simply changed partner.

Likewise, according to interviews the collaboration with British Gas was not always easy. British Gas is a huge corporation with high staff turnover. Finding the right person was therefore difficult and building relations with a new contact person took time. Moreover, British Gas tends to propose standardised offers, whereas PEC is more attentive to the individual needs of its customers. It is therefore a constant challenge that PEC has learned to adapt to.

4.31 Sharing Cities (UK)

Practice scorecard:

Title	H2020 Project Sharing Cities
Place	The programme involves 3 pilot cities (so called "lighthouse cities"): • United Kingdom– London, Greenwich (leader) • Portugal - Lisbon, Downtown, • Italy- Milano, Porta Romana. In addition it also involves the following cities: • France - Bordeaux, • Poland- Warsaw, • Bulgaria- Burgas
Type of initiative (programme, policy, project)	Programme
Period	2016-2018
Sector(s) addressed	Energy (energy efficiency, energy production, sustainable energy systems), transport (electric shared mobility, smart parking), public lighting (smart lamppost)
Type of participatory process adopted	Co-design & co-production
Contact person	Roberto Nocerino, roberto.nocerino@polimi.it Poliedra, Milano (partner of the H2020 project)
Website	www.sharingcities.eu

4.31.1 The context

The project Sharing cities has been financed under the H2020 programme call SCC1 - Smart cities and communities, which aims to provide solutions for significantly increasing cities' energy and resource efficiency, through actions addressing building stocks, energy systems, mobility, climate change, water and air quality.

4.31.2 The programme Sharing Cities

Sharing Cities programme is dedicated to promote the 'sharing' of good practices among cities around Europe. It aims to offer municipal leaders, urban developers and other stakeholders a platform for learning as they go by exchanging views and comparing notes on methodological papers and expert reports, and by attending webinars and peer learning sessions.

Sharing cities involves 6 European cities, of whom 3 act as 'lighthouse cities", experimenting the innovation fostered by the project, and 3 acting as pursuing cities, with a goal to exchange results and learn from each other. The demonstration districts in 'lighthouse' cities of Lisbon, London and Milan will implement replicable urban digital solutions and collaborative models. Through citizen engagement, the Royal Borough of Greenwich in London, Porta Romana/Vettabbia in Milan and downtown Lisbon will retrofit buildings, introduce shared electric mobility services, and install energy management systems, smart lamp posts and an urban sharing platform. 'Fellow' cities Bordeaux, Burgas and Warsaw will co-develop, validate, or implement the above solutions.

The programme involves overall 35 partners, including: Public Administrations, Business Enterprises, Public Utilities, Research Institutes, and Associations.The programme started in 2016 and will end in 2021: three years will be dedicated to the implementation of the project and two more years to the monitoring of the results. The overall funding is 25 million euros.

Sharing cities has 10 challenging goals:

1. Aggregate demand and achieve wide scale deployment of smart city solutions,
2. Deliver highly relevant common and replicable innovative solutions,
3. Attract quantum external investments,
4. Make acceleration in uptake of smart city solutions real,
5. Deliver 3 role-model low/near-zero energy efficient districts,
6. Shift the thinking irreversibly to decarbonizes renewables,
7. Shift the thinking irreversibly to new models of e-Mobility in the districts,
8. Make the notion of citizen participation real,
9. Exploit 'City Data' to genuinely prove its value,
10. Strengthen local scale-up businesses in (at least) 3 cities.

The programme bases is what has been called a 'holistic approach', which integrates three 'P'

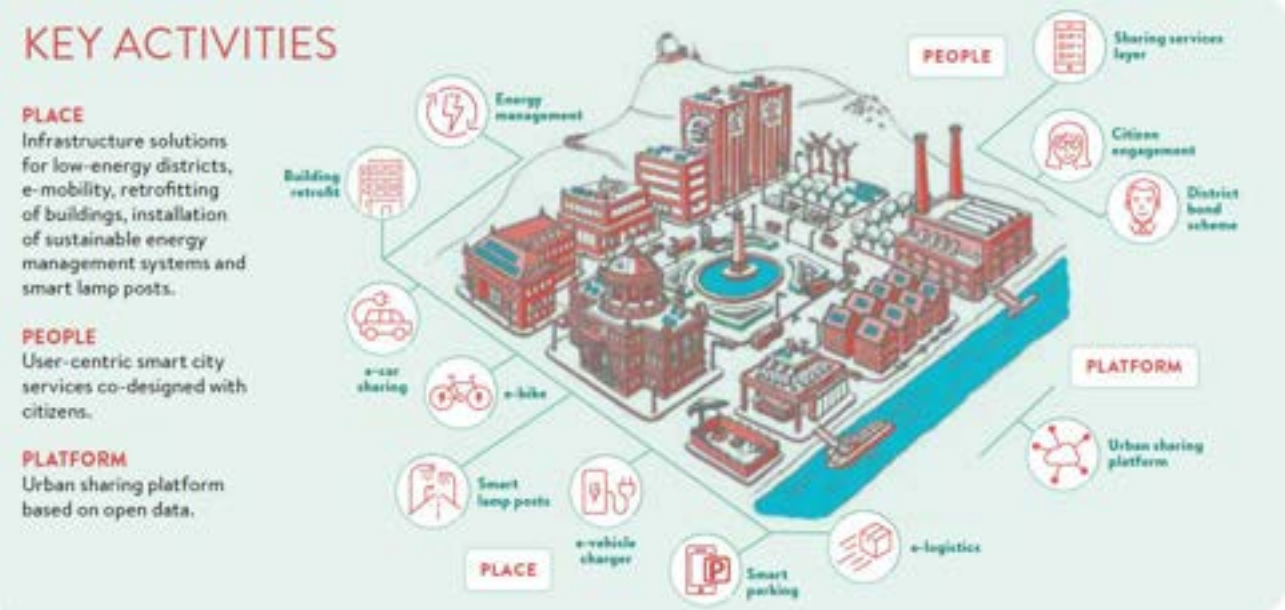

Figure 76 Key activities foreseen by the Programme Sharing Cities: place-people-platform

dimensions: people, place, and platforms (see Figure below). The 'People' dimension means fostering user-centric smart city services co-designed with citizens.

In the city of Milan (Italy), one of the 'lighthouse' partner cities, the project Sharing cities foresees a group of actions focusing on the Porta Romana neighbourhood, including:

- Participatory activities of citizens for the co-design and co-creation of sharing services and the identification of rewarding mechanisms to favor the behavioral change;
- Energetic restoration of 4,633 mq2 of public buildings and 20,000 mq of private-public buildings,
- Creation of an energetic grid for a better balancing of energy demand and supply,

- Provision of electric car-sharing, bike sharing, parking stalls, electric vehicles for the distribution of goods,
- Smart lamps with wifi and various types of sensors.

4.31.3 The participatory process features

In Milan (Italy) the participatory process has been promoted by the Municipality of Milano, the Poliedra research institute, the Politecnico di Milano-DAStU, TEICOS, Legambiente. The participatory activities will take place from November 2016 and will end in November 2017.

Participation is meant to involve citizens in the co-design of services and in the identification of rewards for fostering virtuous energetic behaviours. The co-design process includes:

- Envisioning new urban services: public workshops with citizens plus technical workshops with local stakeholders and partners for envisioning new urban services;
- Building refurbishment: co-design process for the retrofitting strategy of buildings, involving representatives of each building involved in the retrofit (20 buildings, 3 meetings for each building + eventual event for informing the whole building inhabitants);
- Condominium car-sharing service: survey for understanding needs of 5-6 buildings interested in the service and co-design activities foreseen to reshape the service;
- Envisioning the future city: contest for envisioning the shape of the future city.

Various participatory tools have been used. Among them:

- The involvement of citizens on the basis of preliminary selection,
- Facilitation and conduction of participatory processes by external experts,
- Creation of a task force dedicated to the development of participatory actions,
- An intense and dedicated communication campaign,
- The use of incentives to favour the engagement.

Some kind of selection of participants (random sample, target groups etc.)	**X**
Facilitation and conduction of the process by external professionals	**X**
Involvement of technicians and experts in direct interactions with participants	**X**
Constitution of a technical task force to support the collaborative process	**X**
Involvement of politicians and elected officials in direct interactions with participants	**X**
Communication campaigns	**X**
Use of incentives to favour participation (specify which kinds…)	**X**

Figure 77 Participatory activities of the Sharing Cities project in Milan (Italy), 2017

4.31.4 The outcomes achieved

The programme is at its starting phases and no outcomes have been achieved so far. However, the participatory activities promoted has been well accepted by citizens. The level of involvement of citizen is often larger than expected or in line with the expectations. The feedback received so far is generally positive.

4.31.5 Explaining linkages, lessons and shortcomings

The project is only at its early stages, but a broad range of energy-related results are expected to derive from the complex bundle of intertwined types of intervention (see figure 71 below) in the energy, mobility and community domains fostered in each cities.

A special focus is assigned in to the behavioural change of citizens in order to achieve the project's goals, to be supported through participatory actions along the project.

Figure 78 The Milan's sharing city wheel: various dimensions and activities of sharing