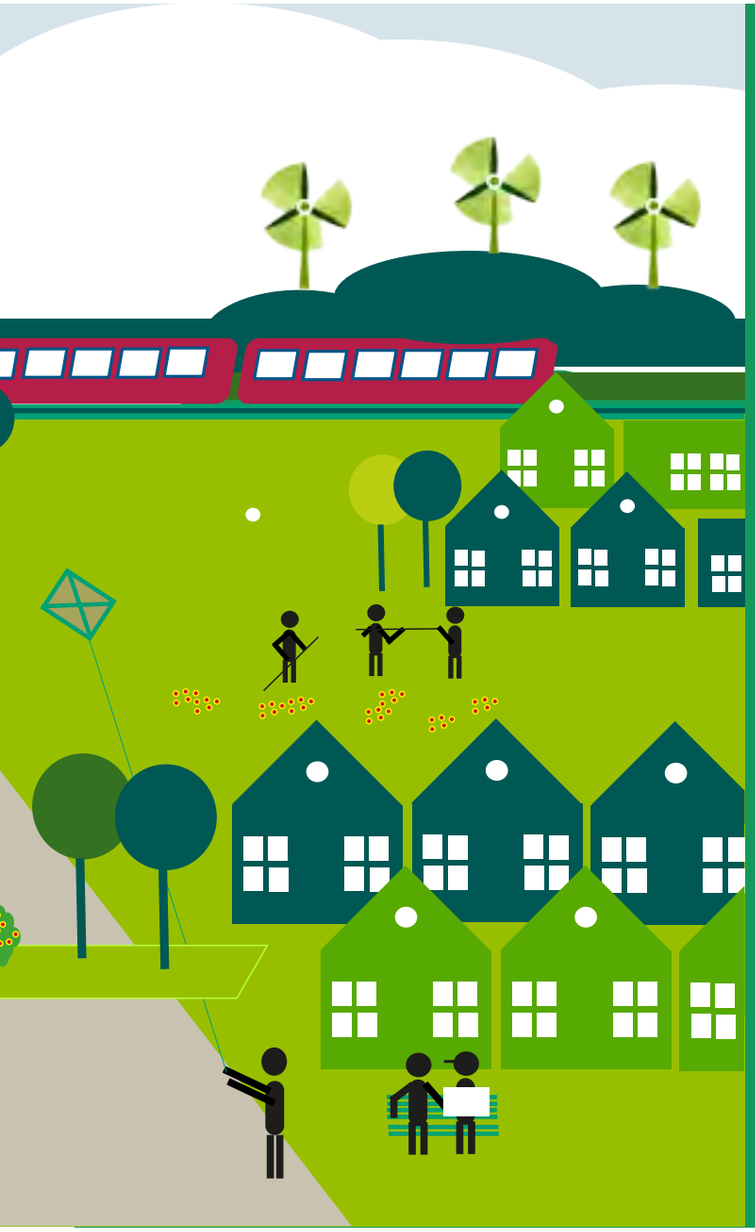
Interreg Europe

European Union | European Regional Development Fund

SmartEdge

Interreg Europe



SmartEdge Report Phase 1

SmartEdge: Sustainable Metropolitan Areas and the Role of The Edge City

Learning from edge cities in Europe

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Letter from lead partner

This is a short summary – a project-guide – with highlights from Phase 1 of the Interreg project "Sustainable Metropolitan Areas and the Role of The Edge City" with the acronym of "SmartEdge" running from 1st June 2018 – 30th November 2020. Phase 1 of the project has been for sharing, learning and development of action plans, while Phase 2, running from 1st December 2020 – 30th November 2022, will be used to put into practice what we have learned in Phase 1.

A common need to improve low carbon economy policies was the reason why the metropolitan regions and its edge cities created this project. All partners had met challenges addressing national and regional climate and energy goals. There was a shared need to develop and explore the opportunity space in regional policies – regional policies targeting edge cities, and support their role in addressing local, regional and national climate goals within the low carbon economy framework. Smaller cities should be test labs for low carbon solutions and could also prevent urban sprawl. More attractive edge cities with economic development and urban life could hopefully reduce transport need and by that reduce emissions.

The preparatory work started with a meeting in Brussels on the 9th and 10th of May 2017. The common challenges had already been identified and now the partners sat down to agree on main themes, a structure and methodology for as well as the main objectives for the project. Relevant policy instruments were identified and described based on this.

The partners expressed a need for an integrated approach based on the role of edge cities in low carbon metropolitan areas. To include the requests of all partners into a coherent approach, the following thematic structure was agreed upon: 1) multi-level governance of spatial planning in metropolitan areas 2) participation in urban and energy planning 3) economic development based on renewable energy in edge cities 4) renewable energy in buildings and 5) renewable energy in transport. These topics should structure the project.

Photo: Viken fylkeskommune

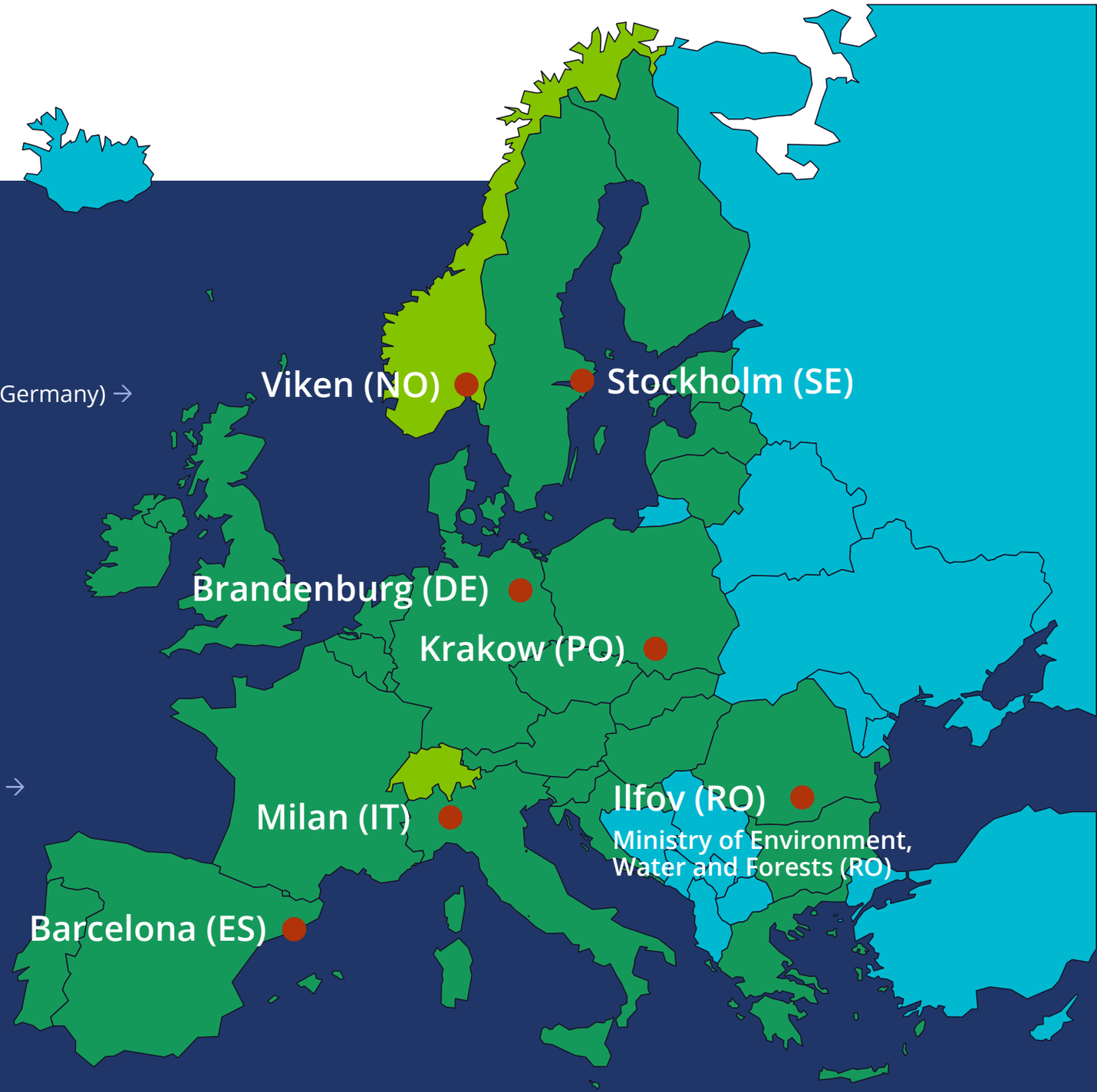
The eight partners

- Viken County Council (earlier Akershus County Council), Norway – Lead Partner
- Brandenburg Ministry for Economic Affairs, Labour and Energy, Germany
- Barcelona Metropolitan Area, Spain
- Region Stockholm (earlier Stockholm County Council) Sweden.
- Innovhub – SSI srl, Milan, Italy
- Krakow Metropolis Association, Poland
- Ilfov County Council, Romania
- Ministry of Environment, Water and Forestry (earlier Ministry of Environment) Romania.

exchanged experiences, transferred good practices and facilitated learning for urban, climate and energy planning. All partners involved stakeholders in and between workshops. We planned to visit each other and share tools, methods and experiences. The outputs should result in action plans and develop policy recommendations. Unfortunately, the partner from Brandenburg left the project after Semester 4. After kick-off in Viken, the project partners arranged workshops with sight visits in Bucharest and Brandenburg. Because of the Covid 19 pandemic the planned arrangements in Milan and Barcelona had to be arranged digitally.

Partners

Lead partner	Viken County Council (Norway) →
Partner 2	The Ministry for Economic Affairs, Labour and Energy (Germany) →
Partner 3	Barcelona Metropolitan Area (Spain) →
Partner 4	Region Stockholm (Sweden) →
Partner 5	Innovhub-SSI srl, Milan (Italy) →
Partner 6	Krakow Metropolis Association (Poland) →
Partner 7	Ilfov County Council (Romania) →
Partner 8	Ministry of Environment, Water and Forests (Romania) →



1

LEAD PARTNER: VIKEN COUNTY COUNCIL (NORWAY)

Regional population: 1.2 million inhabitants

The population growth has led to a transition towards edge cities. The existing climate plans aim to contribute to develop these cities into climate-friendly living areas by facilitating sustainable growth for a low carbon economy. To achieve this all actors need to improve the process of implementing regional goals and coordinate planning instruments at a local and regional level.

2

PARTNER 2: THE MINISTRY FOR ECONOMIC AFFAIRS, LABOUR AND ENERGY (GERMANY)

Regional population: 3.6 million inhabitants

Brandenburg has an above-average energy intensity and above-average carbon emissions and its energy productivity is very low compared to the rest of the country. This collaboration will help to create new approaches and develop innovative solutions in the region and thus will strengthen policy implementation and sustainability.

3

PARTNER 3: BARCELONA METROPOLITAN AREA (SPAIN)

Regional population: 3.2 million inhabitants

To reach the region's goals, Barcelona must address and improve environmental, urban, mobility and accessibility targets. Local governments must deliver better policies by developing solutions for the 35 edge cities and providing tools and methods for multi-level governance and participatory planning. New projects must tackle key challenges such as energy efficiency in buildings and sustainable mobility for commuters.

4

PARTNER 4: REGION STOCKHOLM (SWEDEN)

Regional population: 2.3 million inhabitants

The population is expected to grow to 2.8 million and the number of jobs from 1.15 to 1.4 million by 2030. This growth must be accommodated without simultaneously increasing the carbon emissions. There is a need to coordinate and improve the territorial and structural pre-conditions of the regional cores and collaboration with the partners in this project adds competencies and learnings that will aid in this green transition.

5

PARTNER 5: INNOVHUB-SSI SRL, MILAN (ITALY)

Regional population: 4.1 million inhabitants

The region's aim is to reduce energy consumption in the public sector and promote strategies for cutting carbon emission in urban and metropolitan areas. Issues such as the increase in the public transport network between interconnected urban cores, sustainable development and the adoption of green economy criteria are strongly linked with edge cities. This project will assist in this development as edge cities represent the main actors of interest in local development.

6

PARTNER 6: KRAKOW METROPOLIS ASSOCIATION (POLAND)

Regional population: 1.07 million inhabitants

The region has experienced the need for the development of better strategies, aimed at solving issues common for the whole Metropolitan area. They lack recommendations for wide, system solutions, which would contribute to consistent growth within the region – specifically in edge cities without the simultaneous increase in carbon emissions. Knowledge and experience from partners facing similar challenges will help in this development.

7

PARTNER 7: ILFOV COUNTY COUNCIL (ROMANIA)

Regional population: 0.4 million inhabitants

Ilfov County Council is a polycentric region with ambitions to reduce carbon emissions in the urban and metropolitan area. Ilfov is collaborating with the local level in developing and improving strategies to ensure the sustainable development of the county, aimig at issues like promoting low carbon transport, renweable energies, urban planning.

8

PARTNER 8: MINISTRY OF ENVIRONMENT, WATER AND FORESTS (ROMANIA)

National population: 20 million inhabitants

Romania is promoting a low-carbon growth and has pledged to increase the share of energy from renewable sources. To reach these goals the country must focus on low-carbon urban development in all of its regions. This project will assist in establishing a national network for dissemination of good practice examples and to instruct local authorities on how to best act to transition the region to a low-carbon economy.

Edge cities – Challenges and learnings

WHAT IS AN EDGE CITY AND WHY ARE THEY IMPORTANT

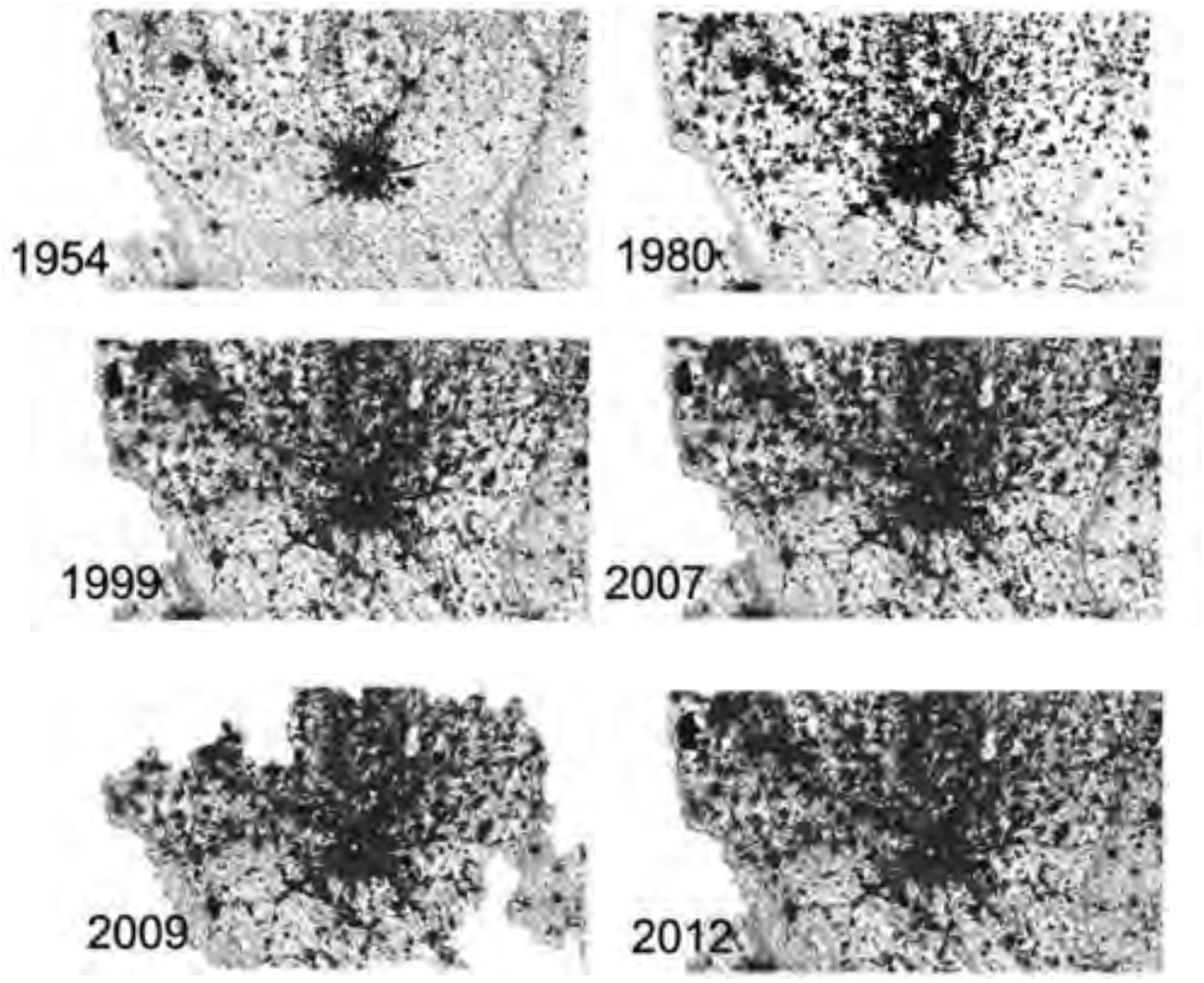
Edge cities are smaller towns and cities surrounding metropolitan centres and are an integral part of the existing metropolitan fabric. Metropolitan regions must reduce their greenhouse gas emissions. By addressing this issue together with the edge cities, support can be given to relevant authorities, stakeholders and other actors in the process of creating smart, green solutions.

There are many advantages of edge cities: they are hubs with high accessibility, they can host high urban densities and diversity and they can drive the development of the entire region. The development and transformation of edge cities, from satellite towns into multi-functional urban arenas, must be linked to the development of a low-carbon economy.

SIMILAR, OVERLAPPING CHALLENGES

SmartEdge has been an important arena to challenge existing perspectives, expectations and strategies on the implementation of low-carbon policies. The partners have exposed themselves to other ways of approaching a problem and solving a challenge. We have exchanged experience, transferred good practices and facilitated learnings on innovative approaches for urban planning and the promotion of edge cities. The partners are known for their initiatives in achieving national and regional climate and energy goals, while simultaneously including the smaller cities that constitute the metropolitan regions.

The SmartEdge project has shown that the challenges the partners experience are often overlapping and are, in some cases, the same. However, the list of possible solutions on how to approach and tackle a challenge can vary significantly between regions. All together, the descriptions of good practice and solutions presented contribute to the Interreg Europe Program by aiding national, regional and local authorities in improving low-carbon economy policies. The partners have used the experience gained through SmartEdge to set own goals and strategies that are presented as individual action plans.



Metropolitan Area of Milan over time, showing the process of how cities can grow and end up absorbing the edge cities.

Sanesi, G. Colangelo, G. Lafortezza, R. Calvo, E. Davies, C. (2016) Urban green infrastructure and urban forests: a case study of the Metropolitan Area of Milan. Landscape Research, DOI: 10.1080/01426397.2016.1173658

UNFOLDING THE ANSWERS

The activities in the project allowed for the identification of innovative tools and measures for urban and energy planning. It has also contributed to the identification of institutional and/or structural barriers that must be addressed in order to reach the goal of a low-carbon economy.

Notions like the need for creating new frameworks for exchange and cooperation between the different levels of governance, sets the baseline for good practices in the future. Experiences indicated that written agreements between players, outlined with clear goals, can be extremely useful in defining the direction of future measures. Participatory processes that include citizens and relevant stakeholders has been highlighted as a key process in solving the multifaceted challenges experienced by the partners.

Transport and buildings represent a great share of the carbon emissions, which can be reduced through efficient policies at a local and regional level. SmartEdge particularly explored the potential for local, renewable energy production, reduction of emissions through the use of renewable energy and updating energy systems. Experiences showed that replicable, innovative solutions are important, alongside equipping local authorities with the relevant expertise. It is also vital that the local authorities share this information with the population in order to gain positive momentum from the public to assist in movement in the right direction.

> **Metropolitan and Edge cities need to cooperate and develop strategies and policies together, that reflect the fact that they constitute parts of an integrated region.**

The partners identified and acknowledged the many co-benefits that the transition to a low-carbon economy can offer edge cities. By increasing their and the regions attractiveness they can accelerate investment in development, boost the local economy and the creation of new job opportunities.

The partners in SmartEdge have taken the initiative to face challenges that are rather new for most urban conglomerates. Even though the innovative projects presented appear as isolated cases, it is necessary to ensure a movement and global transition to a low-carbon economy. With time, more initiatives will appear, replicating existing initiatives or proposing new understandings and solutions, enriching the accumulated impact and creating a sense of a new standard that should be embraced by the rest.

5 dimensions

1. Multi-level governance →
2. Participation in urban and energy planning →
3. Sustainable metropolitan areas and the role of edge city →
4. Renewable energy and energy efficiency in buildings →
5. Renewable energy and energy efficiency in transport →

1

Multi-level governance

Multi-level governance

GENERAL INFORMATION ON TOPIC

A challenge frequently found among edge cities, is the cooperation between different levels of government. Territories are commonly divided in jurisdictions that sometimes fragment the territory, meaning local governments have a delimited area of influence, and other times overlap with regional levels. This traditional governmental division of territory works doesn't necessarily support the cooperation required to face challenges that cross these boundaries, such as infrastructure or energy planning.

The main goal of the "Multi-level governance" workshop that took place in Bærum (Norway) between September 17–19th, 2018, was to share experiences on how to improve the cooperation between governmental levels. Challenges like the need of clear leadership, setting common goals, and financial cooperation were discussed, with focus on sharing experiences and finding innovative solutions.

MULTI-LEVEL GOVERNANCE CHALLENGES

The exchange of experiences showed that despite the differences between regions and their challenges, similar problems were found related to multi-level governance, cooperation and the inclusion of stakeholders in finding common solutions.

There are common challenges when dealing with cooperation at different levels in traditional structures of governance. The traditional silo structures seem to cause a fragmented approach to problem solving as operations aren't integrated and the traditional hierarchy of management limits the cooperation between partners. Though this way of organizing the governing levels of the state may have been useful in the past, the current reality indicates that it creates problems when solving today's challenges. Challenges tied to territorial planning and infrastructure advancements are two examples that require better cooperation and coordination between the different levels of governance.

FINDING COMMON SOLUTIONS

Three cases were selected as examples of multi-level governance good practices. Milan proposes the creation of a common framework that facilitates the collaboration between public, private and social entities, with the common goal of creating a better relationship with the citizens and local companies. This new framework ensures a common understanding between the parties and promotes further collaboration, outside the traditional government levels. +Community exceeds the boundaries of its own experience, inviting other regions to follow in their steps with the aim of replicability.

The Regional development plan for the Stockholm region (RUFS 2050) follows similar concepts but takes them even further. In this case the stakeholders were gathered and agreed to a common goal that was described in a written document created through a participatory process. This was not Stockholm's first initiative in this direction, but RUFS represents an update of a previous agreement, ensuring robustness and a virtuous cycle of continuous improvement.

The case shared by Viken is similar to the other cases in that it includes different types of stakeholders, a participatory process to define measures, and it is the third edition of the initiative. This case, however, has a particularly interesting approach to financing. Many partners have expressed their challenges on gaining enough funds for their initiatives. Oslo package 3 (Oslo municipality, Viken County council and representatives from the state government), showcases that a holistic approach is possible; combining funds to achieve a common goal.

Even when the topics differ; Milan works in information, technology and nettwork on governance, Stockholm in regional development, and Oslo and Viken on public transport, the strategies follow similar patterns. They have set a standard on community participation and stakeholder engagement. Proposing common goals and creating new frameworks of collaboration that play an important role, as it helps to align any conflicting interests or ideas among stakeholders.

Milan Metropolitan Region (Innovhub – SSI, Italy)
+COMMUNITY

A replicable multilevel governance model was created in the Metropolitan City of Milan, known as +COMMUNITY. The programme includes public, private and social entities, with the aim of simplifying work on topics related to sustainability, environmental resources management and distribution of environmental assets.
The open proposal of this plan relies on partnerships among stakeholders to strengthen the skills of the metropolitan territory, increasing transparency, awareness and responsibility for the common good. This institutional collaboration aims to improve the governance of its territories, simplifying processes and relations with the citizens and businesses. The two initial actions promoted by the plan are the digitalization of work processes, using ICT technology to re-design activity flows, and incorporated learning, to update the expertise of local authorities and companies.

More information (Italian language)

Region Stockholm (Sweden)

RUFS 2050 – REGIONAL DEVELOPMENT PLAN FOR THE STOCKHOLM REGION

The region of Stockholm offers a great example of how to define common goals to create a framework for long-term collaboration between different governmental levels. The vision is to make the Stockholm region the most attractive metropolitan region in Europe. To enable the vision, four regional goals were defined: attractive living environments, gender equality, openness and accessibility and innovation. The plan has been developed in close dialogue with the region's stakeholders to reach the region's collective goals. Municipalities, governmental agencies, companies, academia and non-governmental organisations have been involved throughout the process. It included a review of the former regional development plan, a programme for the new plan, consultation on the first plan proposal, an exhibition and review of the second plan proposal, and finally the plan adoption by the Stockholm county council, in 2018.

More information (Swedish language)

Viken County Council (Norway)

OSLO PACKAGE 3

The city of Oslo in a collaboration with the Viken region and other stakeholders, developed an innovative framework to finance the challenges of a cleaner and more integrated public transport system. The Oslo package 3 is the third generation of agreement to finance public transport in the Oslo and Akershus geography. It was developed as a multi-level financing scheme, with funds from different sources: Oslo City, Viken County Council and national public funds, toll systems, public transportation companies, and property developers.
The plan identifies measures at the local, regional and national level, in a process that counts on broad participation and consultation of municipalities and researchers. One ambition for further development of this structure is to broaden the perspectives and open up for climate and energy measures.

More information (Norwegian language)

MAIN FINDINGS

The analysis of the challenges faced and solutions proposed by cities, shows that it is possible to learn from each other in topics related to participation and multi-level governance. In order to have a better understanding of the common challenges identified in the process, a summary can be seen in the following figure. As the purpose of the SmartEdge project is to help cities exchange experiences and learn from each other, some solutions were listed beside the problems.

COMMON PROBLEMS IDENTIFIED	COMMON SHARED SOLUTIONS
Challenges are complex, hard to define and there is lack of knowledge of the local needs.	• Perform detailed initial analysis. • Design tailored actions that aligns with the specific needs of the region.
Lack of support in long-term planning, like climate change agendas.	• Awareness campaigns. • Participatory processes including relevant stakeholders.
There is no “right solution” nor fast way to deal with the challenges.	• Exchange of experiences with other regions. • Monitoring results and verification.
Conflicting interest among stakeholders.	• Build consensus among stakeholders through common long-term goals and commitments.
Lack of cooperation in traditional governance.	• Create new frameworks to support multi-level collaboration.

The list is not exhaustive, as there are numerous approaches that can succeed. Regions must find good practices that fit their own situation.

As a general conclusion on the topic, the rewarding exchange of ideas and experiences left a lot of learnings and possible paths to follow. Simple concepts such as performing initial analyses of the situation, including stakeholders and citizens in the processes, and creating common frameworks and goals, seems to be a solid foundation for overcoming the challenges that multi-level governance presents.

Site visit in Fornebu, Akershus: The SmartEdge Group

> **We saw that, despite the differences between our regions and their particular challenges, we all have similar problems connected to multi-level governance, cooperation and teaming with different sectors, to work on common solutions.**
>
> Participant's reflection after conference

2

Participation in urban and energy planning

Participation in urban and energy planning

GENERAL INFORMATION ON TOPIC

The approach taken within urban planning in recent years has showed a great shift. The traditional top-down approach where urbanists and city planners make all the decisions, has evolved to a bottom-up approach, where the citizens are more involved in the planning process. Many regions still experience that participation in urban and energy planning is mostly handled on the local level and that it is still challenging to implement participatory processes related to urban and energy planning.

The aim of the “Participation in urban and energy planning” workshop that took place in Bucharest (Romania) between April 4–5th, 2019. was to debate about cross-disciplinary work with participatory planning and how to make it relevant for climate and energy planning and urban planning.

PARTICIPATION CHALLENGES IN URBAN AND ENERGY PLANNING

As it was explained in the topic of multi-level governance, some challenges that local governments face, exceed the boundaries of their administration. Cooperation with other levels, such as regional and national levels, are therefore necessary to coordinate common initiatives that have a wider impact. This is the case of topics like territorial planning and energy and climate change where tackling these challenges in an inclusive way is difficult. The technical complexity of these topics and the divergent interest of the different stakeholders makes it difficult to reach common agreements.

New concepts such as urban metabolism, where the focus is more on sustainable planning, increases the complexity of the challenge. In this concept territories should be approached as a living being with continuous flows of materials and energy. There can also be different perceptions of the same problem. A survey performed in 59 cities in Southeastern Europe showed in terms of climate change, that the scientific community was concerned about climate change and air pollution, while the public opinion was focused mostly on air quality, and the policy makers interest lied in urban management and air pollution.

The technical complexity of solving difficult challenges and simultaneously achieving participation in these processes, requires not only the mapping of the different stakeholders and their interests, but also providing enough information to contribute to their understanding of the challenges themselves.

GOOD PRACTICE

Climate protection manager in Rehfelde (Germany)

The role of the Climate protection manager is to enable the public and involve them in relevant projects and build capacity in the local society to create a will to change behavior.

More information

FINDING COMMON SOLUTIONS

Participatory processes include a wide variety of topics and approaches such as working with different age groups, including both urban and rural populations, different levels of government, and stakeholders representing multiple sectors, among others.

Skawina Commune set its foundation in the participation of its citizens through different strategies, including surveys and workshops. Interestingly, the inclusion of the rural population of the territory gave a voice to a population that is usually underrepresented in territorial planning. The participatory-driven approach was not only limited to the initial phase but continued in the execution and evaluation phases.

Following the same logic, Imagina Badia proposed a Local Action Plan to follow, as a result of a participatory process that collectively defined the priorities for future development of the city. The case shows the importance of constructing written, local agreements that determine future measures.

The RENplus funding program in Brandenburg showcases how it is possible to tackle energy and climate challenges using a multi-level approach. Municipalities and companies interested in taking action can apply for additional funding from the initiative and receive assistance from the Regional Energy Managers in the implementation phases of the projects.

Skawina Commune, Krakow (Poland)
MUNICIPAL REVITALIZATION PLAN FOR SKAWINA

The process of revitalization carried out by the Skawina Commune started with setting the boundaries of the area, and included the implementation of a recovery process. The plan was conducted in a comprehensive manner, integrating actions that will benefit the local community, the territorial space and the economy, centered around the stakeholders' participation.

The participatory approach included the rural and the urban populations of the region, taking both needs equally into account. Public participation was involved in the preparation, execution and evaluation of revitalization, including public consultations and involvement of the Revitalization Committee. The stakeholders' perspectives on the revitalization process (those who benefit or are affected by these activities) assisted in shaping the municipality's planning and implementation process.

More information (Polish language)

Badia del Vallès, Barcelona Metropolitan Area (Spain)
IMAGINA BADIAN

The framework created by Badia del Vallès and its collaboration with the Barcelona Metropolitan Area is part of URBACT, an EU program that promotes citizen participation in the transformation of cities to improve the quality of life. The aim of Badia's initiative is to create a draft Local Action Plan to boost the identity of the edge city.

The main actions of the plan are related to connectivity, mobility, the use of public space, and the valorization of the natural and cultural heritage.

The innovative aspect is the participatory process in the project planning, that includes interaction between citizens, municipalities and the regional government. Through stakeholder engagement at different levels, Badia has the opportunity to collectively define and prioritize which actions to be developed in the coming years to transform the municipality and define future strategies. A wide variety of activities were performed to involve as many people as possible, including a Central Debate, discussion meetings with experts, group walks to re-discover the city and sessions in public space.

More information (Catalan language)

State of Brandenburg (Germany)
RENPLUS

The initiative undertaken from 2014–2020 by the state of Brandenburg offered a financing framework to reduce energy-related CO2 emissions, within the implementation of the energy strategy. Five regional energy concepts were developed to implement the strategy, each of them including a Regional Energy Manager position in charge of the exchange with regional actors (companies, organisations, municipalities).

For this purpose, grants are for projects that aim at increasing energy efficiency and the use of renewable energies. The grants offered by the initiative, available for companies and municipalities, include complementary investment measures (e.g. systems for energy recovery, storage systems, district heating systems, combined heat and power systems) and non-investment measures (e.g. energy advice, energy audits, energy concepts). The funds are from mixed sources, the European Regional Development Fund (ERDF) and State of Brandenburg, while the funding agencies are also the State of Brandenburg, and the Ministry for Economic Affairs, Labor and Energy (MWAE).

More information (German language)

Participation process: Many regions still experience that participation in urban and energy planning is mostly handled on the local level and that it is still challenging to implement participatory processes related to urban and energy planning.

Photo: Jan Ivar Bøe

MAIN FINDINGS

Common challenges were identified across the different cities, but with some differences. Some cities were more concerned about the roles of the different governing levels. Others were concerned about the technical nature of the topics and how to increase the knowledge and involvement of the citizens. Some partners expressed their concerns about reaching the right balance between participation and unilateral decision making, as the inclusive processes usually take more time and require more extensive management. The dispersion of the partners interests is represented by the following post-its.

Creating common agreements and new frameworks of collaboration help to align the stakeholders involved in the processes. The partners showcased the importance of including participatory processes not only in the planning stage but throughout the project, and the importance of broad representation from different stakeholders.

The role of regional governments should coordinate cross-boundary initiatives, in cooperation with local and national levels.

It is hard to determine at what stage one should make room for participation, and how rigid or flexible the decision making process should be.

Participatory processes require more time in order to build relationships with stakeholders, and create functional cooperative structures.

It is more complex to include participatory processes in questions related to energy and climate change, but not less relevant to achieve the goals set.

The local governments value citizen participation, while the regional governments find it difficult to include participatory initiatives in their decision making.

GOOD PRACTICE

Participation with youth in urban planning in Lørenskog (Norway)

A primary school and a secondary school were invited to participate in a participatory activity in a plan for green mobility.

More information

Good practices were identified and the inclusion of one or several of the initiatives in the following list can promote a more inclusive approach when dealing with technically complex challenges such as urban, energy, and climate planning on a regional level.

- **Set mandatory standards of participation in planning processes.**
- **Promote channels of communication and provide a clear strategy of involvement.**
- **Increase citizen awareness in new and complex topics.**
- **Mapping of the particular needs of each region to achieve tailor-made solutions.**
- **Municipalities and regional governments should support each other and work together when dealing with cross-boundary challenges.**
- **Create frameworks that support cooperation of multi-level governments.**
- **Develop written agreements with clearly defined goals.**

Discussing wicked questions in workshop on participatory planning in Bucharest. Photo: Viken fylkeskommune.

3

Economic development on the basis of renewable energies

Economic development on the basis of renewable energies

GENERAL INFORMATION ON TOPIC

The energy transition in Europe offers a great opportunity in the advancement of renewable and decentralized energy generation. The shift into emission-free energy sources is key in reaching the climate goals, but can also contribute to boost regional economies and value creation. The restructuring of the energy supply requires considerable investment, but can provide growth and employment. The rapid development of sources like wind and solar energy, hydropower and biomass also bring new challenges, in particular in relation to public acceptance.

The main goal of the “Economic development on the basis of renewable energies” workshop that took place in Brandenburg, Potsdam (Germany) between September 23–25th, 2019, was to find the answer to the question “Can there be an economic development in edge cities through renewable energy?”.

ECONOMIC DEVELOPMENT CHALLENGES ON THE BASIS OF RENEWABLE ENERGIES

The rapid development of renewable energies in recent years brings forwards new challenges. The system integration of wind energy and photovoltaic systems, for instance, has reached its physical limits in many places. Synchronizing the expansion of the grid with the further expansion of renewable energies will be a central political and technical task in the future.

The benefits of developing distributed, renewable energy are well know: it attracts investment, creates new jobs, enhances the region’s profile, cleans the energy mix and provides energy security, among others. But the challenges appear when aligning the political willingness of the local level, the lack of public financial support or private investment, the complexity of legislation and regulatory frameworks, the lack of technical knowledge, and citizen acceptance, among others.

State of Brandenburg (Germany)
FELDHEIM

Feldheim represents the first case of a self-sufficient energy town in Germany, based 100% on renewable sources. The individual households are supplied with heat and power from renewable energy power plants on their own doorstep via autarchic local grids.

The project owes its success to the excellent partnership between the municipality of Treuenbrietzen, the residents of Feldheim and the project developer, Energiequelle GmbH. This innovative town showcases practical experience in the field of renewable energies, attracting more than 3500 visitors per year. The shift to renewables relies on the benefits that the initiative provides to the community: independence from the grid and energy security, reduction in the total carbon emissions, a positive image of the municipality and local communities, and job security and the creation of new, local jobs. The alternative strategy has allowed for value creation in Feldheim, boosting its profile through good resource management and social capital.

More information

Viken County Council (Norway)
SOLAR ENERGY CLUSTER NORWAY

The Norwegian initiative shows that the application of solar systems to drive the energy transition can be developed even at high latitudes. The solar energy industry organized itself with the aim to make Norway an innovative arena for testing and boosting solar technologies. This cross-sector initiative that includes private companies, research institutes, universities and development actors has a goal of creating a competitive market and placing the country as an international leader in solar systems.

The base of the proposal is to strengthen each other providing an all-embracing approach for users, from manufacturing to installation and consultation. The case is an excellent example of regional collaboration in the context of renewable energy sources to achieve a specific goal, including different types of stakeholders that complement to achieve mutual benefits.

More information (Norwegian language)

4

Renewable energy and energy efficiency in buildings

Renewable energy and energy efficiency in buildings

GENERAL INFORMATION ON TOPIC

In the achievement of the EU's energy and environmental goals, the building sector is crucial. Many buildings are old and are inefficient users of energy. Buildings are responsible for approximately 40 % of the EU's energy consumption, where heating and hot water supply require the majority of energy. Renovations can improve the situation, but they often require major investments and are time consuming, and often they are not prioritised at local and regional levels.

The aim of the "Renewable energy and energy efficiency in buildings" workshop held on 23–24 November, 2020, was to share experiences and best practices in increasing energy efficiency of buildings, and how potential new initiatives that can positively impact the building sector and its consumption of energy.

CHALLENGES WITH RENEWABLE ENERGY IN BUILDINGS

Energy consumption and carbon emissions from buildings have not yet been a focus area for many local and regional authorities, due to a range of factors. The knowledge about this challenge within governments has been limited, and in the construction of new buildings, renewable energy and energy efficiency have not always been prioritised. The overlap between modern architecture and energy and climate has only in many regions been recognised over the last decade.

Realising how inefficient some buildings are, and the amount of energy that is wasted, has been one side of the challenge. The other difficulty has been finding ways to improve the situation. There are many new forms of technology out there, the challenge is making use of these in a system that has been rigid for many years. Interventions to large, public buildings can be done, however there are thousands of households that are also a big part of the picture. It is difficult for private households to make their own, individual, changes at home.

It is also a challenge to find financing schemes to support retrofitting and renovations.

FINDING COMMON SOLUTIONS

Solutions to the challenges presented must be commercially viable, easy to implement and replicable. They are at large dependent on funding, but they also require collaboration. The case from Milan displays how different levels can collaborate technically and financially to contribute to the reduction of their footprint. The cooperation between academic institutions, and the public and private sectors can lead to the development of wholesome approaches to the issues that have been presented.

The distribution of information and advice is a part of the solution that will help private households in particular in making changes independently to reduce their emissions and become more energy efficient. The project in Germany has found an innovative solution that can be applied to private households. By sharing this knowledge they are helping raise awareness about this issue, but also in finding a common solution.

Part of this process requires support and training of governmental authorities so they can distribute relevant information and advice to the population. This increase in knowledge will aid in ensuring the integration of climate and environment in modern architecture. Barcelona is already developing new building code that will help ensure that all new constructions are energy efficient. National standards could also assist in this development.

Milan Metropolitan City (Italy)
VIRTUOUS TERRITORIES

A project designed to enable public and privately owned buildings to reduce their primary energy consumption and carbon emissions. Milan Metropolitan City obtained the funding and could increase the energy efficiency of its buildings through energy re-qualification operations together with ad hoc consultancy services provided by a grant.

In this strategic action, the City has introduced a contract of services that contains the identification, design and implementation of an energy efficiency level (in relation to a specific plant or building) that can guarantee energy savings in public buildings.

More information

The Ministry for Economic Affairs, Labour and Energy (Germany)

SOLAR SUBSTITUTION KIEBITZBERGE

The most important potential for energy system transformation lies in the heating sector. The Solar Substitution Kiebitzberge-project shows that it is possible to use solar energy to heat the water in an open-air swimming pool. The project has demonstrated to its 100 000 visitors per year that solar substitution of fossil fuels is also possible in the heating sector and that this also can be dimensioned for a typical private household.

Since the majority of energy in private households is used for heating and hot water, rather than for electricity, this is where the most important potential for energy system transformation lies. There has been an increased focus on presenting this technology and showing that such innovative solar heating technology can be an interesting alternative for many private households.

More information (German language)

Barcelona Metropolitan Area (Spain)

METROPOLITAN ENERGY DASHBOARD

The dashboard is a platform tract that brings together current energy data from the 35 municipalities of the Barcelona metropolitan region in a single data visualization. The object of the tool was to have updated real consumption data of all energy supplies of the 35 municipalities of the metropolitan region of Barcelona.

The dashboard stores all the energy information of each point of public consumption. It makes it easy to compare the energy indicators of each municipality with respect to the rest, benchmarking, allowing to identify the most efficient municipalities that can serve as a reference, and those that have the greatest potential for improvement (globally, building typology, etc.). This will help policy makers to prioritize and define metropolitan energy policies from an objective and unique dashboard.

This kind of data-driven approach can help stakeholders reduce their energy consumption and helps to continuously evaluate the progress towards energy efficiency and energy savings.

More information

Photo: The Norwegian Solar Energy Cluster / Ola Rostad.

Buildings are responsible for approximately 40 % of the EU's energy consumption, where heating and hot water supply require the majority of energy. Local, smart grid projects are increasing and they lead to organizational and regulatory innovation, new business models and value chains, as well as better integration of different types of end-users into the energy system.

MAIN FINDINGS

The systems we have for energy management are increasing in variety and availability every year. Local, smart grid projects are increasing and they lead to organizational and regulatory innovation, new business models and value chains, as well as better integration of different types of end-users into the energy system.
Common challenges were identified among the partners on the way forwards. Many of the solutions are tied to multi-level governance and the responsibility that public authorities can take in this transition.
Construction projects can take years and existing action plans may span close to a decade. There are also ways of re-shaping and modifying existing plans.

Support from local and regional governments for future emission reductions from buildings but also in the improvement of existing action plans.

- Stimulate demand for environmentally friendly construction
- Focus on climate impact in construction projects and raise efficiency requirements
- Support innovation
- Spread knowledge and advice to the public
- Facilitate and support cooperation between public and private sectors to enhance synergies and avoid overlaps
- Design best practices
- Invest in new technological solutions
- Define a clear set of objectives

Some of the implemented strategies have had significant contributions to the adoption of energy efficiency through renewable energies. Some of these are highlighted in the boxes below.

- **Dedicated funds aimed towards energy efficiency and greenhouse gas emissions**
- **The education of citizens towards green alternatives for energy**
- **Strict performance requirements for renovation and new construction. Verification protocols clear objectives must be set, and KPIs must be monitored to follow the development**
- **Web-based energy calculators and monitoring systems to track energy consumption in public and private buildings**

5

Renewable energy and energy efficiency in transport

Renewable energy and energy efficiency in transport

GENERAL INFORMATION ON TOPIC

In some regions economic and demographic growth is causing increased congestion due to use of private vehicles. Due to COVID-19, there have been changes in urban mobility habits. The pandemic has favoured individual mobility which will force us to rethink cities and achieve a more flexible public transport system to the current demands.

The aim of the fifth workshop held 9th and 11th of December was ”Renwable energy and energyefficincy in transport”. With the EU’s objectives including a decarbonsation of transport, sustainable mobility is evolving rapidly. Sustainable mobility is a broad concept that has several areas of action and effects (accessibility, security, environment, efficiency, citizen equity and governance). The aim is to reduce the use of private vehicles through an increase in public transport, cycle lanes and changes in mobility habits. All regions are technologically committed firstly to electrification and secondly to hydrogen. To be considered an effective strategy, renewable power must be guaranteed.

A shift from individual fossil-fuel vehicles to cleaner ways of transport will provide direct benefits, as reduction in traffic congestion, in the level of noise and improvement in the air quality, and also indirect benefits, like making the region more attractive, increase the population mental and physical health, and reduction in the infrastructure requirements.

CHALLENGES WITH RENEWABLE ENERGY IN TRANSPORT

Most partners have the mechanisms to carry out sustainable mobility planning. The difference between them being that in some regions, these are organized under a single mobility master plan (SMMP) while in others these are grouped into several partial plans. There is a challenge of coordinating activities between communities and integrating the management of three levels of governance.

The partners have a mutual aim of improving the air quality, creating spaces for social interaction and improving the safety of urban mobility. For some regions the challenge is to improve the road network for electric cars and connectivity, while for others it is changing mobility habits like reducing the use of private vehicles or gaining space for pedestrians and cyclists. There is a challenge when it comes to impacting and changing people’s habits. It is hard to enforce change as people are reluctant to changing their habits.

Another challenge is the application of innovative technologies and renewable energy to mobility. Renewable energy must be secured, in addition to technology that supports renewable energy.

FINDING COMMON SOLUTIONS

Enforcing a change in mobility and the use of alternative transportation to the traditional car is difficult. A single plan that integrates objectives, strategies and actions linked to different parts of sustainable mobility can be seen as advantageous. However, several regions have multiple, partial plans that cover different areas.

Focus areas differ between the regions. Some focus on the acquisition of vehicles while others on the provision of infrastructure for their charging. Either way, investments in infrastructure for renewable energy must be secured for all regions. The availability of renewable energy secures the opportunities for electric mobility and its effect on local emissions.

In all promoted solutions, the activities must be coordinated between communities and integrated in the different management levels to ensure that all strategies and actions point towards the same goal. In the promotion of electric mobility, incentives are often given. Aid has been given for the purchase of bicycles, electric bicycles, electric scooters and segways and even electric cars in some region. Electric cars in Krakow are exempt from parking fees and the monthly subscription for a hybrid car is 2.5 times lower than for a standard car. In contrast, deterrents to reduce the use of polluting vehicles, such as parking restrictions and increases in fuel taxes can also be an important part of the strategy.

Mutual solutions include investing time and resources into building a network of low emission mobility measures and good practices. Aligning strategies is important and necessary to highlight the importance of these changes to the citizens to ensure their acceptance and cooperation.

Krakow Metropolis Association (Poland)

LOW EMISSION PUBLIC FLEET

An increase in demographics and migration has lead to an increase in citizens commuting to, Krakow Sakawina and Niepolomice, causing a congestion challenge. In the pursuit of reducing emissions, air pollution and car dependence in suburban areas, Krakow has been focusing on increasing the availability of environmentally friendly public transport, expanding the network of connections (bicycle and pedestrian routes), and developing new solutions in the field of mobility such as bikesharing, carsharing, and carpooling. Car sharing is developing in the metropolitan area and electric scooters gain popularity.

Parking lots in close proximity to public transport hubs have been created and the plan is to expand the number of car parks to include over 2900 parking spaces.
More information

Barcelona Metropolitan Area (Spain)
SUSTAINABLE MOBILITY

To improve sustainable mobility, Barcelona focuses on reduce polluting vehicles by increasing public transport or the use of non-polluting vehicles. They are encouraging the use of public transport while improving the network. The adaptation and electrification of depots for the bus fleet are well under way. The expansion of the network of charging stations for low-emission vehicles has been important in addition to the promotion of R&D projects involving low-emission vehicles. Renewable energy generation is increasing alongside the charging network and the installation of photolineras which allows electric vehicles to return energy to the grid.

Reclaiming the streets for bicycles and open spaces to be used by the public has been an ongoing process. During confinement by COVID-19, this process accelerated. The network of bike lanes has been improving, promoting the use of this method of transportation.
More information

Ilfov County Council (Romania)
SUSTAINABLE URBAN MOBILITY PLAN BUCHAREST

Urban expansion is happening in the Bucharest-Ilfov region, often characterized by low-density residential housing and a greater dependence on private cars for transport. The challenge in this expansion is to minimise the use of transport-related energy and pollution.

The railway has provided insufficient service to counties so the focus has been on achieving a viable public transport system that is comfortable, efficient and reasonable. Significant road improvements have been made to the road network to improve connectivity between Bucharest and the surrounding counties. In the modernisation of the public transport system the aim is for half of the 600 buses to be electric. They further plan to improve safety and security and reduce the number of accidents in addition to reducing air and noise pollution, carbon emission and energy consumption. The plan focus on improving the efficiency and cost effectiveness of the transportation of persons and goods, including defined sources of underlying funding and financing for such activities.
More information

Investments in infratructure for renewable energy must be secured for all regions. The availability of renewable energy secours the opportunities for electric mobility and its effect on local emissions

Photo: María José Reyes Martín

Closing remarks

Phase 1 of the SmartEdge project has provided lessons, experiences and benchmark achievements from our european partnership. The five thematic workshops has shown how each of the partners work to implement strategies and reach goals.

From a governance level, experiences are expected to increase the rate of success of local and regional policies. The necessary involvement of citizens and stakeholders on different levels and along the entire process is an example of this. The cooperation between local, regional and national administrations responsible for the management of structural funds can be expected to create a closer-knit sphere of funding policies to respond to demands of the regions. Undeniably, the closer the coordination is between regions and different levels of government, the easier it will be to create synergies and work together towards common goals.

Knowledge and expertise among local authorities and decision makers is important to ensure that climate and energy planning is a part of all local and regional planning processes. Climate and energy considerations must be part of all developments. This is also something that should be conveyed to the public. The road towards a low-carbon economy must be undertaken by everyone. The citizens have a responsibility and a role to play. They need to be well-informed in order to be able to participate and be a part of the decision-making-process. In order to solve the wicked questions and climate crisis, local and regional government need to achieve public support and involve the citizents in the process.

The initiatives related to the energy transition and reduction of carbon emissions, constitute an undeniable opportunity for edge cities to become more appealing and competitive. The co-benefits of shifting to renewable energy sources include attracting investment, creating new jobs, increased energy security and resilience.
The transport and building sector represent the best opportunities of areas where these policies can be boosted.

The partners in this project represent regions that differ in size, culture, inhabitants, situations and contexts. However, all partners have in common a desire to transition towards low-carbon economies. This includes having enough knowledge and experience on how to tackle the challenges along the way. A common lesson for all regions is the need to agree on, and clarify, goals and ambitions in their separate regions. It is vital that local authorities, stakeholders and citizens in the same area are all pulling in the same direction.

The experience exchange and dissemination of the project can provide other European regions with suggestions of good practice, successful experiences and ideas that can be replicated. Interaction with existing platforms and frameworks that promote a low-carbon economy policy (Eurocities, METREX, Purple, Covenant of Mayors, EMA, Metropolis, MedCities, C40, ICLEI) is desirable as part of the work in spreading the results of this project. If this is materialized, the impact of SmartEdge as a project would not only be limited to the project partners, but it will achieve an impact at a European, or even global, level.

Photo: Nelly Krüger, Brandenburg

Site visit in Potsdam Brandenburg: The SmartEdge Group

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