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Low carbon city: Obstacles and solutions identified by the city partners

Summary

An analysis based on a set of identified obstacles

This set of 20 obstacles aims at giving a frame to the Low-Carbon activities of the local authorities. The ways local authorities address these obstacles and the specific local answers given to these challenges are a good indicator of the strategy in place in each city.

This set of obstacle was defined by the project partners during a series of workshops and were finally validated on 28 September 2017 during the project workshop in Suceava.

Among this set, each city chose 10 obstacles to tackle.

According to the local context, this analysis has been done in house or externalised to a sub-contractor. Many cities have done this work closely with their local stakeholders' groups

Therefore, these obstacles are seen as **thematic fields** looked at in order to understand the activities in place to tackle them. Therefore, we want to focus on the solutions proposed. Of course, we do not want to focus on the problems but on how to overcome them. Using the obstacles is only a mean to classify these solutions and maybe to identify common responses/strategies between the MOLOC partners.

1.1. Silo thinking

Lack of coordination / lack of leadership capacity and know-how for complex, cross-sectoral processes

- 1. Make sure that a common (understandable) language is used
- 2. Remind their responsibilities to the local authority and the local stakeholders
- 3. Ensure internal communication and cooperation between services
- 4. Ensure cooperation and coordination between public bodies (and their competences)
- 5. Refer to a shared transversal vision within all activities

1.2. Changing behaviours / mobilisation

Lack of understanding towards stakeholders and citizens – tools/methods for dialogue and coconstruction

- 6. Overcome lack of stakeholder's participation into the low-carbon strategy (including changing behaviours between stakeholders)
- 7. Ensure involvement of citizens and users in the low-carbon strategy (including ownership and empowerment of citizens)
- 8. Use analysis methods from sociology and social sciences
- 9. Deal with conflicts of interest and lobbies
- 10. Address concretely the question of unsustainable behaviour and lifestyles (NIMBY, etc.)

1.3. Political vision

Strong political commitment - Low carbon actions are part of all strategic plans

- 11. Follow a long-term approach
- 12. Cope with political changes
- 13. Ensure commitment and motivation to the low-carbon strategy

1.4.Implementation

Socio-economic and technical arguments – lack of allocated budget – demonstration

- 14. Use of proper indicators (including indicators for evaluation and monitoring)
- 15. Build a sustainable financial strategy (including human resources)
- 16. Evaluate the economic and social aspects (including a global approach)
- 17. Cope with / go beyond national legislation
- 18. Select actions that have highest "low carbon" potential (justify choosing specific actions)
- 19. Test replicable pilot projects
- 20. Make action attractive (identifying the right incentives, communicating)

	Hamburg	Katowice	Lille	Suceava	Torino
1.1. Silo thinking					
Make sure that a common language is used					
2. Remind the local authority and the local stakeholders their responsibilities					
3. Ensure internal communication and cooperation between services					
4. Ensure cooperation and coordination between public bodies					
5. Refer to a shared transversal vision within all activities					
1.2. Changing behaviours / mobilisation					
6. Overcome lack of stakeholder's participation into the low-carbon strategy					
7. Ensure involvement of citizens and users in the low-carbon strategy					
8. Use methods of analysis from sociology and social sciences					
9. Deal with conflicts of interest and lobbies					
10. Address concretely the question of unsustainable behaviour and lifestyles					
1.3. Political vision					
11. Follow a long-term approach					
12. Cope with political changes					
13. Ensure commitment and motivation to the low-carbon strategy					
1.4. Implementation					
14. Use of proper indicators					
15. Build a sustainable financial strategy					
16. Evaluate the economic and social aspects					
17. Cope with / go beyond national legislation					
18. Select actions that have highest "low carbon" potential					
19. Test replicable pilot projects					
20. Make action attractive					

Remind their responsibilities to the local authority and the local stakeholders (Obstacle 2)

OBSTACLE: Local authority and local stakeholders "forget" the responsibility they have when leading a low-carbon strategy. Sectoral policies seem to continue to obey their own goals and habits inherited from the past.

Addressed by the cities of Lille and Suceava

Definition of the obstacle - context

In Lille, it seems that local authorities are engaging in actions to develop a low-carbon strategy. Consciousness and responsibility exist in the implementation of a low-carbon city, and policies are being developed. These policies are becoming a priority of the municipality since the City engaged its staff in the application to become European Green Capital 2021.

The main challenge is to make the low-carbon strategy more visible as well as a clear priority. This is true for institutional communication which is very limited and the lack of visibility of key initiatives involving inhabitants. Initiatives exist, but are not communicated within a global sustainable city approach.

In Suceava, a series of strategies aimed at reducing carbon emissions have been developed through which the authorities undertake their policies for reducing carbon emissions. A Local Sustainable Energy Action Plan (SEAP) for the Municipality of Suceava has been developed. Still, the implementation of SEAP proposals has not been monitored.

The main concern is to integrate different sector-specific strategies with specific objectives into a single global strategy at the local level to reduce CO_2 emissions and to bring visibility towards potential stakeholders. There is only a small number of stakeholders involved. Others levels of governance are not involved in the SEAP.

Horizons & solutions

In Lille, the application to the title of European Green Capital has given a frame to many actions and initiatives.

Within the Suceava Municipality administration, an interdepartmental working group has been set up to produce the reference data and the list of possible actions aimed at reducing carbon emissions. This working group is made up of the Heads of the Environment Office and of the European Communication / Projects Bureau, coordinating between different sectors and stakeholders involved in the development of individual projects. Nevertheless, dialogue with other stakeholders is deficient.

The local authority has developed a low-carbon policy / strategy. At present, actions have already begun to implement practical measures to reduce carbon emissions.

Ensure internal communication and cooperation between services (Obstacle 3)

OBSTACLE: Inherent silo mentality, and consequently a lack of cross-sectoral processes, within the local authority

Addressed by the cities of Hamburg, Katowice, Lille, Torino

Definition of the obstacle - context

In Hamburg, leadership in ecological questions is located within the **Department for Environment and Energy**. The communication between the different actors is going on over some levels. On the working level in most cases directly between the different services and actors involved. But also formal communication is happening on the lead level of the different departments and within the Senate of Hamburg

In Katowice, the city is facing difficulties in coordinating and monitoring the progress of implementation of the LCEP. The main problem is the **lack of procedures** according to which departments responsible for the implementation of tasks would be required to consult tasks and report their implementation status and the achieved results.

In Lille, some difficulties encountered in systematically and not only opportunistically engaging all the services concerned. Due to budget cuts and reduced human resources, services have less opportunity to get involved in cross-sectoral working groups and some key services are less active.

In Torino, the local Public Administration has organized an **inter-departmental roundtable** which consist on Environment, Private Households, Infrastructure, Mobility, Social Policies, Information Systems, Urban Planning, Green, Public Construction, Civil Protection, and Energy Management departments.

The administrative apparatus is currently **complex** and there is a **strong difficulty in making efficient cooperation.**

Horizons & solutions

In Hamburg, through the climate plan, the local authorities are focusing primarily on **key areas**, independently of the Federal government. To that regard, strategic clusters were formed, integrating and supporting cross-sectoral collaboration in these key areas: Transformation of urban spaces (city/neighbourhood development), green economy, Hamburg as a role model and Climate communication

The **Coordination Centre for Climate Issues** creates the necessary working structures with the participation of the relevant sectoral ministries, public enterprise and the affected target groups from the private sector and will report on joint routes to achieve the targets in the next update of the Hamburg Climate Plan.

Set up ok **key partnerships** eg collaborate with the ZEBAU GmbH, a company which establishes and promotes the use of renewable energy sources as well as construction of energy-efficient buildings, operating with multiple stakeholders in the field of politics and administration, science and research and planning and construction.

In Katowice, the Mayor created in 2014 the **Working Team** responsible for the implementation and realization of the Low Carbon Economy Plan (LCEP). Many actions have been taken to improve internal communication:

- introduction of an electronic document flow system,
- participation in conferences and trainings,
- organization of meetings between the City Hall and external entities,
- organization of meetings of managers and heads of departments,
- submission of proposals on the meeting of the Mayor of Katowice for broader discussion and eventual acceptance
- established templates of reporting tables and deadlines for their fulfilment for a given year, defining the institutions and units responsible for a given area of activity

In future it is necessary to improve the communication procedures.

In Lille, real efforts have been made to promote internal dialogue and collaboration. But the trigger for such collaboration is an immediate subject, such as the candidacy for Green Capital, which is often driven by the DGA, and also the renewal of EEA (Cit'ergie in French context).

In Torino, the coordination among services to reach a local strategy for climate change is leaded by **the environmental sector of the City** that promoted **TAPE Plan**. Within the environmental sector, other services involved are the offices for Environmental education, Sustainable mobility, Energy Manager, Economic Development, Education.

The current administration is the first systematic and formalized tentative to use an inter-sectoral approach for the policy-makers. The assessment of indicators, the creation of a common database and approach to the policy, the definition of key indicators and the common vision on how to reach the target is perceived as fundamental for the administration.

There are **no specific indicators to measure and evaluate** the cooperation between different departments of the public administration.

Refer to a shared transversal vision within all activities (Obstacle 5)

OBSTACLE: The transversal vision about low carbon is not sufficiently shared within the local authority

Addressed by the cities of Suceava, Torino, Hamburg

Definition of the obstacle - context

In Torino, since it is an earlier phase of the application of coordination among services to reach the national strategy on Climate Change, the operational activities among services are reduced to some common meetings based upon an agreement to share data, approaches, and goals to develop specific guidelines for a low carbon strategy. Actually, Urban Planning services are working to find practical binding rules for environmentally sustainable land use planning regulations.

In Suceava, many planning documents/strategies elaborated by other institutions are not correlated to the carbon reduction policies. And so far, there is no cooperation between departments to develop a such shared vision.

Hamburg follows a clear target and has a transversal vision regarding the reduction of its CO_2 emissions, optimising its infrastructure, working with Universities and research centres as well as increasing the use of public transport. This vision has been established and emphasised by the State of Hamburg as a ground policy. This vision is mainly explained in **the Hamburg climate plan of 2013.** This Plan has been developed across departments and by incorporating the districts as well as in cooperation with the city's stakeholders.

Horizons & solutions

In Torino, an **inter-department roundtable, focused on climate change** has been created. The departments involved are Environment, Private Households, Infrastructure, Mobility, Social Policies, Information Systems, Urban Planning, Green, Public Construction, Civil Protection, and Energy Management. + TAPE office?

The city's administration of Suceava has preoccupations to improve the degree of sharing of the cross-cutting vision on low carbon emissions. The *Moloc* Project itself has already contributed to the sharing of this vision, both between the local authorities' own departments (public transport service, urban planning, energy department, sanitation service, public lighting service), as well as to other stakeholders participating in working groups (regional development agency, environmental protection agency, utilities suppliers - gases, heat, other cities in the region, etc.). The actions carried out in the working groups contributed to strengthening communication skills of the participants on reducing carbon emissions.

In Hamburg, through its different partaking projects, the city has consistently learned from other partners on how to deal with systemic problems. Thereby, one of the main focus is **to increase communication skills** between the partners, local stakeholders and authorities by giving them the needed tools

Overcome lack of stakeholder's participation (Obstacle 6)

OBSTACLE: Local stakeholders do not participate to the low-carbon strategy of the territory and in consequence do not adapt their habits/behaviours accordingly

Addressed by the all the cities

Definition of the obstacle - context

In Torino, there is a **lack of an organized shared platform** to make the stakeholders participate in the low-carbon strategies. Moreover, the participative approaches are normally **time-consuming** involving effective stakeholders. The difficulty of the inclusion of **conflicting point of views** and then aggregation of stakeholders' preferences in a participative decision-making context is another issue to be tackled.

In Suceava, there is a **lack of interest from local actors**, no culture" of reducing carbon emissions. For most of citizens issues related to CO_2 reduction are purely formal. There is no local authority policy or strategy that aims to attract and motivate stakeholders to reduce carbon emissions.

In Lille, despite very good cooperation on certain projects or initiatives, we do not see any real territorial dynamics that could encourage local actors to become proactive and committed actors. Civil society involvement is still too much done through **consultative**, **top-down processes**.

In Hamburg, a wide field of different types of stakeholders has been assembled. The District of Altona could have brought as one stakeholder (the district within Hamburg where they are going to implement the action plan from MOLOC).

In Katowice, stakeholders do not engage in low-carbon policies. Despite public disclosure of the LCEP in 2014 and the update in 2017, no comments or proposals for changes were received from non-governmental organizations and organizations of public benefit. NGOs concern about low carbon policy is weak.

Nevertheless, accordance with the Statute of the City, **consultations with residents can be performed**. During the update of the "Low-carbon economy plan for the city of Katowice" and "Assumptions for the plan of supply of heat, electricity and gas fuel for the city of Katowice", **residents and stakeholders can participate in the planning and energy management process**. Information about investment tasks planned for implementation in the city are provided for them - documents are publicly available and consulted socially. **Cooperation with non-governmental organizations** includes cooperation: a) financial in the form of commissioning non-governmental organizations to carry out public tasks selected as a result of the competition, and b) non-financial - information, organizational and other. Such cooperation is regulated.

In Torino, the definition of a list of local stakeholders involved in the low-carbon strategy needs long time, spent in the creation of involvement and relationship. Some stakeholders are consolidated and collaborate usually with the environment department. Several projects developed by the city created a network of local stakeholder composed by private companies, public administration departments, cultural institutions, university and local association of citizens.

In Suceava, dialogue efforts via media channels and different European projects are developed. Creating working groups at the level of each project involving stakeholders from the above mentioned categories of interest.

In Lille, many projects and initiatives have successfully brought local actors together but they lack visibility on the low-carbon side, which hinders a real dynamic.

In Hamburg, direct one on one dialogues with the different stakeholders have been implemented.

The city of Katowice participates in **ongoing events to connect with stakeholders**, for example: The New Economy Forum, Conferences for local governments, Cyclical meetings of the Committee on Local Energy Policy in the Silesian Union of Municipalities and Districts....

The staff of the City Hall participate in meetings to which they are invited: bodies of Auxiliary Councils or debates by non-governmental organizations.

In order to broaden the cooperation with stakeholders, the city has joined several international projects.

Ensure involvement of citizens and users in the low-carbon strategy (Obstacle 7)

OBSTACLE: Lack of expertise and practice when it comes to working with the civil society in a low carbon strategy instead of just providing top-down information

Addressed by the all the cities

Definition of the obstacle - context

Hamburg has a long tradition of participatory processes and initiatives, including citizens in decision making. Today, the city organises workshops, a learn process where the civil societies can interact directly with the stakeholders and get the information.

In Katowice, communication with citizens and organizations is one of the strategic objectives of the LCEP.

The city has a mining tradition and their inhabitants are accustomed to coal as a (cheap and commonly available) source of energy. The barriers are mainly related to financial aspects and also to insufficient knowledge about the health and environmental effects of coal combustion in inefficient heating installation, a lack of knowledge about new RES-based technologies, as well as insufficient knowledge about the possibilities of co-financing activities related to the increase of energy efficiency, replacement of heat sources and the use of RES, as well as technical conditions for the modernization of existing heating installations.

Lille is a pioneer city in citizen participation: charter of participatory democracy, several successful initiatives notably a participatory budget but all these initiatives would require more financial resources.

In Suceava, there is a **fairly limited experience** in working with civil society, not a large mass of organizations and citizens involved in such actions. The stake lies in acquiring expertise and experience in involving citizens and users

In Torino, citizens are informed about low carbon policies by some formal channel such as:

- Web page of environment department
- Front office for distribution of informative material and free consulting, for example the energy office (Energy Counter)
- Direct communication between users and administration, for example biciclette@comune.torino.it is an operative email about slow mobility
- In some cases, public administration meets single citizens for petition/complaint (not only about environmental issues). To meet single citizens is the occasion for solving specific problems, but also occasion to inform and give advice on environmental aspect. Many initiatives implemented through the tape Plan...

In Hamburg, since the beginning the city has involved civil societies within the scope of decision making. In fact, the participatory process was expanded by the **Coordination centre for climate issues** in 2014 regarding the climate masterplan of Hamburg, thereby increasing the range of stakeholders and topics and including them to the whole process.

In Katowice, consultations with residents are organized to increase social participation and involve the society in the decision-making process (urban internet platform – open meetings, working teams). A system of subsidies has been implemented to help residents to change their heating system and to finance energy retrofitting. Many tools exist to improve the dialogue/participation:

- Residents Service Office in Katowice, where residents have the opportunity to make calls to employees
 of the Office, employees answer questions, provide explanations or refer to those responsible for the
 content of the matter.
- The civic budget (5th edition in 2018) with the largest funds per capita among provincial cities in Poland, with one of the highest voter turnout in the country
- Drafts of resolutions for which residents can express their opinions
- The service Naprawmyto.pl (which can be translated into 'let's fix it'), for mapping defects in public space identified and reported by citizens.
- The local initiative
- The portal "Energy and Environment in Katowice" for the educational activities and should become a source of information on "Municipal energy".
- The application 'wCOP drzewo' ('dig a tree') was launched an application that allows citizens to indicate places for planting trees.
- The Municipal Energy Center was opened (in Sept. 2018) to serve residents through energy consulting

In Lille, consultation is still too infrequently *bottom up*. The selection of projects via the participatory budget model makes it possible to initiate a change on this subject. This method should be extended to other subjects such as the redevelopment of public spaces or temporary urban management.

In Suceava, dialogues via the following interfacing capacities have been implemented: days of open gates; deliberative opinion polls; organization of consultative committees; juries of citizens; referendum.

The City of Turin and the Metropolitan City are now promoting **new tools to communicate to citizens**, integrating ICT and interactive consultation models. Furthermore, it is necessary to reinforce information activities and public debates starting from the questions specifically requested by participants.

There are some **experimental projects** related to involvement of citizens but usually they do not have bequests on ordinary activities. Ecological Sundays is one the initiatives, which is organized by the City of Turin.

Deal with conflict of interest and lobbies (Obstacle 9)

OBSTACLE: Conflict of interest and lobbies (internal and external) prevent the development of a strong low carbon policy

Addressed by the cities of Suceava and Hamburg

Definition of the obstacle - context

In Suceava, the stake lies in **convincing the carriers and industry** to support carbon reduction policies by presenting the benefits of implementing these policies.

The Federal State of Hamburg has a long history of green involvement and even more since the Green party is part of the coalition agreement with the socialists. Also, strong inveterate environment associations as NABU (Nature and Biodiversity Conservation Union) and BUND (Union for Environment and Nature conservation Germany) are important stakeholders, the primary influencers in the city, protecting above all the Climate and the people, focusing on specific actions to prevent any harm to the environment.

Horizons & solutions

In Suceava, in all the projects that have been carried out or ongoing projects, the administration is working to reduce the impact of the actions of different interest groups that have disjointed interests in reducing carbon emissions.

In Hamburg, the local authority has focused on how at **best communicate** with stakeholders to respond to their demands

Organize debates, implement plans.

To promote a low carbon strategy, the city has issued an **air pollution control plan for 2018**, strongly required by the BUND, and safeguarded by the BUE (environmental authority). To that regard, the plan includes also traffic regulation measures to reduce emissions, a project supported by the environment associations and other local stakeholders

Address concretely the question of unsustainable behaviour and lifestyles (Obstacle 10)

OBSTACLE: the difficulty of addressing the question of unsustainable behavior and lifestyles (NIMBY, etc...) and give incentives to change

Addressed by the cities of Hamburg, Lille, Torino

Definition of the obstacle - context

Hamburg tries to involve every citizen to change their habits, in particular regarding **recycling projects**, to teach them about recycling issues, how to increase recycling behaviours, and implement educational programmes to incorporate such behaviours in the citizen's everyday life. The city has **a lot of freedom**, having the possibility to enact legislations to surpass these systemic problems through enforcement (procedures, construction permits...) and especially punish the wrongful behaviours.

Examples of actions: direct communication with the companies, inform the people by putting in place some awareness in schools and education.

In Torino, residential sector is responsible for 40% of CO₂ total emissions. Bonuses, incentives and deductions for the residential sector are provided the Budget Law 2018.

Lille seeks to understand what would accelerate change, encourage new eco-responsible behaviors, compatible with a low-carbon approach, on a massive scale.

Horizons & solutions

In Hamburg has put some efforts together to promote its green strategy, by leading important projects in regard of emissions reduction. In fact, the districts have push forward their recycling strategies and responsibilities, increasing waste sorting to ease the process and also through refundable bottle installations, which improve plastic recycling.

Furthermore, the companies are also cooperating to reduce their emissions, setting real targets for the future and including it to their strategy.

In Turino, beyond financial incentives, the environment department developed «Adotta comportamenti sostenibili» meaning choose sustainable behaviors, which is a web page with different guides on how everyone can do something in the daily life. This project provides brief guidelines for specific occasion in daily life taking into account four main actions "Lower - Turn Off - Recycle - Walk: how to adopt sustainable behaviour at work, at home or in the city.

Examples of actions:

- Ecological Sundays is an initiative dedicated to health, wellbeing and relation between health and environment.

- Punti Acqua SMAT (box for distribution of drinkable water) where citizens can use Km0 water reducing the impact of plastic bottles. The box offers information about quality of water and initiative of water saving;
- The metropolitan network of Green Public Procurement started in 2003 and now has more than 40 partners. Citizens are also involved in the activity of planting new trees as an occasion to generate new sink areas for pollution

In Lille, **l'Agenda des solutions** sets out the overall framework for action to change the behavior of citizens and municipal officials to develop low-carbon actions. Several initiatives such as Positive energy family challenge, Carbon conversations and regular information and event on energy, mobility, waste, urban agriculture.

Follow a long term approach (Obstacle 11)

OBSTACLE: Decisions are taken while taking into account only short term outputs/ consequences. How to encourage local authorities to take long-term approach into consideration when taking decisions having an impact concerning the low-carbon objectives?

Addressed by the cities of Katowice, Suceava

Definition of the obstacle - context

In Suceava, the planning documents realized at local level aimed at developing the short- and medium-term development of policies targeted to reducing carbon emissions, generally action plans being guided by the existing sources of financing for the pre-integration and post-integration phases of Romania in the European Union.

This is an obstacle because it wasn't implemented and monitored an overall long-term vision, regarding the cutting down of carbon dioxide emission at local level.

In Katowice, the strategy is specified in long-term documents such as the LCEP and the Plan for the supply of heat, electricity and gas fuels. Such documents are developed taking into account the development plans of energy companies and energy systems development strategies.

Long-term goals are primarily related to:

- elimination of coal-based heat sources or replacement of old inefficient coal-burning devices with more ecological but still coal-based boilers;
- installation of renewable energy sources;
- reduction of energy consumption by thermal insulation of buildings,
- reduction in the consumption of energy and water carriers through the use of monitoring and operating systems in public buildings.

The instruments used are mainly financial incentives and information as well as educational activities are also carried out.

Long-term activities are associated with risks, such as obtaining funds for investments or problems with finding contractors. **The potential risk to health is a strong motive to action**, therefore low-carbon policy is prioritized together with **anti-smog policy**. But after achieving a good air quality (in term of particulate matters), there can be problem with continuation of low-carbon policy.

There is a lack of involvement of individual energy users - individuals and companies involved in low-carbon policy. It is influenced by high costs and lack of conviction of residents to renewable energy sources. Despite the possibility of obtaining subsidies, majority of people are not interested.

In Suceava, within the Municipality administration, a working group has been set up to produce the reference data and the list of possible actions aimed at reducing carbon emissions. This working group includes the heads of the Environment Bureau as well as the Communication Office / European Projects Office, having the role of coordination between the different sectors and stakeholders involved in the development of individual projects. This working group should consider in the future that the next generation of strategies (Sustainable Urban Mobility Plan, Integrated Urban Development Strategy, Sustainable Energy Action Plan etc.) also include the long-term analysis (by 2050). Cooperation between different departments works very well.

In Katowice, barriers in the city administration are associated with the gaining budgetary and non-budgetary funds for the implementation of the LCEP tasks. The city **applies for funds** for realization the LCEP. Possibilities of using private funds in the form of **public-private partnership** are considered and analyzed.

An important barrier is related to the lack of capabilities of the city authorities of influencing external energy companies operating on market to participate in creating and implementing a long-term low-carbon strategy. The activities planned at the LCEP involve the cooperation of gas and heat supply companies. In practice, the change in the type of fuel used by the user from coal to gas or network heating depends on the supplier's acceptation of the new connection to the grid and the cost-effectiveness of the new point. The implementation of planned activities related to the transformation of the coal-based economy towards other fuels, including natural gas, is ineffective in cases when the gas company considers that the new connection is not economically viable. Representatives of the city participate in conversations and meetings of residents with energy enterprises to facilitate reaching agreement.

Cope with political changes (Obstacle 12)

OBSTACLE: Political discontinuity (following changes of majority in local authorities) as well as short term political time horizons and objectives are often not in line with the long-term, continuous effort that an energy transition towards a low-carbon future demands

Addressed by the cities of Lille, Torino

Definition of the obstacle - context

In Lille, housing and social mix policy followed for several years has sometimes led to the secondary importance of sustainable development and the construction of a low-carbon city. It is therefore necessary to ensure the municipality's commitment on these issues in the medium and long term.

In Torino, Through the years the administration of the city has shown a strong effort for the deployment of an environmental strategy and the promotion of a more sustainable development. In 2016, after a long period of political stability, there has been a drastic change in leadership at the level of local administration. Even if the attention to environmental problems is not totally new, in order to face current challenges and issues (e.g., climate change, air pollution) the new government has decided to invest more attention and resources in the deployment of a more comprehensive low carbon strategy.

Horizons & solutions

In Lille, this policy now seems to be evolving to take more account of sustainable development (see obstacle 13).

In Torino, the recent political changes have not influenced significantly on the implementation of low-carbon policies. However, the **focus of the political strategies has been slightly shifted** in order to address some main issues such as mobility, energy.

Creation of an inter-departmental roundtable, focused on climate change. Different departments and services have been involved to cooperate and to investigate current policies and good practices, to update and prepare a more effective plan, with mitigation and adaptation measures, and to coordinate the actions of each actor involved. This working group has recently been instituted.

Ensure commitment and motivation to the low-carbon strategy (Obstacle 13)

OBSTACLE: The low-carbon strategy exists officially but is not a priority. Neither the local authority, nor the local stakeholders are committed to it.

Quite often, local authorities decide on some climate change strategies without real motivation. In some cases, the law obliges local authorities to elaborate plans. In some cases, plans exist to be part of a trend. The same is true for other organisations or business. Greenwashing is an issue to be dealt with. How to make sure that a low-carbon strategy meets commitment of local actors and that stakeholders keep motivated to achieve such a strategy?

Addressed by the cities of Hamburg, Katowice, Lille, Suceava

Definition of the obstacle - context

In Hamburg, if the commitment and motivation of the stakeholders are not high enough, then the local administration is to blame. The Senate and of course the city are the ones who implement such strategies and their duty is to make sure everyone is going the right path. Therefore, they have to work together, combine strength and reach these common targets. To that regard, the administration and each district have to increase the communication possibility and ability between the stakeholders, creating otherwise a too broad picture.

In Suceava, there are specific preoccupations of the local authority to reduce carbon emissions, but these are found in different plans and strategies, not in a single strategy dedicated solely to the goal of reducing carbon emissions. A local integrated strategy that includes all measures aimed at reducing carbon emissions in various fields (transport, residential buildings, public buildings, industry, other areas) has not yet been achieved.

There are several measures / projects with objectives targeted to carbon emission reducing that have been proposed in action strategies / action plans and are at an advanced stage of maturity. This demonstrates a **strong commitment and a strong motivation** of local authority for carbon reduction strategies.

In the current situation, the only entity involved in developing carbon reduction strategies and implementing them is the local authority. Stakeholders are not interested in this global issue. The main causes include lack of communication, lack of information about the measures that can be applied and the negative consequences of not applying them. There are no issues of conflict or lack of trust.

In Lille, housing and social mix policies followed for several years has sometimes led to the secondary importance of sustainable development and the construction of a low-carbon city. It is therefore necessary to ensure the municipality's commitment on these issues in the medium and long term.

The city of Katowice was one of the first cities in Poland which developed a LCEP, a voluntary plan. But the local authority has limited organizational and financial capacity to implement the low-carbon policy. The first important barrier is related to a lack of human resources. In case of air protection, the emission of substances harmful to health, such as sulphur oxides, particulate matter, heavy metals, is controlled and limited (for

example in The Clean Air for Europe programme, CAFE). The city authorities are obliged to refer to the limit values of pollutant concentrations, but for carbon dioxide emissions such limit values do not exist. Greenhouse gas emissions are not part of the environmental impact assessment of projects, nor are the basis for decisions and permits. Neither entrepreneurs nor local governments treat low-emission strategy as a priority. It is crucial for them to meet numerous legal requirements, to incur costs required by law, e.g. health and safety and environmental charges. In practice, the city administration has limited personal resources, and is responsible for the implementation of many tasks from different areas which reduces the possibilities for effective monitoring of results.

Horizons & solutions

In Hamburg, the local authorities are also involved to make some progress in the future, working together with different departments as the one for environment and energy and also for economy, education, etc.

To lead a green policy, the city has put a lot of confidence in its industries, based on voluntary commitment. Voluntary commitments enable companies to decide for themselves which measures will achieve climate change mitigation targets most successfully. Voluntary commitment enables companies to make an active contribution to climate change mitigation. They are thus acknowledging their responsibility for protecting the natural environment and at the same time the future of the business and employment centre of Hamburg. To let industries set their own goals, is a way for the city to show some flexibility on how each of the stakeholders is implementing a green policy. The highest reductions in CO2 emissions were achieved through voluntary commitment by industry (with 88,000 tonnes) and by the expansion of large-scale bioenergy plants (with 81,000 tonnes).

In Suceava, the lack of local involvement does not have a decisive influence on the city administration that is in the process of developing a project that will implement an integrated action plan for all measures aimed at reducing carbon emissions. This plan will also include an energy audit to determine the areas of intervention and implementation needs for the actions to be proposed in the plan. There are several departments involved that provide the data needed to analyse the current situation and will be consulted when drawing up the plan. Cooperation between the departments involved works well without communication bottlenecks.

The local authority has undertaken in all projects targeted to carbon reduction campaigns for the population and other stakeholders. Information sessions were organized, the information was disseminated on the authority's website and in the local press.

For the integration strategy, similar actions will be organized. The strategy will be subject to public consultation and debate. As a cross-cutting effect, local culture will be developed to involve citizens and other stakeholders in carbon reduction issues.

In Lille, the urban plan document of the Metropolitan area "PLU2" is included new or stricter environmental recommendations. Commitments have been made, notably with the Covenant of Mayors, to achieve long-term objectives. A replication of the public building renovation scheme in other sectors would ensure the continuity of a low-carbon strategy.

In Katowice, involvement in low-carbon policy requires multidirectional activities: economic, legal, and social. In order to increase motivation and involvement in the low-carbon strategy, the city implements activities in five areas related to air protection: 1. Support for the poorest inhabitants; 2. Introduction of new legal regulations; 3. Increased investments in municipal facilities; 4. Subsidies for residents; 5. Pro-ecological education. Activities related to sustainable transport are following: replacing of 100 buses with new vehicles – ecological or electric for over PLN 120 million, construction of 4 transport hubs for over PLN 200 million, new tram line, city bike network.

Use of proper indicators (Obstacle 14)

OBSTACLE: Relevant indicators for sustainability or low-carbon approach are difficult to find. Often indicators are not comparable, or data is missing. Most of the existing methodologies are discussed. However, it is important to measure and evaluate progress and local authorities are looking for methods to support this work

Addressed by the cities of Hamburg, Katowice, Suceava, Torino

Definition of the obstacle - context

Hamburg has been creating its own software to collect data and information, to increase data and indicator sharing. The Senate has commissioned the Coordination Centre for Climate Issues for the recording and evaluation of monitoring the measures, financial controlling and CO₂ monitoring.

The indicators are **shared between the different departments**. The administration wanted to gather all the data to monitor progress and enhance the controlling measures.

Katowice has identified these **main problems**: data availability, the lack of procedures of reporting and gathering necessary data as well as the lack of devices enabling measuring the real effects instead of calculated, estimated effects.

Various indicators are used for different tasks and areas of activities but there is **no common methodology for converting**, for example, kWh of electricity into CO₂ emissions. The lack of such methodology leads to discrepancies and incomparable results.

There are no procedures imposing the obligation to report emissions of greenhouse gases to the city. Such procedure was implemented by the Silesian Voivodeship in case of air monitoring in the Air Protection Program, but it doesn't cover carbon dioxide.

There is an obligation to report data by business entities, which is a valuable source of data and methodology

In Suceava, there are difficulties in identifying the most suitable indicators for describing actions aimed at reducing carbon emissions. Given the multiple fields in which carbon emissions are being pursued, it is difficult to find indicators that are relevant in all areas at the same time and local actors are also confronted with the difficulties. Other local actors are also confronted with the same difficulties.

In Torino, the hard process of choosing the relevant indicator from numerous ones and set up an accurate benchmark for each of those indicators can be a major obstacle. In the environment department, currently, the benchmarks are deriving from the national normative and standards. The integration of citizen-led and expertled approaches for sustainable indicators development is another challenge to be considered within the assessment framework.

Hamburg has **to upgrade its transparency policy** by supplying the citizen with readable facts, giving a sense to these numbers. Overcome the problem of non-proper indicators by setting achievable goals and increase communication between the stakeholders to share their results.

In Suceava, the choice of data and the calculation of the indicators are done according to the methods set out in the monitoring plan of each strategy. There is a close cross-cutting collaboration between the different departments that own and manage the data on which the indicators are calculated.

Torino is trying to select the most relevant and significant indicators, and it is defining the relative benchmarks. The first step is to analyze the baseline scenario and identify the relative obstacles. The city is organizing different stakeholders' roundtables involving the experts and public administration to improve the use of sustainability indicators. The city administration is trying to address the above-mentioned obstacles setting up different focus groups involving different stakeholders from different services.

There are many initiative and projects that take into account the issue regarding the use of proper indicators: CESBA MED, the Action Plan for Sustainable Energy of the City of Turin.

Katowice has started to prepare a functional model for monitoring activities defined in the LCEP as well as updating and evaluating the document. One of the objectives is also to establish cooperation with energy companies in order to establish rules for obtaining data on fuel and energy consumption.

A special Task Force was established in the city with employees of the following departments: Environmental Development Office, Department of Buildings and Roads, City Development Department, Faculty of Transport and European Funds Department. The Environmental Development Office is responsible for the monitoring and reporting on the implementation of tasks in the budget year. Most of the indicators are collected and calculated by the Environmental Development Office.

Build a sustainable financial strategy (Obstacle 15)

OBSTACLE: The needed investments for thermal retrofitting of buildings, local renewables, public mobility infrastructures, etc. are considerable and available business models are not appropriate

Addressed by the cities of Hamburg, Katowice, Lille, Torino

Definition of the obstacle - context

Hamburg has to increase its cooperation with the different departments responsible for funding activities.

The city actively collaborates with the IFB, the investment bank for the city of Hamburg but also the fiscal authority, the one for economy and environment.

The Federal State of Hamburg benefits of its own funding programmes, using Federal funds.

In Katowice, decreasing population, variable national policies and the limited financial framework of European programs do not provide a sustainable financial strategy for a low-carbon economy.

The climate and energy budget is related to the low-carbon economy plan. The tasks planned for implementation at the LCEP are included in the current yearly city budget, as well as the long-term financial forecast. **The stability of funding sources is not ensured**. They are financed partly from the city budget, and others from external funds, so obtainment of this funds determines implementation of these tasks.

In Lille, today, there is no clearly identifiable cost accounting for actions to tackle climate change and energy transition. It is difficult for the citizen or local partners to assess the City's investments in the field. Similarly, as there is no major political programme, the financial resources are dispersed over a large number of projects which, although relevant, make it difficult to measure the financial resources implemented.

In Torino, the main obstacle is that **the Return of Investment (ROI)** is **long**. Sometimes, bigger projects become funded rather than the small ones since many decentralized small projects struggle to find finance models as they are too small to be taken separately. For this reason, there is a need to use the centralized retrofitting actions for the possible buildings in the same district. For the low-carbon strategies **there is not a specific budget** even if it is acknowledged that a specific budget is needed in order to realize these strategies, and also to increase the personnel skills. The lack of budget leads to have fewer human resources who deals with low-carbon strategies.

Horizons & solutions

In Hamburg, the financing of sustainability projects and **strategy has been transferred mainly to the IFB**, the investment bank in Hamburg which is also managing the funds for a low carbon strategy.

The last years, companies, locals and authorities have focused especially on **replacement investment and to guarantee finance approaches on targeted projects**. To that regard, stakeholders concentrated on how to improve housing systems by making products more energy efficient through refurbishment works, putting in place green roof strategies combining the urban development policy aim of the growing densely-populated city with environmentally friendly building and work along with companies as *Aurubis AG* to fund programmes for renewable heating systems.

In Katowice, the implementation of the low-carbon strategy is monitored by the Environmental Development Office and the Working Team. **Financial indicators** of tasks are included in the LCEP.

There is another possible mechanism to finance public tasks from private capital within a **public-private partnership**. However, the use of this instrument is not popular in Poland yet.

Lille is beginning to implement **new innovative financing models such as** *intracting* - an internal fund for the energy renovation of municipal buildings. This could make it possible to replicate it for other projects.

Torino is preparing the energetical document attachment, named "Energetic Annex". This document will provide the guidelines to the citizen in order to support them to requalify their own apartments in terms of energy retrofitting.

Evaluate the economic and social aspects (Obstacle 16)

OBSTACLE: The evaluation of the actions and projects often only base on pure financial aspects and do not take into consideration neither externalities (negative or positive) applying on the local territory nor a long term approach.

Addressed by the city of Torino

Definition of the obstacle - context

In Torino, one of the main obstacles is the lack of effective communication with the citizens and the stakeholders. It would be important to properly collect their feelings, willingness and the expected impact towards a post-carbon city. Moreover, from the point of view of the stakeholders and public administration there is a difficulty to adopt involving methods as qualitative/quantitative methodologies very well known in the research field that could help to overcome this obstacle. All of this is traduced in a scarcity of available quantitative and qualitative data.

Another obstacle for the Public Administration is constituted by a lack of proper indicators able to measure social and economic externalities. In this sense, to produce and find new indicators, it is necessary to activate new researches and to do that a huge amount of money is required.

Horizons & solutions

In Torino there is a local reflection about innovative ways to approach economy and sustainability shared among public administration, researchers and third sector. Action Plan Torino 2030 (a sustainable and resilient vision of the future), supported by the metropolitan urban centre, aims at realizing a city focused on the citizen's well-being. To do so, the plan provides coordination and communication tables to reach economic and environmental sustainability introducing circular economy.

In the **urban planning field**, a powerful instrument is constituted by the **SEA** (Sustainable Environmental Assessment – in Italian VAS, Valutazione Ambientale Strategica), which objective is **to assess the environmental effects of plans improving the public participation**.

Sometimes the **new well-being indicators** (plus the traditional demographic indicators) provided by National Institute of Statistics are used to evaluate the change in the attitudes of the citizens. However, they proved to be not sufficient to consider the overall sustainable behavior.

Another interesting indicator is the so-called "**Time budget**" also produced by ISTAT: the objective of the analysis is to understand the habits of the citizens in their personal life, every day for a year. Unfortunately, those kinds of analyses are **very expensive** for the public administration and therefore not so much used. Currently, due to the recent change in the Turin administration, **a shared strategy in terms of monetary and non-monetary indicators has not been defined.**

Select actions that have highest "low carbon" potential (Obstacle 18)

OBSTACLE: Most often, action aims to the so-called low hanging fruits, while the major needed measures are ignored because they are hard to carry politically, are difficult to implement, or necessitate deep societal and economic changes.

Addressed by the cities of Hamburg, Katowice, Lille, Suceava

Definition of the obstacle - context

Hamburg has prioritised individual action areas to enable measures to be taken.

The different stakeholders implementing the climate plan are highly interested in statistics to monitor the ongoing progress the city is facing.

Working along with **research institutes**, the city has drawn up a comprehensive strategy and defined targets which have been implemented with the assistance of national funding programmes and European funded ones as the ERDF Program 2014-2020. Today progress has been seen in increasing green mobility (e.g. car-sharing, bike stations and battery stations) and incorporating the action plan to the local economy.

In Katowice, the actions planned for implementation at the LCEP were selected based on the **inventory results.** The activities with the largest possible ecological effect were selected - so that the most beneficial ratio of ecological efficiency to the costs incurred is achieved. On the other hand, tasks planned under the LCEP are limited as a result of the limited competences of the local authority.

In addition to the LCEP, an important document is the **Air Protection Program** for the area of the Śląskie Voivodeship aimed at achieving the levels of permissible substances in the air. The program does not cover greenhouse gas emissions. Nevertheless, activities undertaken under this program are beneficial to a low-carbon economy.

A Lille several exemplary low-carbon projects (rehabilitation of the Fives Cail brownfield, Operation Concorde, heritage renovation scheme, development of the green belt) have been developed, but **communication** on the "low-carbon" aspect of these projects **needs to be improved**.

In Suceava measures that have a major impact on the reduction of carbon emissions require considerable efforts in financially, socially and politically terms. **Limited economic resources** mainly generate difficulties. Investments in environmentally friendly public transport and infrastructure are already identified as having great potential for reducing carbon emissions.

The prioritization of projects is made in the context of multi-sector analyzes, however not globally, but in the areas for which there are strategies

Hamburg is already engaged in plenty of projects to promote low-carbon strategies for the near future. We have been working with local authorities within the Hanseatic city to develop a "Climate smart city". Projects as the INTERREG IVC project CLUE (Climate Neutral Urban Districts in Europe) which finished at the end of 2014, developed a good practice guide with recommendations on the integration of climate factors in urban development.

But the city is facing also **some issues, when measures are ignored or contested by some stakeholders**, often environment associations, who are torn between moving forward and act in a sense for the environment but at the same time against. eg in 2008, when the airport was finally linked to the city by metro. On one side, it increased the use of public transport to get to the airport but it also boosted the air traffic in Hamburg, arising the CO₂ emissions.

In Katowice, actions that have highest "low carbon" potential need activation of citizens. The competences of the City Office concern to the highest degree the public sector. The activities planned in the LCEP included energy management and thermo-modernization of public buildings. However, the share of public buildings in the total emission of the city is very low, however such action should be perceived as a good practice to follow by owners of private buildings. The activities related to the replacement of heating sources and thermo-modernization have the highest potential of carbon reduction in the housing sector. To overcome the barrier related to the impact on the housing sector, the city offers subsidies, but also conducts numerous promotional and educational campaigns aimed at residents to increase their involvement, raise awareness of possible activities, increase knowledge about energy efficiency etc. Various events, workshops, Energy Days, the Eco-responsible picnic. In order to overcome administrative barriers related to insufficient knowledge of residents about energy technologies and financing possibilities, the Municipal Energy Center (MCE) was opened in September 2018. The facility will be a place where residents can obtain necessary information, regarding, for example, available subsidies, heat sources, pro-ecological attitudes.

A Lille, the selection criteria for low-carbon lighthouse projects have yet to be determined. It is important to systematically display energy and environmental ambitions on urban projects.

In Suceava, local stakeholders are involved into prioritising actions by **consultation and public debates**. Successful prioritization of projects that have already been implemented:

- Electromobility electric vehicles for a "green" municipality;
- Modern and efficient management of public lighting in the Suceava Municipality;
- Capitalization of the historical monument Suceava Royal Court for the local, regional and national tourist circuit using alternative energy sources

Test replicable pilot projects (Obstacle 19)

OBSTACLE: Implement a low carbon strategy at local level request to follow a step by step approach. Conduct a pilot low carbon project could help the local authority and stakeholders to experiment together and demonstrate the relevance of action.

Addressed by the cities of Katowice, Lille, Suceava

Definition of the obstacle - context

Katowice identified 3 main barriers to conduct successfully a pilot low carbon project:

- lack of strategy for the dissemination and implementation of the results of pilot projects,
- **lack of effective cooperation** between public and private sectors (local government business-science) and information flow on the results of pilot projects,
- lack of appropriate financial and legal incentives for implementation, including public-private partnership.

There is no special strategy for implementing pilot projects, the use of their results in subsequent projects. Pilot activities were included in LCEP with the aim not only to implement them, but also that their implementation will allow to test the basic elements and develop a concept for implementing similar projects on a larger scale.

There is no special pilot project team. Pilot projects included in LCEP, depending on the area they concern, are implemented by various departments of the city.

In Lille, many innovative low-carbon projects are being developed: the multifunctional district of Five Cail, the Maison de l'Habitat durable, a functional prototype of the semi-detached house and Live Tree, which is a living laboratory for the energy and societal transition in the Vauban district.

Exchanges between project teams avoid to repeat certain mistakes. The difficulty lies in the post-construction phase, in monitoring and evaluating these innovative projects.

In Suceava the implementation of these 2 pilot projects - "Modern and efficient public lighting management in Suceava Municipality" and "Suceava Electromobility / electrical vehicles for a green Municipality (e-Vehicles)" - has been achieved successfully.

The obtained results confirm significant decreases in costs, energy consumption and greenhouse gas emissions which confirms the viability and the success of the project, and takes a step towards becoming a "smart city".

Katowice

There is no procedure/instruction to assess the replication potential of pilot projects or follow-up activities. The replication potential of pilot projects related to energy management in buildings is assessed on the basis of the results obtained, described in contactor reports, taking into account:

- effectiveness of the actions undertaken
- usefulness
- efficiency in terms of energy (energy savings), economic (costs and savings) and environmental (reduction of pollution and greenhouse gas emissions).

In addition, opinions of users and building administrators regarding the thermal comfort of rooms and the ease of use of the monitoring system are taken into account.

The city:

- disseminates information and knowledge related to energy management in buildings addressed to local stakeholders (these activities could be included in the operation of the newly opened Municipal Energy Center),
- takes part in **current events** enabling contact with representatives of science, business, administration and social organizations,
- participates in international projects related to the thematic area of pilot activities, such as MOLOC,
 AWAIR and AdaptCity.

Lille, more quantified indicators are needed to assess these innovative projects and promote their replicability.

In Suceava, the pilot projects are managed by the European Integration and Development Strategies Department. There is no transversal team to handle only these pilot projects. The management is usually provided by people from this department.

There are laws / strategies / programs in the higher governance levels that **support and encourage** local authorities to implement pilot projects with carbon reduction targets.

Make action attractive (Obstacle 20)

OBSTACLE: Unsustainable lifestyles and decisions are the majority. How to communicate so as to provoke change of habits/attitudes?

Addressed by the cities of Hamburg, Katowice, Torino

Definition of the obstacle - context

In Hamburg helped by innovation and new services, notably within its duty of care, the administration could amplify either the use of public transport, or investment in electric-cars, or furthermore intensify its green message through education and within the companies and industries, to help make some larger efforts.

In Katowice there are three most important reasons that significantly hinder the achievement of the LCEP:

- A **low level of ecological awareness** of the local community, inappropriate attitudes and behaviours, low knowledge about emission sources, threats and health effects
- **Financial issues**: high costs of energy carriers, high-efficiency devices and RES, energy poverty of a large group of residents
- **Technical issues**: technical condition of houses, public buildings and heating systems, lack of a widely-developed energy management system, bad condition of infrastructure and supply networks with heat and gas, which makes it difficult to shut down local coal-fired boilers.

These three obstacles refer to all stakeholders.

In Torino, one of the main obstacles for the public administration is the lack of proper social and economic indicators able to catch effects of planning policies. Another obstacle is the lack of citizens' participation in the communication tables.

The **most effective activities** are supported by local associations, neighborhoods and citizens' unions as bottomup activities.

There is not a specific public office dedicated for the communication purposes regards to low carbon strategies and initiatives. But there is a participatory association related to the public administration, named "Urban Center Metropolitano" that has the goal to communicate projects and initiatives of urban regeneration and to promote involvement of citizens. The association reports that there is a lack of interest by public administration in initiatives related to the communication of low carbon projects.

Historically, the public administration used to involve citizens in **urban regeneration projects**. Periodically the public administration organizes communication tables and/or online participation sessions but the actual **participation to those initiatives is quite low**.

In Hamburg, within ten years the city has gained in attractiveness in Germany but also in Europe. the city has shown real results toward ambitious targets, having improved our citizen's life for the short and long term. Regarding the implementation of green strategies on a local scale, the city has the ability to have direct contact with the multiple stakeholders, and so will create a trustful partnership and implement one policy for the whole, by reaching to everyone.

in Katowice, actions of awareness raising and financing incentives:

- Expansion of the information and education portal
- Organization of education and information campaigns on effective use of energy, reduction of pollutant emissions, and renewable energy sources
- Conducting social campaigns related to effective and environmentally-friendly transport
- Campaign for children
- Continuation of activities related to co-financing the replacement of heat sources in single and multifamily residential buildings
- Fighting energy poverty: financial help for the least affluent inhabitants
- Continuation of thermomodernization of public buildings and implementation of energy management system
- Investments in the sector of sustainable transport
- Establishment of the Municipal Energy Center in September 2018

In Torino, the inter-departmental round tables are the main instrument used to share and define policies among departments.

A new effective strategy needs to be defined considering also the dimension of the public administration. The city managed BSInno-Boosting Social Innovation project which purpose is the creation of a network able to allow public administrations to promote social innovation, through and outside the public sector, to create an urban social innovation ecosystem that can effectively help public authorities to become European hubs and propose models of public and private social innovation.