

# COOK BOOK



Stakeholder identification  
and building society of knowledge  
and transformative change

# Stakeholder identification and building society of knowledge and transformative change

## Content

Stakeholder engagement in NBS projects .....	1
Stakeholder identification and selecting approach .....	4
Collaboration with experts and governmental sectors .....	7
Value-focused method for collaborative planning – example from Vantaa, Finland .....	8
Collaboration between experts – Inherited territorial governance - a challenge to be mastered in Lyon .....	9
Co-operation with city officials toward increased water storage and infiltration in urban area – Example from Łódź, Poland .....	13
Another approaches and methods for collaboration with experts .....	15
Collaboration with citizens and inclusive public participation .....	18
Inclusiveness of the participation process - example from Łódź, Poland .....	20
Involving local residents in Lyon, France .....	20
Collaborative approach for selecting NBS and its location – example from Łódź .....	21
Observing actual users on site, example from Łódź, Poland .....	24
Identifying and analyzing public acceptance of NBS, ATENAS cases .....	26
Another approaches and methods for identifying and analyzing public opinions .....	30
Recommendations for inclusive and successful public participation .....	33
Invite and engage with the entire community .....	33
Identify power keepers and local knowledge holders .....	34
Listen local communities and respect sense of place .....	34
Recommendations for successful stakeholder engagement – examples from local city authorities, planners and activists from Finland, France and Poland .....	37
Communication for awareness raising .....	37
Educational aspects for awareness raising .....	38
Citizen engagement in planning, maintenance and monitoring .....	39
Inclusive engagement to overcome social barriers .....	40
References .....	42
Attachment 1 .....	43

## Stakeholder engagement in NBS projects

Cities are increasingly facing water-related challenges and water cycle disruptions. Urban floods and droughts, heat island effects and water quality deterioration decrease the quality of urban living environments. Climate change and continuing urbanization are increasing the problems. Water-related challenges underline the significance of sustainable urban planning and water management. New kinds of technical, operational, and behavioral approaches have been sought in nature-based solutions (NBS) that are inspired and supported by nature and provide multiple benefits through locally adapted, resource-efficient and systemic interventions (*European Commission 2020*).

| 2

Urban planning is developing towards **multi-stakeholder co-design practices**. It is important to involve relevant stakeholders in the planning from the beginning of the planning process. Collaboration and co-designing require new ways of thinking and adaptation of new cross-sectoral collaboration instead of traditional silo boundaries. Possible implementors, such as building companies and maintainers should also be involved as early as possible. Design should take into account the needs, knowledge, and experience of different stakeholders (including scientists, practitioners and residents). The exchange of knowledge between planners, managers and citizens reduces the risk that the solution will not be well received.

In addition to multi-stakeholder engagement and breaking silos between different sectors, it is important to pay attention for **social justice aspects of NBS**. In 2022, the European Parliament adopted resolution that recognizes the uneven burden of disasters and climate change. The Parliament highly emphasized to the uneven exposure to climate risks, with disadvantaged groups more vulnerable to the impacts of extreme events, and specifically gender inequality. The International Panel for Climate Change (IPCC) identifies three core justice dimensions related to climate adaptation and mitigation actions: 1) distributive (*benefits and burdens equally distributed*), 2) procedural (*inclusive participation, fair planning processes*) and 3) recognition justice (*respecting diversity of values, worldviews and bottom-up perspectives*). Recently published ETC report “Just Resilience for Europe: Towards measuring justice in climate change adaptation” provide an overview of existing indicators, methods or frameworks that can be used in monitoring and reporting on social justice (*Lager et al. 2023*).

One of the key criteria of IUCN (2020) is that NBS are based on **inclusive, transparent and empowering governance process**. Top-down planning traditions are facing new transformative self-governance, where empowered citizens take decisions in their own hands and actively engage and create their living environment to become more attractive and inclusive (*Buijs et al. 2016*). According to IUCN Guidelines for NBS (2020) planning and implementation of NBS should have an inclusive approach. The Guidelines highlights the need for well-prepared stakeholder mapping in order to identify the key stakeholders who will be either affected by the NBS or they have an impact on planning process. All key stakeholder groups should be represented, and their ideas, suggestions and concerns considered when making decisions (*IUCN 2020*).

This booklet of ATNEAS Cookbook gives you well-tested ingredients how to improve your stakeholder engagements and socially justice public participation. Firstly, we focus on collaboration between experts and disciplines, and then inclusive participation of local stakeholders and residents.

The solutions developed are based on stakeholder engagement experiences of three ATENAS partners facing different challenges and approaches:

1. **Responsible planning – Finland – planning for cities**

The key objective of Atenas in Helsinki metropolitan region was to support developing and evaluating alternatives for urban planning and decentralized stormwater management in the planning phase.

2. **Making change in degraded landscape – Poland – mitigation of disaster**

Key objectives of the measures taken: 1) environmental - improvement of green space quality, improvement of water retention, runoff harvesting, 2) social - community inclusion, connecting citizens to nature, improvement of recreational space, 3) economic – reducing the cost of payment for lack of water retention.

3. **Focus action on the problem – France – vision of the problem**

The key objective was to worked on focused solution (increasing the self-purification capacity of a small stream polluted by urban rainfall discharges) on well identified and located problem together with well recognized stakeholders.

## Stakeholder identification and selecting approach

Stakeholders can be defined as individuals or institutional, professional, economic or other actors that have an interest towards the case or project, may be (in)directly affected by the project or can have an effect on the project (Cascetta *et al.* 2015). The potential stakeholders can be identified by asking:

1. Who is most likely interested in the planned NBS?
2. Who are the potential beneficiaries?
3. Who is or might be affected by the NBS?
4. Who are the supporters, sponsors or funding agencies
5. Who are against the NBS?
6. Who might have effect on the NBS?

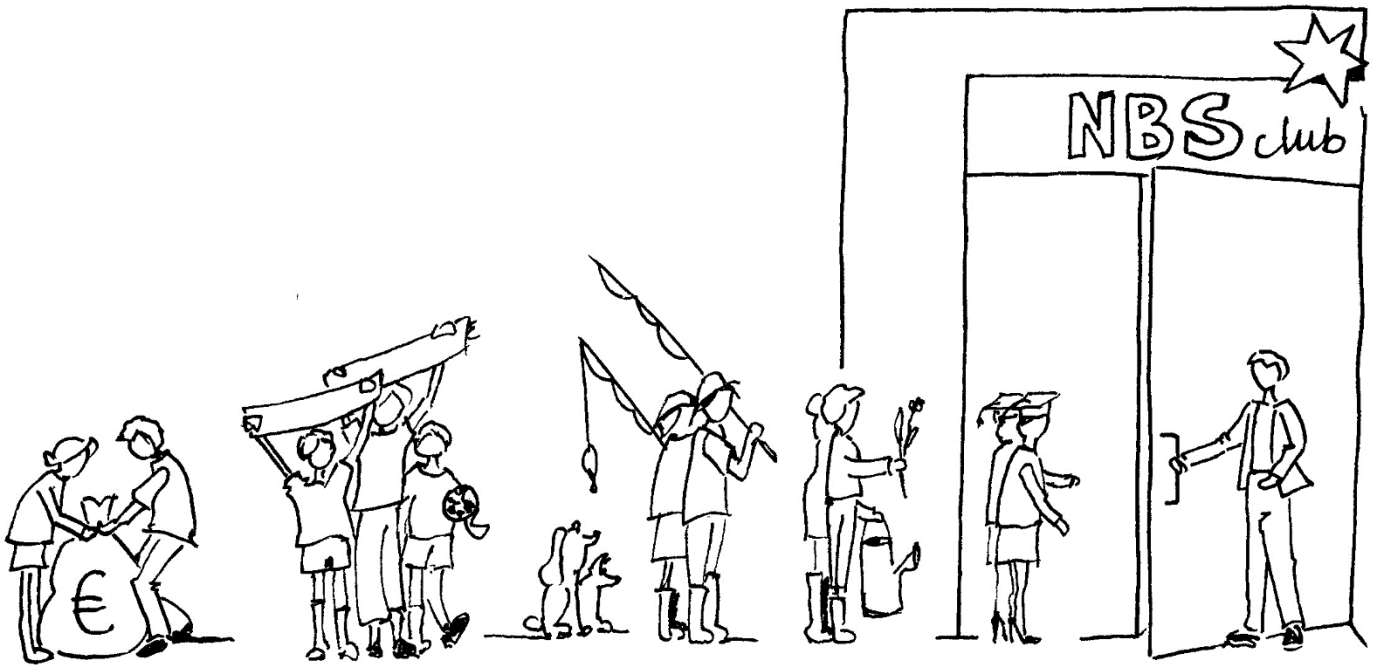
Key steps towards effective stakeholder engagement (see attachment 1):

**Step 1:** List potential stakeholders. Be rational when selecting those who are invited to become participants and those who are left out. Be aware of vulnerable and minority groups.

**Step 2:** Classify stakeholders. Identify their potential influence and how relevant the project is for them.

**Step 3:** Define participation level and choose feasible methods. Do you want inform, involve, collaborate or empower them?

In NBS planning, different participation approaches can be selected based on complexity, longevity of the plan and who are the key stakeholders that are necessary to involve in the planning process. The methods and tools can be typified based on Arnstein's ladder of citizen participation introduced in the Table 1.



Graphics:  
*Agnieszka Butterworth*



**Table 1.** Different approaches for stakeholder engagement and short definition based on Arnstein’s ladder of citizen participation (Vierikko et al. 2020).

Approach	Definitions
Inform	One-directional communication, e.g. press releases, social media campaigns, visualizations about ongoing plans or development processes, informing stakeholders to get engaged.
Consult	Two-directional, <i>one-time</i> hearing during the process, e.g. internet- or telephone-based surveys, interviews or public hearings. Usually includes feedback to stakeholders or public report how opinions have been taken into consideration in the plan/ project.
Involve	To work directly with the stakeholders <i>throughout</i> the process to ensure that public concerns and aspirations are consistently understood and considered, e.g. workshops, brainstorming, role plays, community committees.
Collaborate	To partner with the stakeholder in each aspect of the decision including the development of alternatives and the identification of the preferred solutions, e.g. strategic groups.
Empower	To place final decision-making in the hands of the public, e.g. citizens juries.

Interreg project MARA (2019-2022) that analyzed sustainable transportation in remote areas, reviewed literature on stakeholder engagement (Vierikko et al. 2020). Some of the main reasons why inclusive stakeholder engagement is needed can also be considered in terms of NBS planning:

- To understand heterogeneous preferences, underlying values, and norms that different socio-cultural groups have;
- To identify salient socio-cultural factors that are not identified through surveys;
- To increase public awareness about goals and planning of NBS;
- To increase acceptance and decrease resistance. People's behavior towards a plan can change if they feel being involved in the decision-making process, since participation changes their perception about problems and potential solutions.

## Collaboration with experts and governmental sectors

Although many technical and ecological improvements can be sought more easily when planning or implementing NBS, one of the most challenging tasks can be the institutional collaboration. Obstacles to the implementation of NBS are often the complexity of assessing benefits and long-term impacts, the sectoral distribution of management and planning in the organizations responsible for planning, and the challenge of finding funding as the benefits are distributed differently and wider than using traditional measures. For example, new urban objects (NBS) often create uncertainty about how to manage malfunctions, which is a notable hindrance for decision-makers in charge of ensuring the continuity of associated services. Therefore, it is crucial to identify and explain the potential risks for all stakeholders involved in the decision, and the means put in place to reduce them. Close **collaboration between different sectors** is crucial in most cases. One way to improve the situation is to use structured value-focused approach to develop alternatives and comprehensively and systematically assess the multiple benefits of NBS and thus make them more visible. The co-creative methods can bring different sectors and disciplines around the same table to discuss about common or competing goals. Based on our experiences on organizing co-creative and collaborative planning by using value-focused methods we listed few critical points that should be taken into account when preparing workshops and meeting.

### Critical points in preparing workshop and meeting with experts:

1. Reserve enough time for discussion – avoid too optimistic and packed program;
2. Make sure that the composition of the group is heterogeneous enough to enable different information and divergent perspectives;
3. Groups should be small enough (3-4 people) that everyone has enough time to present their own views;
4. Avoid using specific terms. Terms used should be understandable and concrete for all participants;
5. Make sure that alternatives are sufficiently different to stimulate discussion;
6. It is important to make it clear to the participants from which point of view they are making the assessment.



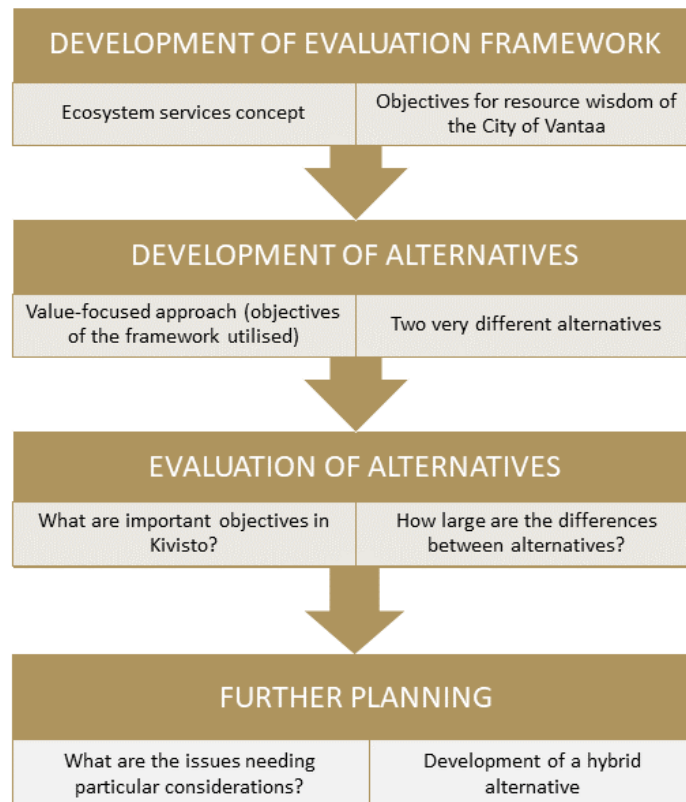
## Value-focused method for collaborative planning – example from Vantaa, Finland

The key objective of ATENAS in Helsinki metropolitan region was to support developing and evaluating alternatives for urban planning and decentralized stormwater management in the planning phase. There were no concrete implementations of nature-based solutions during the project. The aim of the Helsinki metropolitan case was to (i) develop a systematic and interactive approach to support multi-objective urban planning in general and (ii) to test the approach in the ongoing urban planning process.

| 8

We held a stakeholder meeting at the beginning of the project (Nov 2019) and invited city officers from the city of Vantaa, Finland to discuss potential development areas that are going through land use planning. Totally, five different areas were identified by the city officers. Finally, after email exchanges and further discussions between ATENAS researchers and the city authorities of Vantaa, Kivistö development area was selected as a potential research site. The target area is a new residential area of about 20 ha, where dense urban construction is planned. The key starting point for the planning of the Kivistö area is mitigating and adapting to climate change, as well as the City of Vantaa's goal of being carbon neutral by 2030. One of the challenges in the development of the area is the management of stormwater to avoid flooding to the railway nearby. A central part of stormwater management is building a reservoir for the retention of the flood water. Multi-criteria decision analysis were selected by the researchers to be a key tool for co-planning and support decision making. Researchers at Syke are experienced in facilitating use of MCDA.

Multi-Criteria Decision Analysis (MCDA) is a general term for systematic approaches that support the analysis of multiple alternatives in complex problems involving different objectives, intangible and incommensurable impacts, and uncertainties. The main phases of MCDA are 1) identification of objectives, 2) structuring them into a form of hierarchy, 3) developing alternatives, 4) assessing their performances with regard to objectives, 5) collecting preference information and 6) forming an overall view of the alternatives and presenting recommendations for policy makers. MCDA can be applied in a more descriptive and qualitative way or quantitatively building a preference model and calculating priority values to alternatives. The main phases of the process are presented in [Figure 1](#). There was an intense dialogue with the method experts and city planners. Altogether a dozen meetings were held. In addition, a workshop for different sectors' planners and experts in the City of Vantaa was also organized.



**Figure 1.** The main phases of MDCA. Example from Finland case.

## **Collaboration between experts – Inherited territorial governance - a challenge to be mastered in Lyon**

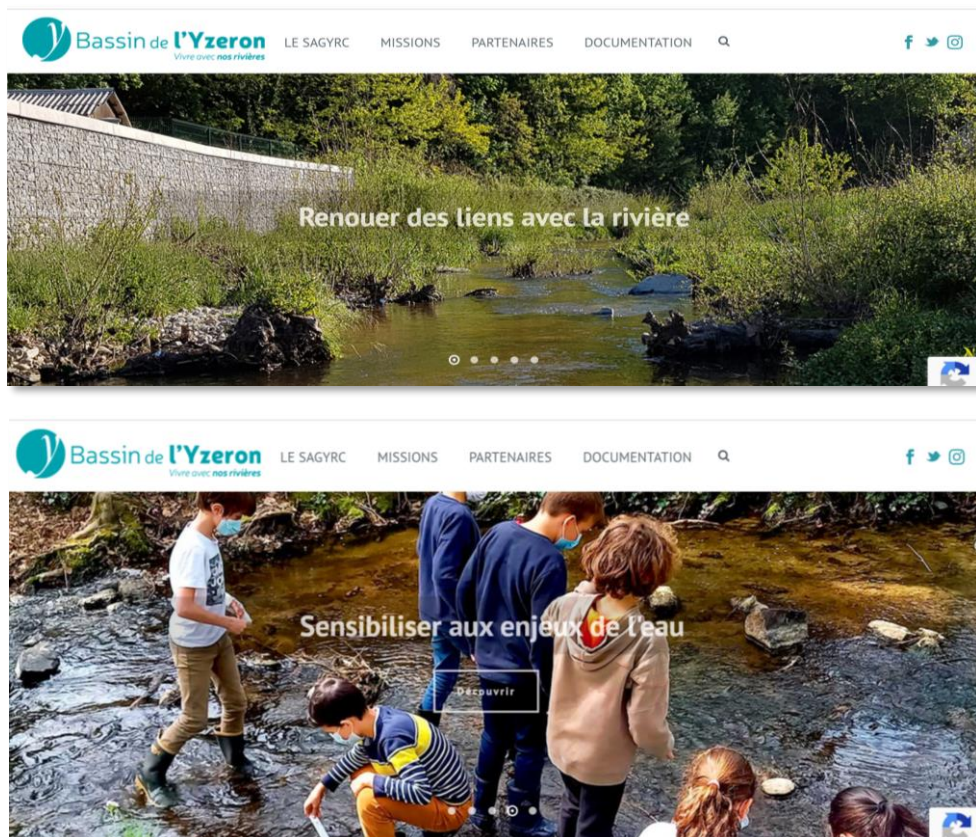
As in many industrialized countries, the development and management of territories have been entrusted by governments to public services, of collective interest, and operational on geographical entities. In France, the basic administrative unit is the municipality. The mayor is elected by the municipality's residents to manage its development. There are some 36,000 such municipalities. Since the 1970s, the French government has required municipalities to form communities of communes to pool the resources needed for public services, including water management (drinking water supply, wastewater treatment, resource quality). These groupings are often called "syndicates" because of their mission to manage common assets. Syndicates are "specialized" in their purpose. They manage staff and assets, and launch and manage studies and works. Their legal form enables them to be financed by the budgets of the partner municipalities and additional budgets provided by various government departments with a broader territorial remit.

## Decision-makers

Syndicates are coherent operational units on a territorial scale. A river syndicate's mission will be to manage the various issues associated with its quality and quantity, in terms of services and drawbacks, within the geographical entity of a watershed. A sanitation syndicate will manage the smooth operation of a network and a wastewater treatment plant. The objects and interlocutors are different, but the interactions are potentially real. This is the case in the Yzeron basin, where urban discharges during rainy weather are a well-identified source of deterioration in the ecological quality of watercourses. The second point is the draining of underground resources by leakage from the ageing and degraded wastewater network. Here, poor management of the sewerage system has an impact on river management. It's also an economic loss, as the volume of wastewater treatment increases, raising local taxes. A third factor is urban development, with soil sealing accentuating the loss of water resources through rapid transfer to watercourses. It is the mayors, partners of the syndicates, who guide urban development projects. We can therefore imagine that all the players needed to improve the ecological quality of watercourses are brought together. This is what led to the emergence of a common project for the two syndicates. It can be summed up as "conserving every drop of rainfall to the best of our ability to feed groundwater". This means:

- Controlling and compensating for imperviousness through infiltration and/or evapotranspiration of runoff (NBS at source). This policy is to be pursued by the mayors of municipalities, who can impose technical prescriptions on urban development projects, as it is their prerogative to issue building permits.
- Disconnect rainwater from combined sewer systems, repair leaky sewer systems and use NBS to treat stormwater runoff. This work is the responsibility of the sanitation syndicate.
- Monitor the ecological quality of watercourses, carry out river restoration work in areas heavily damaged by urbanization. Reduce water use in low-water periods to support aquatic life. Define the rules for sharing between different uses to ensure equity.

**The river union of the Yzeron watershed (SAGYRC, <https://www.riviere-yzeron.fr/>, Figure 2) is funded by the partner municipalities.** The union is competent for the actions to be carried out in the river bed and its surroundings, in order to ensure the protection of the riparian population against floods, the good ecological status of the river, in compliance with the WFD (2000/60/CE), and the management of the sharing of water volumes in case of drought. It is also tasked with managing water-related heritage (hydraulic works, water mills) and providing educational and formative communication for school children. These different tasks imply the management of observatories of flows, aquatic species, water quality, as well as the conduct of ecological restoration projects of degraded watercourses. The Yzeron river union is also competent for the management of rainfall runoff, even at a distance from the watercourse. The Syndicat intercommunal d'assainissement de la Haute Vallée de l'Yzeron (SIAHVY) manages the drinking water, collective and individual sanitation services of the six rural and peri-urban communes of the upper Yzeron watershed. It must ensure the proper functioning of the sanitation system and limit urban discharges during rainy weather into waterways, in compliance with the European directive 98/15/EC on urban wastewater. The two syndicates work together effectively on the primary objective of the water resource management plan, which is to conserve every drop of rain that falls on the Yzeron watershed. This implies acting on the management of runoff in the slopes to limit their drainage by the sewerage systems. This action is completed by the treatment in the watercourses of urban discharges in rainy weather, not controlled.



**Figure 2.** SAGYRC, <https://www.riviere-yzeron.fr/>



The coordination of the syndicates' activities with the work in the ATENAS project, made it possible to test a NBS in the river and to study a sectorization of the catchment area to manage the runoff with the help of NBSs (constructed wetlands, hedges, landscaping, spatial organization of land uses,...). As the demonstration site has no impact on economic or biodiversity issues, project approval was negotiated between the river syndicate, the fishing federation and the scientific team. The process was collaborative and involved partnering with stakeholders in every aspect of the decision, including developing alternatives and identifying preferred solutions.

The Yzeron river union (SAGYRC) is a historical partner of INRAE (ex-IRSTEA) in the sense that it is a partner of many research projects anchored on its territory to study the influence of the peripheral development of the city of Lyon on the water resource and its extremes, on the ecological, chemical and biological quality, and on the solutions of mitigation of the deleterious effects.

#### SAGYRC's syndicate cooperation in ATENAS project:

- Organization of meetings with socio-anthropologist, for analysis of the social and operational perception of NBS by local institutional actors (river syndicate, sanitation syndicate, water agency, fishing federation, metropolis of Lyon, Rhône-Alpes Region, Departmental Directorate of Equipment)
- Provision of topographic data for the study of the implementation of the ATENAS demonstration site.
- Meeting to discuss the results of the topographic and hydraulic study with presentation of the construction rules of the NBS "porous ramps".
- Field meeting for the reconnaissance of the NBS implantation sites of the ATENAS demonstration site. It was a question of evaluating the conditions of access of the earthmoving machines and recognizing the land parcels belonging to the river syndicate. Consultation meeting with the fishing federation for final selection.
- The syndicate took charge of the construction costs of the two porous ramps.
- Contact with the specialized earthwork company. INRAE is in charge of the works.

The president of the SIAHVY syndicate is very open to the search for NBS to treat and conserve the resource that represents urban runoff before it reaches the combined sewer system. The syndicate signed a partnership agreement with INRAE to test innovative solutions. INRAE supported the engineering offices to transfer its research methods.

## Co-operation with city officials toward increased water storage and infiltration in urban area – Example from Łódź, Poland

Pre-existing cooperation within projects in Łódź (i.e EU FP6 SWITCH, ENABLE Biodiversa+, Life + EHREK) created a climate of mutual trust between city authorities and researchers. This is an important point in advancing work and implementation of innovative solutions.

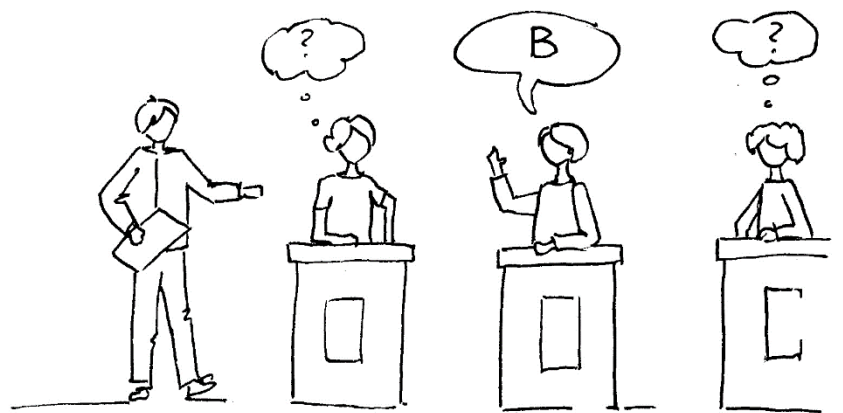
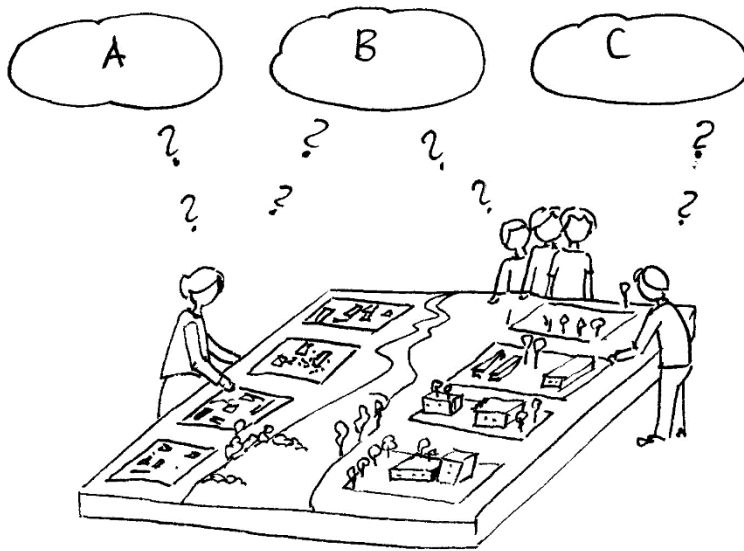
During the course of the project, a series of meetings were held with the city authorities of Łódź (Department of Municipal Services, City Planning Office, Department of City Greenery, Department of Ecology and Climate, Department of Municipal Investment Management, Bureau for Social Participation) which are responsible for the management of blue-green infrastructure, spatial management, investments, coordination and supervising of public consultation and citizen involvement in Łódź. The aim of the meetings was joint discussion about critical success factors and barriers for NBS implementation and the area of implementation: the best place, best solutions and reason for choosing.

During the course of the contacts (Figure 3), the location of the investment was confirmed – square between Obłęgorska, Widok and Wojska Polskiego streets. The required documents for carrying out the investment in the area owned by the Municipality were obtained and prepared. This made it possible to work with residents to implement the NBS. Informing about the possibilities of implementing the proposed solutions in the city and enabling the implementation can be considered as the main roles of the above-mentioned entities in this project.



**Figure 3.** Social Network Analysis (an institutional map showing the links between actors through tasks) workshop with City of Łódź authorities representatives (Łódź, 23.11.2022)





Graphics:  
Agnieszka Butterworth

# Another approaches and methods for collaboration with experts

## Social Network Analysis

Usage of Social Network Analysis (SNA) offers possibility to understand the preconditions and the key players for NBS upscaling (WP4): knowledge about WHO (actor) is involved in NBS implementation, HOW (task) and WHAT knowledge it needs (information) (Figure 4). Mapping decision making network for NBS implementation in the City shows information and workflow among institutions dealing with environment. SNA support collaborative decision-making process by the detection of the key vulnerabilities in the networks and the nodes for the intervention's implementation. Methodology based on paper *Giordano et al. (2020)*. By *Giordano et al. (2020)* SNA support “i) identification of networks of interactions (existing, missing and realistic cooperation), and investigation of actors, structures and network boundaries; ii) innovation potentials through network development strategies where and how cooperation can be optimized, and where and how alterations are possible and reasonable); iii) identification of problems of coordination, information and motivation; iv) identification of weakness in the knowledge transfer process identification of networks of interactions to. “

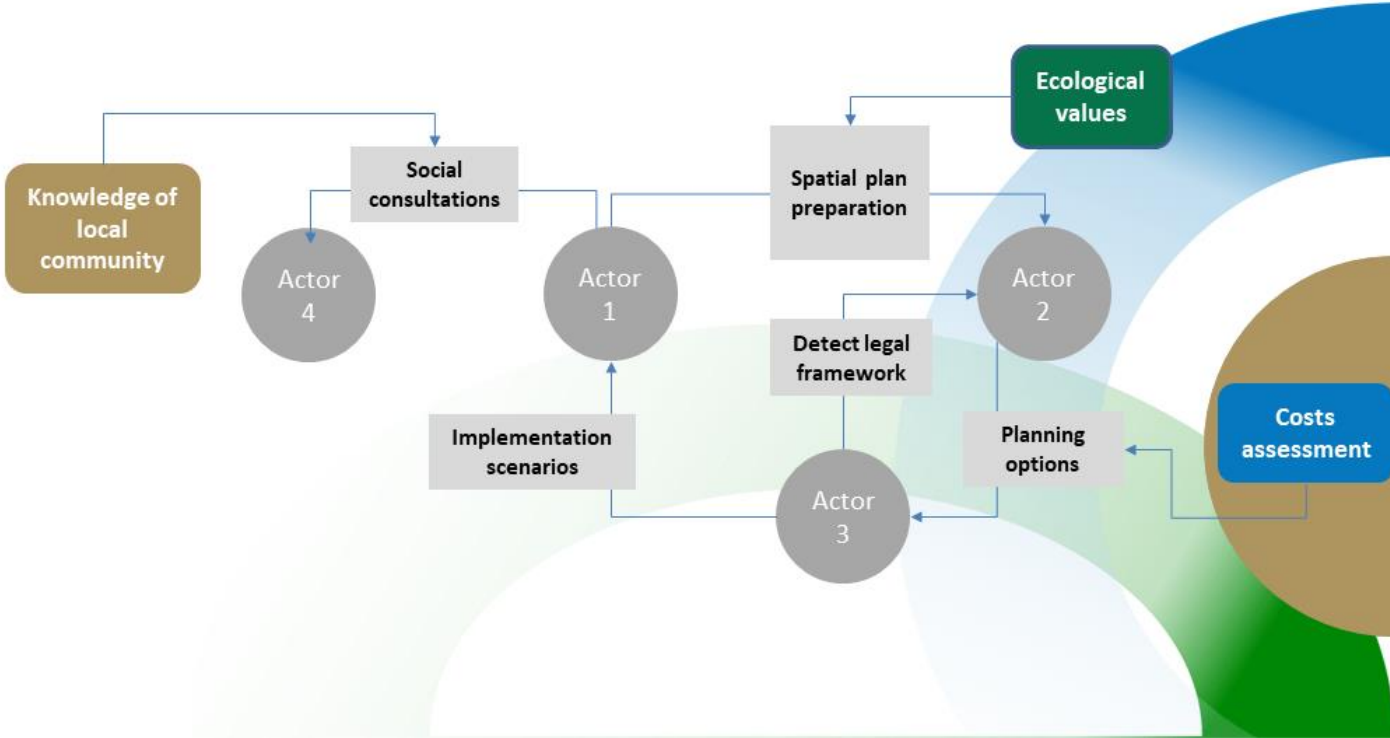


Figure 4. SNA scheme

## *DELPHI Method*

The Delphi Method (*Barrett and Heale 2020*) is an exercise structuring a group communication process among a panel of geographically dispersed experts, to make the process effective in allowing a group of individuals, as a whole, to deal with complex problems. It is based on collecting and distilling knowledge by means of a series of questionnaires interspersed with controlled opinion feedback.

Experts (30-50 individuals) are selected by requesting nominations from specialists in the field, through experience (e.g. readers of a certain publication) or specialist knowledge (e.g. tourism or forestry experts). They answer questionnaires (open-ended probes or specific closed-ended questions, depending on the focus of the research) in two or more rounds. After each round, a facilitator analyzes answers and provides an anonymous summary from the previous round. Experts are encouraged to clarify and rank order survey items, revise their earlier answers and give new ideas. During this process the range of the answers should decrease and the analysis converge towards less subjective and judgmental, and more quantitative and objective. The process stops after reaching a pre-defined criterion (e.g. number of rounds, achievement of consensus, and stability of results) and the mean or median scores of the final rounds determine the results.

### **DELPHI CHARACTERISTICS**

Features of the Delphi procedure:

- Experts based - human judgment are assumed to be a legitimate and useful input of quality information leading to reliable and valid results and evolving quality knowledge;
- Anonymity - weakens influence of any dominant group member and/or individual interests;
- Statistical group – collecting a range of opinions and putting equal weight to their importance;
- Controlled feedback - summaries of the results from each round are analyzed and communicated back to the participants;

## **RATIONALE FOR DELPHI**

Delphi method is usually used to generate ideas and facilitate consensus among experts in a given field, such as:

- Coping with complex issues, e.g. identifying priorities for development of particular issue at your site/platform; identifying difficulties and importance of implementing basic concepts at the site and/or platform e.g., those in landscape management, stakeholder communication, social education and awareness rising etc.;
- Generating new ideas and concepts e.g. for new/missing activities to be implemented; strengthening general public understanding/acceptance of environmental decisions; strengthening involvement of decision makers into defining research scope;
- Setting long-term priorities and strategies, e.g., defining the strategic directions of a site;
- Forecasting likely inventions, new technologies and the social and economic impact of technological or ecological change;

## **DELPHI OUTCOME**

- Consensus on future challenges by experts in a given field, representing different institutions;
- Agreed set of guidelines and/or recommendations that include inputs of all relevant areas of expertise, regardless geographical dispersion or availability of experts;
- Integration of results into relevant projects, programs, strategies and policies.

## **INFORMATION SOURCE**

Panel of independent experts, specialists and/or researchers with the knowledge on a given field. The individuals can be geographically dispersed and represent multidisciplinary group.

## Collaboration with citizens and inclusive public participation

There are plenty of freely available guidelines to develop and implement socially just and inclusive stakeholder engagement and public participation. For example, some funders such as Biodiversa+ (*Durham et al. 2014*), offers guideline for stakeholder engagement for project they fund but the document is useful also for other projects. In this book we don't offer detailed guidance for successful stakeholder engagement, instead we want to share a few tipping points that you should carefully consider when implementing or planning NBS based on our experiences and results of ATENAS.

| 18

### **Building critical mass and networking - example from Łódź, Poland**

In order to create an environment to benefit from interaction by fostering dialogue on critical issues, shared understanding, co-design, efforts were made to find and connect with local leaders and activists. The involvement of non-governmental actors was essential for gaining support and involvement in planning, knowledge sharing, care and maintenance of the area. Stakeholders were requested to support the project with their thematic knowledge and to enable recycling of ideas and skills of activist and society members.

The snowball method was used to make contacts in order to attract people (contacts through social media, housing estate councils, cooperation with residents). Based on several meetings (6) with Łódź activists, a Map of Social Activists was prepared (**Figure 5**) - people who can offer their support and commitment at different stages of the project. The results of this activities include, for example, the training and participation of Social Tree Guardians in the joint planting of greenery in the ATENAS square, the donation of seedlings by the Landscape Park Complex of the Voivodeship, assistance during the consultation on the development of the square by Young Climate Strike Lodz, the co-creation of the Nas Canvas model for cities with the Revitalization School of Lodz, or the creation of a manual for greenery planting species in the city by Zielnik Łódzki. Activist participation was evident at various stages of the project including consultation, implementation and maintenance.



**Figure 5.** Map of Social Activists created on the basis of meetings with Łódź activists.



## Inclusiveness of the participation process - example from Łódź, Poland

In Łódź, several approaches were taken to provide diversified stakeholders engagement in the project for opening spaces for co-design and building shared responsibility and ownership of place among communities. Prior to the implementation of the NBS, several workshops and meetings were held with residents to familiarize them with the project's assumptions about water use, integrate participants, build relationships for involvement in subsequent activities, and create a connection, a link to the square. Residents of the surrounding tenements were also given the opportunity to choose a variant of the square's redevelopment that suited them, as well as a selection of plantings. After the construction work to build the retention basins, several workshops were held including joint planting of trees and shrubs and establishment of vegetation at the NBS, as well as a meeting with a dog behaviourist to initiate the creation of a mural depicting the neighbourhood's canine residents. During the project, consultations were held with Łódź activists on the concept of redevelopment of the selected square with the possibility of indicating the solutions most needed from the perspective of social, historical, cultural, and environmental conditions (Figure 6).



**Figure 6.** Meetings on the square with local community (*left*) educational meeting, (*right*) greenery planting

## Involving local residents in Lyon, France

In the French collaboration, public consultation in projects is considered for large-scale operations, in fact those involving works that will have an impact on the daily life of local residents. Thus, the involvement of the local population in major works is regulated to include the presentation of the project and its possible options. The project is subject to the public enquiry process. It is not a vote, but it allows arguments for and against the project to be put forward. The final decision rests with the local authorities and the State if the project has an extra-regional scope.

For the NBS it seems possible to involve citizens in the choice of possible solutions and the monitoring of malfunctions. Maintenance cannot be entrusted to citizens for reasons of technical knowledge and safety for people.

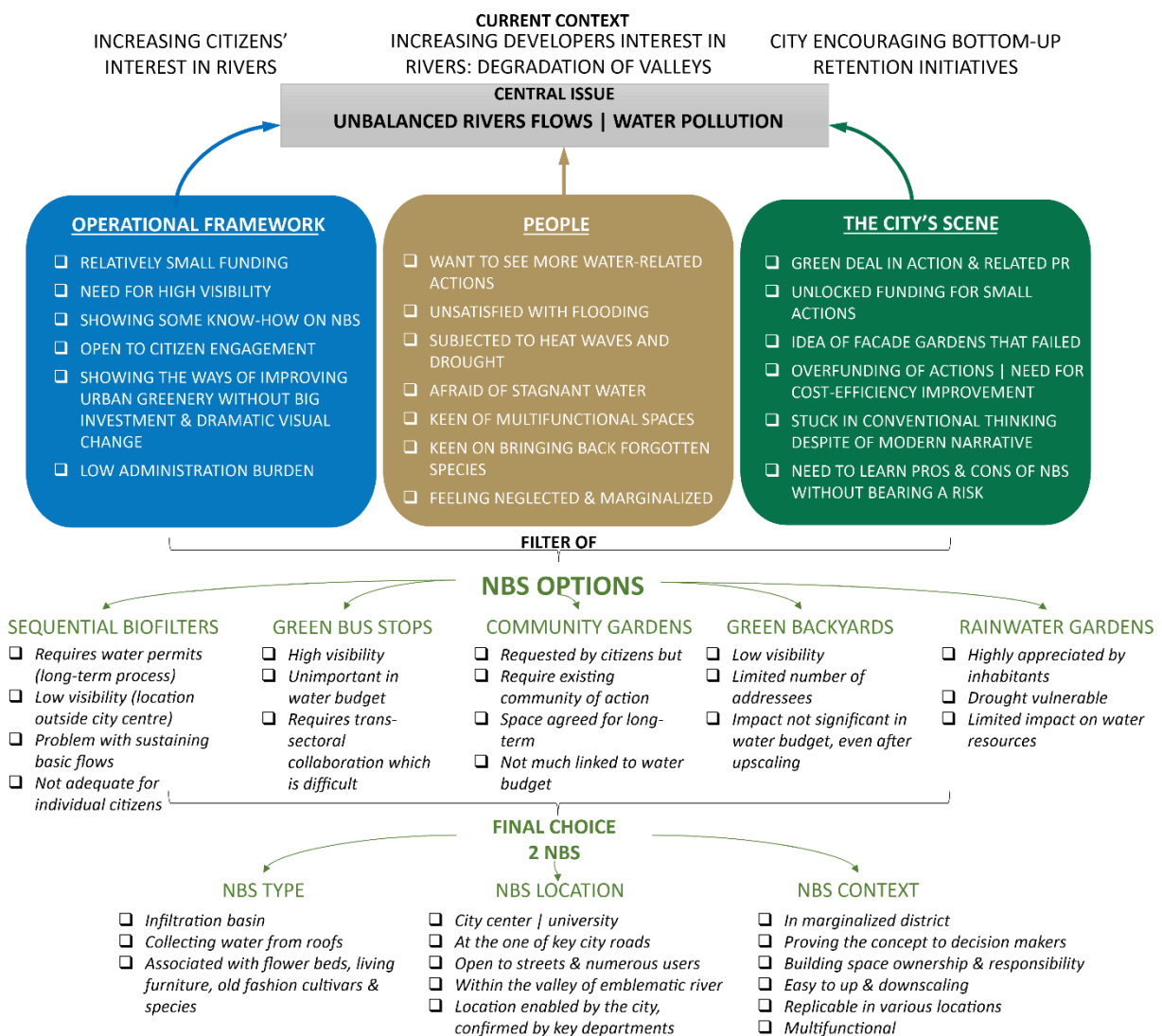
This mainly concerns the activities of the river syndicate. Major works are subject to a public inquiry before reaching the "declaration of public utility" stage. Depending on the project, strong resistance may be encountered, despite public meetings and attempts at co-construction. The current case of the Yzeron basin involves the construction of two dry dams to manage the 100-year flood that could inundate the highly urban downstream part of the basin (southern part of the city of Lyon). The construction of a 22m-high dam across a still relatively wild valley has been called into question by the new municipal team, which was elected on its opposition to the project. Several smaller projects are under discussion. We see here that ecological arguments are pitted against safety and economic arguments (one large dam is less costly than several smaller ones). But it's the understanding of long-term climate and biodiversity issues by a wider public that explains the levers of this opposition.

In Lyon case, project approval of porous ramps was negotiated between the river syndicate, the fishing and the scientific team. Although they are mainly institutional actors, this example showed the importance of involving third parties (in this case, fishermen). Any announced changes to the riverbed could result in a reduction of the benefits they enjoy, so involving them in the process allows through communication and cooperation to work out solutions that avoid future conflicts and protests. The meetings held with them allowed them to make suggestions and provided substantive responses to their concerns.

### **Collaborative approach for selecting NBS and its location – example from Łódź**

The choice of ATENAS NBS involved several steps in Łódź. Without flooding / drought problem quantified, we decided to list the hot topics raising. The main were invisibility of rivers and increasing interest of citizens in bringing them back to urbanscape, encroaching land development in river valleys contradicting the latter, and a number of funding options for small NBS opened by the city to inhabitants (Figure 7). Analyzing the context of the project, we developed a plan based on three pillars: operational framework – the project required action based on land allowance, low administrative burden, availability of funding for multiplication of solutions, and with high visibility, people – ATENAS had to consider people's attitudes, fears, willingness, economic burden resulting from newly introduction of payment

for rainwater release into sewage system, and the city context – the actions needed to fit the circumstances, like green deal coming into operation and triggering economic opportunities for the cities, urgency to build green PR for elections, no experience and knowledge in NBS and willingness to learn. The types of NBS considered for discussion with communities and further implementation, came from the existing know-how, earlier surveys carried among citizens, city’s own plans and actions, and outcomes of the Citizen Panel on City Greenery operating in 2021.



**Figure 7.** Decision-making tree for planning NBS implementations. Example is from Łódź

The preliminary NBS selection included sequential biofilters being a multiplication of known NBS along city's rivers, green bus stops - raising a lot of positive emotions among citizens, community gardens - brought by citizens as a missing element in Łódź' urbanscape, green backyards - being a solution particularly targeted at strict city center, and rainwater gardens - the most popularized type of NBS, although never implemented in bigger scale. Finally, the chosen NBS represented rainwater gardens, one with the function of water retention and one for water infiltration. One implementation was done at the University building, serving leisure space to the students of the Faculty of Biology, and simultaneously attracting attention of all passers-by of the University of Łódź campus. The second one has been located at the main road crossing the upper Łódka River valley, at the back of the Park of Survivors, a place commemorating holocaust. The second NBS has been dedicated to Jewish and Gypsy people of the 2<sup>nd</sup> World War ghetto by choosing plants or colors important to both nations. Simultaneously it was to serve the local community with nice space for education and leisure.

#### The reasoning behind the selection included:

##### i) In terms of NBS type:

- Interest of the city and private property owners in lowering the fee for releasing rainwater into storm water system - according to the Water Law lack of water storage or infiltration devices will generate extra fees to the infrastructure owners; the ATENAS implementation was to address this issue demonstrating possibility of collection of rainwater from roofs for augmentation of groundwater;
- NBS was to include cultural elements: infrastructure favoring society building, serving leisure time, bringing back forgotten biodiversity - old plant cultivars and species.

##### ii) In terms of location:

- Location was to serve high visibility of the demonstration, attracting attention of citizens of different age;
- The target was to improve existing green space supporting marginalized communities;
- Both implementations were to be located in the Łódka River catchment as a starting point for upscaling of water retention and infiltration facilities serving the river and augmenting ground water;
- Location was to be confirmed by city departments - free of underground infrastructure, development plans, any ownership conflicts.

iii) **In terms of broader context:**

- The selected NBS type corresponded well with the future plans of the City in terms of NBS multiplications;
- NBS was to provide know-how on construction, collect experiences related to its establishing and maintenance, build the trust in insurance role of ecosystems;
- NBS type needed to be easily scalable and applicable;
- NBS had to support not only water cycle but also biodiversity, soil formation, pollination and regulation of climate, so ecosystem services severely impacted by urbanization.

### **Observing actual users on site, example from Łódź, Poland**

Learning about users' preferences and usage patterns can contribute to creating spaces that are aesthetically pleasing, useful and well-functioning, consistent with people's expectations of spaces. Conducting observations before and after design intervention allows to determine its impact on users' behavior patterns. What, can be considered as a method to determine the impact of the NBS intervention on the frequency and use of the space. This will also make it possible to determine whether the new solutions have made the space attractive to different people in accordance with the design intentions.

As a part of selection and design of the NBS, direct on-site observation was applied in implementation area of ATENAS project in Łódź. The choice of method was dictated by the need to identify the needs of the local community for green spaces in a non-contact way, as a remedy for the coronavirus of constraint. We used behavioral mapping which is an observational technique that allows to study the interrelationship of people's behavior and the environment. Its purpose is to record behaviors in a given space with minimal observer intervention.

To conduct an observation, a map of the area, the types of activities to be observed, a schedule for observation, a coding and counting system were prepared. Data on the use of space were collected primarily during the outdoor season 6 times a day, at morning, afternoon, and evening (observation time 30 minutes), on working days and on weekdays. The observations were conducted for two weeks at similar weather condition. The recording of behavioral and physical location information was done in tables (behavioral mapping matrix) and directly on maps. Observation card included request for following information: number of users, number of groups, age, gender, type of activity (walking, dog walking, passing, biking, resting, sitting, waiting,







How many people stay from 15 to 30 min																			
How many people are over 30																			
Contact of users of the place: greeting																			
Relationship: conversation																			
Eye contact between unfamiliar users																			
Lack of mutual contact among users																			
other																			
Notes																			

**Figure 8.** Site user activity observation card in Łódź.

### Identifying and analyzing public acceptance of NBS, ATENAS cases

In the ATENAS project the internet-based public survey was conducted. We were interested if residents are satisfied with current climate adaptation policy and tools in three countries: Finland, France and Poland. Survey was developed to ascertain the values that residents of three demo sites assigned to the water and NBS in cities. In our survey (Table 2) we gathered information through standardized on-line questionnaire (including the series of questions with pre-defined answers to choose from) filled by the respondents. In Łódź we collected 309 filled questionnaires, in Helsinki 115, and in Lyon 26 (youngsters) over 2020-2021. We asked about perception and acceptance of different NBS in cities and whether management measures to improve water resilience are valued by residents.

#### Gathered information:

- Acceptance of water and different nature-based solutions
- Values of urban water
- Management of water in cities
- Information sources
- Background information of respondents (e.g. age, gender, education, nature activism, relations to water)

In general, residents in three countries gave positive values for water in cities and supported measures to improve water resilience. However, their values and acceptance of NBS in general are contradict as residents do not necessarily want to see all types of NBS or forms of water close to their home. We argue that there is a need for collaborative knowledge production and planning of NBS to decrease resistance of local residents towards NBS.

**Table 2.** Examples of questions in survey on public acceptance of different NBS and water management

Question	Answers / results																														
Respondents socio-economic background																															
Questions about respondent profile	Proportion of respondents:  Male and female  Level of education (primary, secondary, high)  Different age groups  Working for nature																														
NBS presence in the urban space / distance																															
Would you like the: i)reservoir / ii) infiltration reservoir (dry) / iii) rain garden for water storage to be located:	<table border="1"> <thead> <tr> <th></th> <th>Definitely yes</th> <th>Rather yes</th> <th>Difficult to say</th> <th>Rather not</th> <th>Definitely no</th> </tr> </thead> <tbody> <tr> <td>on the outskirts of city</td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>in my neighbourhood</td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>in my housing estate</td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>in the immediate vicinity of my place of residence</td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> </tbody> </table>		Definitely yes	Rather yes	Difficult to say	Rather not	Definitely no	on the outskirts of city	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	in my neighbourhood	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	in my housing estate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	in the immediate vicinity of my place of residence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Water in urban space / emotion																															
Seeing a puddle on your lawn makes you feel:	<input type="checkbox"/> distrust  <input type="checkbox"/> comfort  <input type="checkbox"/> disgust  <input type="checkbox"/> anger  <input type="checkbox"/> joy  <input type="checkbox"/> indifference																														

	<input type="checkbox"/> contentment  <input type="checkbox"/> don't know																																																																											
Pairs of features that oppose each other. Tick the feature in each pair that you think best describes the characteristics of water in urban spaces.	Proportion of replies for different scores (1-5): <table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 30%; text-align: right;">artificial</td><td style="width: 10%; text-align: center;">_____</td><td style="width: 10%; text-align: center;"><input type="checkbox"/></td><td style="width: 10%; text-align: center;">_____</td><td style="width: 30%; text-align: left;">natural</td></tr> <tr><td style="text-align: right;">threatening</td><td style="text-align: center;">_____</td><td style="text-align: center;"><input type="checkbox"/></td><td style="text-align: center;">_____</td><td style="text-align: left;">non-threatening</td></tr> <tr><td style="text-align: right;">dangerous</td><td style="text-align: center;">_____</td><td style="text-align: center;"><input type="checkbox"/></td><td style="text-align: center;">_____</td><td style="text-align: left;">safe</td></tr> <tr><td style="text-align: right;">redundant</td><td style="text-align: center;">_____</td><td style="text-align: center;"><input type="checkbox"/></td><td style="text-align: center;">_____</td><td style="text-align: left;">necessary</td></tr> <tr><td style="text-align: right;">expensive</td><td style="text-align: center;">_____</td><td style="text-align: center;"><input type="checkbox"/></td><td style="text-align: center;">_____</td><td style="text-align: left;">inexpensive</td></tr> <tr><td style="text-align: right;">aesthetic</td><td style="text-align: center;">_____</td><td style="text-align: center;"><input type="checkbox"/></td><td style="text-align: center;">_____</td><td style="text-align: left;">unaesthetic</td></tr> <tr><td style="text-align: right;">non-functional</td><td style="text-align: center;">_____</td><td style="text-align: center;"><input type="checkbox"/></td><td style="text-align: center;">_____</td><td style="text-align: left;">functional</td></tr> <tr><td style="text-align: right;">not worth protection</td><td style="text-align: center;">_____</td><td style="text-align: center;"><input type="checkbox"/></td><td style="text-align: center;">_____</td><td style="text-align: left;">worth protection</td></tr> <tr><td style="text-align: right;">rare</td><td style="text-align: center;">_____</td><td style="text-align: center;"><input type="checkbox"/></td><td style="text-align: center;">_____</td><td style="text-align: left;">common</td></tr> <tr><td style="text-align: right;">not harmful</td><td style="text-align: center;">_____</td><td style="text-align: center;"><input type="checkbox"/></td><td style="text-align: center;">_____</td><td style="text-align: left;">harmful</td></tr> <tr><td style="text-align: right;">dirty</td><td style="text-align: center;">_____</td><td style="text-align: center;"><input type="checkbox"/></td><td style="text-align: center;">_____</td><td style="text-align: left;">clean</td></tr> <tr><td style="text-align: right;">valuable</td><td style="text-align: center;">_____</td><td style="text-align: center;"><input type="checkbox"/></td><td style="text-align: center;">_____</td><td style="text-align: left;">valueless</td></tr> <tr><td style="text-align: right;">boring</td><td style="text-align: center;">_____</td><td style="text-align: center;"><input type="checkbox"/></td><td style="text-align: center;">_____</td><td style="text-align: left;">interesting</td></tr> <tr><td style="text-align: right;">unobtrusive</td><td style="text-align: center;">_____</td><td style="text-align: center;"><input type="checkbox"/></td><td style="text-align: center;">_____</td><td style="text-align: left;">obtrusive</td></tr> <tr><td style="text-align: right;">undesirable</td><td style="text-align: center;">_____</td><td style="text-align: center;"><input type="checkbox"/></td><td style="text-align: center;">_____</td><td style="text-align: left;">desirable</td></tr> </table>	artificial	_____	<input type="checkbox"/>	_____	natural	threatening	_____	<input type="checkbox"/>	_____	non-threatening	dangerous	_____	<input type="checkbox"/>	_____	safe	redundant	_____	<input type="checkbox"/>	_____	necessary	expensive	_____	<input type="checkbox"/>	_____	inexpensive	aesthetic	_____	<input type="checkbox"/>	_____	unaesthetic	non-functional	_____	<input type="checkbox"/>	_____	functional	not worth protection	_____	<input type="checkbox"/>	_____	worth protection	rare	_____	<input type="checkbox"/>	_____	common	not harmful	_____	<input type="checkbox"/>	_____	harmful	dirty	_____	<input type="checkbox"/>	_____	clean	valuable	_____	<input type="checkbox"/>	_____	valueless	boring	_____	<input type="checkbox"/>	_____	interesting	unobtrusive	_____	<input type="checkbox"/>	_____	obtrusive	undesirable	_____	<input type="checkbox"/>	_____	desirable
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<p>Knowledge / information about water collection</p>																			
<p>The sources of information that spreading opinions about water collection</p>	<p>TV, internet, books and newspapers, acquaintances, school / work, family, own experience /observation</p> <p>statement whether these opinions are positive or negative</p>																		
<p>Tick all the statements that apply to you</p>	<p><input type="checkbox"/> I follow current media information on water storage.</p> <p><input type="checkbox"/> I browse websites and forums for information on climate change</p> <p><input type="checkbox"/> I watch documentaries and popular science programmes on drought and drought management.</p> <p><input type="checkbox"/> I often spend my free time on the water.</p> <p><input type="checkbox"/> I have visited institutions or organisations working to protect water resources.</p> <p><input type="checkbox"/> Difficult to say</p>																		

## Another approaches and methods for identifying and analyzing public opinions

In addition to traditional questionnaire surveys or interviews with residents, other methods can be used to get residents' opinions on possible implementations.

### *Cognitive Maps / Concept Maps (CM)*

Cognitive maps, concept maps (CM) and mind maps are diagrammed expressions of relationships between concepts (*Eppler 2006*). They are used to identify and understand the structure of a subject, and the way that its components fit together. Concepts can be connected with labelled arrows and relationship between them can be articulated in linking phrases, e.g., "gives rise to", "results in", "is required by," or "contributes to".

Concept maps are based on informant knowledge and experience and from his perspective show the nature of relationships between processes, maintaining the focus on central issue. This means looking for new relationships between objects and processes through establishing problems and questions or thinking about the relationships of another group of processes or phenomena.

The mental maps of the qualitative and quantitative processes, and the subsequent gathering, selection and systematization of data can be the first step towards other methodological processes.

### **CM characteristics**

FCM helps to extract information from expert judgments and common knowledge. It may also combine number of information sources so that the final result provides comprehensive overview of the situation, state of knowledge and interactions between its components.

### **Rationale of CM**

- setting in order existing information (e.g. about barriers and enablers),
- clarifying existing concepts and approaches,
- identification of knowledge and data gaps,
- identification of expertise and sources of information,
- understanding and analyzing the mutual dependencies between variables,
- communication of knowledge to different actors;

- defining the strategic directions that need to be taken in interesting area and topic.

### **CM objectives**

- Engage a broader community in a process of understanding the problem;
- Extract knowledge from variety of information sources;
- Develop simplified model to describe complex systems and interactions.

### **CM outcome**

- Gap and knowledge analysed
- Critical information identified
- Critical links between concepts described in cause-effect relationships.

### **Information source**

Different groups of actors, expert knowledge, literature review, meta-analysis of data, rough data.

### *Analytic Hierarchy Process*

Analytica Hierarchy Process (AHP) is a technique for dealing with complex decisions (*Steiguer et al. 2003*). AHP helps to find the one that best suits the needs of investigator/decision maker and allows to understand the problem, e.g. to find the set of drivers or pressures that need to be address with respect to certain environmental issues. Thus, AHP is a highly subjective method, however it enables to deal with variety of factors in the same, structured way.

The AHP starts with decomposing the main problem into a hierarchy of sub-problems, each of which can be analyzed independently. The elements of the hierarchy can relate to any aspect of the decision problem - tangible or intangible, measured or estimated, well- or poorly-understood.

Once the hierarchy is built, its various elements are evaluated by comparing them to one another two at a time. In making the comparisons, the decision makers can use either concrete data about the elements or judgments about the elements' relative meaning and importance.



The AHP converts these evaluations to numerical values that can be processed and compared over the entire range of the problem. A numerical weight or priority is derived for each element of the hierarchy, allowing diverse elements to be compared to one another in a consistent way.

### **Analytical Hierarchy Process characteristics**

- Models the problem as a hierarchy comprising: ▪ the decision goal, ▪ the alternatives for reaching it, and ▪ the criteria for evaluating the alternatives.
- Establishes priorities among the elements of the hierarchy by making a series of pair-wise comparisons of the elements.
- Synthesizes experts / decision makers' judgments to yield a set of overall priorities for the hierarchy.
- Checks the consistency of the judgments.
- Leads to a final decision based on the results of this process.

### **Rationale of AHP**

The AHP provides a comprehensive and rational framework for

- structuring a decision problem,
- representing and quantifying its elements,
- relating those elements to overall goals,
- evaluating alternative solutions.

### **AHP objectives**

- Understanding processes, their drivers, the impacts and
- Building knowledge on alternative approaches to deal with problems either conceptually or through management, policy

### **AHP outcome**

- Making a choice - the selection of one alternative from a given set of alternatives,
- Ranking of alternatives - putting a set of alternatives in order according to how much they suite adopted criteria, e.g. risk to biodiversity
- Prioritization – association of the relative value to the members of a set of alternatives,

- Benchmarking - comparing the processes, or consequences of processes, drivers, pressures in one area with the others.

## Recommendations for inclusive and successful public participation

### **Invite and engage with the entire community**

Sometimes engagement can fail to procedural justice and despite costly and time-consuming public participation. In the review of MARA project (*Vierikko et al. 2020*) many potential risks were listed:

- Stakeholder involvement fails in creating dialogue among and with participants.
- Engagement may create dissent and conflict among or within communities instead of shared understanding and agreements.
- Participation does not effectively reach disenfranchised or disabled groups.
- Participation is dominated by a few strong participants, because stakeholder groups have different resources and competences to be equally involved in the planning process.
- Decisions are not truly open to the influence of lay public.
- Failed participation processes may increase costs to municipalities, states, and developers.
- The participation with particular goals is dated in the wrong stage of the process.
- Selected participation tools and proposed timeframe are not applicable to relevant stakeholder groups and for reaching defined goals of stakeholder involvement.
- The professional terms and too big amount of information make the contents difficult to be understood by the participants.

With this in mind, it is important to ensure or at least make every effort to treat each stakeholder fairly, and the approach should be case specific. Targeted stakeholders could include low-income groups, women, children, the elderly, people with disabilities, minority groups, and those without formal land title, who may have been previously excluded. Approaches to stakeholder engagement should be culturally sensitive and inclusive. Appropriately selected activities can lead to stakeholder empowerment (increasing the ability and confidence of stakeholders to make choices and decisions). An inclusive approach to stakeholder engagement, can foster acceptance of the project and can increase their sense of belonging, ownership, greater social responsibility,

which contributes to the long-term sustainability of the project beyond individual outcomes.

### Identify power keepers and local knowledge holders

It is important that you find and attract those local actors that have power to influence to the process. You can create a *Map of Social Activists* of individuals, organizations, associations, institutions that could be interested in the project. These stakeholders can be asked to support the project with their local knowledge. You may also ask them to contact and invite other practitioners, organizations and relevant stakeholders. Stakeholder mapping is a standardized protocol that will help to identify and map stakeholders that can have a great impact on processes and those who are mostly impacted by the project or planning.

### Listen local communities and respect sense of place

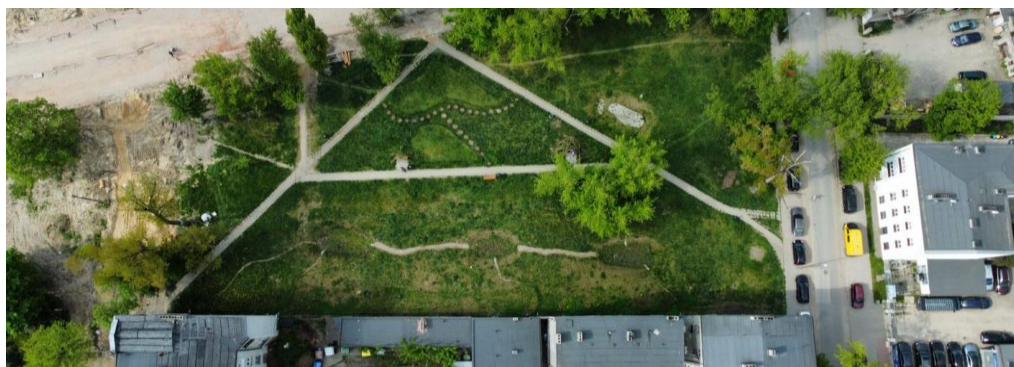
Sometimes the implementation of NBS can fail due to strong resistance of local residents or activists. People can have a strong fear or doubts towards the planned NBS despite the planners and city officers aims to improve environmental conditions (Vierikko and Niemelä 2019). Instead of complains, be open and understandable towards their resistance. Listen their concern and respect their opinions. *Empathy listening*<sup>1</sup> is a participation method that have been developed to support inclusive engagement.



Graphics:  
Agnieszka Butterworth

<sup>1</sup> 7 Tips for Empathic Listening ([crisisprevention.com](https://crisisprevention.com))

**Experience from the ATENAS Łódź project showed that prior to the design phase, it is highly important to make preliminary assessment of the local community and characteristics of place by gathering information on historical and cultural context.** An assessment of the situation by determining the neighbourhood community's perception of the space can be made through interviews, consultations, workshops, or field trips that are organised in close to implementation area of NBS. Subjects covered in this organized meeting can be related to perception of the place and its uniqueness, actions and forms of activity undertaken by the local residents, the level of belonging and attachment to the place, and how and by whom the place is used. The next step is consultation with members of the local community to select preferred solutions for the space. During the Lodz co-design and co-creation, residents were presented with two alternative options for landscaping the space, asking them to indicate the elements they like best and those they like least. The grey and green elements of final implementation have been selected by local community members, while the blue elements have been broadly discussed locally and with NGOs. Consultations with residents were conducted in the form of face-to-face interview to include diverse respondents.



**Figure 9.** Case Study in Łódź – Oblęgorska square



**How important it is to listen, cooperate, but also educational activities shows the case of ecological rehabilitation and flood protection of the Yzeron river in its urban crossing in Lyon.** The project's starting point was flood management, which has become more frequent as a result of climate change and upstream urbanization. Financial support from the regional water agency (50%) was conditional on effective ecological improvement (increased biodiversity via improved water quality, reconnection to the groundwater table, hydro-geomorphological diversity). The project concerned 2 kilometers of concreted watercourse in an urban area. The project was initially opposed by local residents, who said that "their concreted river had been there since the 70s and was part of the landscape". The operation involved destroying the concrete riverbed, widening the watercourse to create a winding minor bed and a major bed accessible to walkers.



**Figure 10.** Before restoration (4 m wide concrete channel)-> during work (concrete bed removed and river width widened to 20 m with solid fixing in the ground to withstand a 30-year flood)-> after one year of operation (footpath visible next to gabion line).

Fixing the forms to withstand flooding required major infrastructure, which is now hidden by the natural envelope. Renaturation has enabled biodiversity to be reintroduced into the city, but this is not accepted by all local residents, as it brings in "beasts", by which is meant "pests". In addition, the area is not lit at night, so as not to disturb nocturnal species, including "young people" who like these places to meet up, but leave lots of empty bottles and cans, as there are no garbage cans (they would be vandalized by the animals and washed away in the event of flooding). The economic gain (return on investment) has already been realized, as the buildings along the river have benefited from a new, attractive setting, which is more expensive to resell, and the development has already contained two flooding events that would have created costly damage for the local economy and the municipality. The municipality now has to deal with new conflicts (generational) and the acceptance of naturalness in the city, which was not foreseen at the outset. The economic benefits are confirmed, but the social benefits are not total. Education and compromises still need to be invented.

## Recommendations for successful stakeholder engagement – examples from local city authorities, planners and activists from Finland, France and Poland

Workshops on critical factors were organized in the three case areas. The aim was to bring together different stakeholders to discuss the critical barriers and success factors. The workshops had a common thematic structure that was drawn from the research literature. The main themes were: (i) effectiveness and management of NBS, (ii) organizational aspects, (iii) governance and partnerships, (iv) public awareness, (v) participation and perceptions of NBS, (vi) and financial resources and valuation. Each of the workshops emphasized the themes that were relevant in the case context. Here we present main findings and recommendations related to awareness raising and public participation from each country.

### Communication for awareness raising

In Finland, participants said it is necessary to **clearly and comprehensibly communicate the benefits NBS** provides to people. In awareness raising, one needs to remember that the inhabitants of the city are a large and wide target group for communication. Demonstrations and exhibitions of NBS can concretely showcase NBS in function. There are a few excellent exhibitions also in Finland, e.g., in Marketanpuisto in the City of Espoo where different methods for the management of run-off waters are exhibited. Workshop participants mentioned that targeted magazines could also be used for sharing information, e.g., magazine of Home Owners Association.

Polish stakeholders also argued that it is necessary to **spread information about NBS and its benefits** for society. Such information should include the costs of establishing NBS, as well as various profits, i.e. discounts, savings in bills and expenses, and information on environmental benefits, i.e. protection against flooding, droughts, or improvement of air quality. This information should also include examples of solutions applied in the city, also taking into account the technical feasibility of the various NBS. This, on the one hand, will serve as a tool to raise the knowledge and awareness of the residents and, on the other hand, can support discussions with authorities (to push certain solutions socially) by providing counter-arguments to claims that implementation is not possible because it is too expensive, technically impossible, or there is lack of appropriate legal regulations.

In the workshop in Poland, stakeholders agreed that it is important to be proactive in communication and **attract people through different channels** (e.g., advertising column, social media, local residents, NGOs). Information sharing, via social media or social action in public space, should also be used to stimulate city community on multiple levels, to think, reflect, see the need for change and, naturally, to act. It was also pointed out that the communication (showing the benefits) needs to be adjusted to the needs of the community and directed not only to people who know or are interested in this issue, i.e., to extend the communication beyond the groups of environmental activists.

Greater public acceptance would be possible with more awareness-raising educational campaigns tailored to different groups, so that materials can be understood by lay people.

### **Educational aspects for awareness raising**

The results of interviews, workshops, as well as the experience of Polish, French and Finnish practitioners show the necessity of including educational aspect in all NBS. **Education should take place on many levels**. The need to educate and involve schools in the implementation of new NBS is very much emphasized. Children are treated as an important factor of social change; their involvement can translate into interest among parents.

Through different methods, such as gamification of environmental monitoring for school students or phenomena-based learning at schools, it is possible to get students involved in NBS interventions. If a school is located in an area where NBS are planned it is possible to involve teachers and students in the planning process. Workshop participants in Finland mentioned that in Stockholm each school has been reserved one week or at least some days for getting acquainted with cities water systems, the students visit an exhibition where city guides explain the students the water management systems, including NBS. In Helsinki region, there is no centrally steered communication, but stakeholders and cooperation organizations carry out communication by themselves. Awareness-raising actions on water and river management are developed for pupils who take part in field work and school projects with river union of the Yzeron watershed – SAGRYC. Also in Łódź, there are educational activities aimed at schools and guides issued by the city office, and the ATENAS project conducted workshops to familiarize the local community with the assumptions on the use of water, not only in the circulation in nature, but the possibility of its self-capture in a rainwater tank.



## Citizen engagement in planning, maintenance and monitoring

The Finnish workshop participants argued that participation in NBS planning depends on the type of the area. In a new area that is still to be developed, it is challenging to identify stakeholders. New inhabitants of the area are not known yet. Stakeholders can be found in neighboring areas, but their viewpoints may differ from the future inhabitants of the area. In an existing neighborhood, it is much easier to identify stakeholders. It needs to be decided on which level and scale you should arrange participatory actions, catchment, city quarters or real estates.

From the NBS planning perspective, Finnish workshop participants considered it important to get **ideas from citizens who know the local environment**. It would be good to identify activities where voluntary people can take bigger responsibility and arrange possibilities for people to be active and do things by themselves. This requires additional resources e.g., tools for the work that could be provided by the city. Collective work also needs management and guiding, otherwise people may implement controversial or obsolete solutions. In the best case, it is possible to find coordinators or persons who are ready to take responsibility for collective work among the active participators.

Another good solution is to **utilize groups that are already organized** (local environmental groups, fishing clubs for river and brook restoration, etc.). It was also discussed what kind of actions are most suitable for citizen involvement. Stormwater management is the responsibility of the real estate owners, and the city water company is responsible on a larger scale. The restoration of brooks was mentioned as a good example of voluntary action on NBS in Finland. Voluntary participants have carried out restoration measures with successful results: trouts have returned to brooks for spawning.

In the Polish experience, proposed and implemented NBS should be **adapted to the realities of social problems in each region/district**, because people who live in close vicinity of place create its identity (there is a risk that decision-makers impose visions of the place and convince its inhabitants). This requires the involvement of residents on many levels, whether planning, executing, maintaining or monitoring the effects. Only in this way, bearing in mind social needs, is it possible to build co-responsibility for actions and for the place. In other cases, the actions of the decision-makers may meet with reluctance or even vandalism.

Based on the Polish stakeholder interaction, the planning stage should **involve the widest possible range of experts** who will present the possibilities according to the accepted scientific knowledge and technical possibilities and standards for the city. This procedure will help to avoid disappointment of the residents, which was found out in the case of the City Office workshop “Streets of Old Polesie” with the residents. Urban planners informed citizens about terms and conditions, which has helped to avoid a situation where residents have chosen extreme solutions that cannot be implemented. Only dialogue supported by expert knowledge allowed to choose optimal solutions.

### **Inclusive engagement to overcome social barriers**

In order to talk about inclusive engagement, it is necessary to take into account the universality and transparency of the process of involving residents. This means that everyone should have the opportunity to learn about and participate in the planned processes, and information about the purpose, principles, process and results of the activities must be widely available.

During meetings in Poland, residents and activists addressed the topic of involvement in initiatives to improve environmental conditions in the city. The lack of citizen involvement in planning activities was explained by a lack of sense of community and common space, lack of time, no reason to get involved, and lack of citizen trust in city officials' declarations regarding implementation of proposed solutions. If citizens are convinced that their voice will not change anything, they do not participate (considering it as a waste of their time). As factors enabling engagement were mentioned: interesting **initiative, with a strong focus on improving the quality of life**, and **significant role of community leaders** in initiating and implementing various environmental project. For citizen engagement, there is need for a lot of **education and activation measures** (community animation, streetworkers) to build communities around the initiative because of the high level of mistrust.

The need to create a sense of cooperation and co-responsibility for solutions created in the Łódź was raised by citizens, decision-makers and local activists. This strengthens citizens' activities and gives them the opportunity to take care of the area. Similar, the Finnish workshop participants emphasized the significance of **citizen engagement that creates sense of responsibility** for the environment among dwellers.

The problem may be excluded social groups, the elderly, the poor, who may find it difficult to participate in online and on-site meetings. This was further highlighted by the COVID-19 pandemic, where face-to-face meetings were not recommended, and participation in planning had to be organized online. It was discussed whether internet-based tools / questionnaires treat people equally. Some people are very practical with the tools, but other groups can be excluded. The epidemic also reinforced by the existence of other, more important problems than blue-green infrastructure problems. Together with local activists and animators, solutions are being sought on how to involve and integrate excluded groups, not only in pandemic times:

- forms that allow for non-contact communication with residents, e.g., placing posters in publicly accessible areas asking people to record their thoughts, attitudes and needs,
- organization of meetings, workshops with immediate vicinity of potential area of implementation, or where the target group lives or visits,
- organization of outdoor meetings,
- organization of more meetings with fewer people.

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## Atenas D5.1 Identification of stakeholders and ways to engage them in co-design actions

### Guidelines

*Author: Kati Vierikko*

### **Three steps for stakeholder participation** (INFACT Deliverable D2.5)

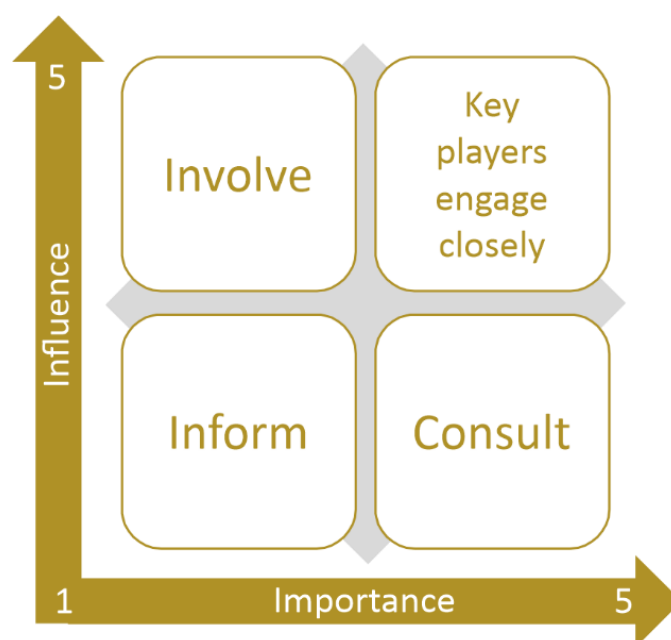
- Participation processes can and should be designed in accordance with two major organizational principles: ***inclusion and closure***
- ***Inclusion*** means that the organizing team needs to decide whom to involve and what topics to include. First, it needs a rationale to select those who are invited to become participants of the involvement and those who are left out
- ***Closure*** includes the concept and methods of how these participants are going to be involved and engaged. First, the team needs to select a format or a set of formats that it will use

### **Step 1: List potential stakeholders** (INFACT Deliverable D2.5)

- Stakeholder can be considered as individuals, organisations and or other entities that have an interest in the project, may be affected by the project or can have an effect on the project
- Identify potential stakeholders by asking:
  1. Who are potential beneficiaries?
  2. Who might be adversely affected?
  3. Who are the supporters and who are the opponents?
  4. Who is most likely interested in the project or the actions planned?
  5. Who is affected by the project?
  6. Who has an effect on the project?

## Step 2: Choose and classify stakeholders

- After listing potential stakeholders, identify their potential influence and how relevant the project is for them
- Stakeholder mapping power matrix (Figure 1): **1**=low potential influence and or potential importance; **5**=high potential influence and or potential importance) (after: Innovation for Social Change 2014, <http://innovationforsocialchange.org/stakeholder-analysis/?lang=en> (Source: INFACT Deliverable D2.5))



**Figure 1.** Stakeholder mapping power matrix

## Step 3: Define participation level

- Finally, decide the level of engagement based on Arnstein's model as a indicators for measuring participation efficiency (Figure 2):
  1. Informing (one way)
  2. Consultation (two way- one off)
  3. Involvement (two way- continuous)
  4. Collaboration (discussion and making decisions together)
  5. Empowering (making decisions together)



INCREASING IMPACT ON THE DECISION

	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision. We will seek your feedback on drafts and proposals.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will work together with you to formulate solutions and incorporate your advice and recommendations in the decisions to the maximum extent possible.	We will implement what you decide.

**Figure 2.** International Association of Public Participation (IAP2) - public participation spectrum (changed)





