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From rhetoric to practice: new collaborations for urban blue-green infrastructures

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Abstract: In the shift from grey to blue-green infrastructures (BGI), urban water management currently advances nature-based and multi-purpose strategies. Therefore, both theory and practice argue for a multi-stakeholder perspective, but urban water management remains a technocratic and engineering-driven field. This paper explores new forms of internal collaboration (within the municipality) and external collaboration (with other stakeholders) in ten European BGI-projects, and the underlying motivations for establishing these collaborations. The cases demonstrate different degrees of collaboration, which can be explained by three factors: the framing of the project, the lead municipal department, and the organisational strategy.

Keywords: green infrastructure; collaboration; governance; participation; climate change.

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1. Introduction

In the quest for a climate resilient city, grey infrastructures are considered inadequate for coping with the impacts of climate change. Instead, blue-green infrastructures are proposed, which can be used to store water in case of heavy rainfall and periods of drought. Examples of blue-green infrastructures include parks, raingardens and green roofs. Urban re-structuring projects enable cities to seize the moment to create amenities that serve multiple purposes, both in terms of climate change and for instance liveability. To illustrate, urban parks can store a higher amount of water, but can serve recreational, ecological and social purposes as well.

Blue-green infrastructures originate from the field of urban water management, which is often typified as a technocratic and an engineering-driven sector (Malekpour et al., 2015; Furlong et al., 2016). Common urban water management strategies are to optimise the existing sewage system, such as expansion of water storage or improved water treatment. These strategies take place in a single sector, i.e. technical domain of water management. However, for making cities climate-proof, urban water management strategies increasingly take into account the natural water cycle and aim for a multi-purpose end-product. First, instead of discharging water as quickly as possible, more nature-based strategies are sought to give space to the water. Second, these strategies nowadays include plans to create other benefits related to the environment, society and economy. In order to accomplish a multi-purpose end-product, the technocratic perspective is opened up to a multi-stakeholder perspective, through which water and green areas can serve recreational, ecological and liveability goals as well. In this paper, the agenda-setting and delivery of blue-green infrastructures is therefore considered a matter of multi-actor governance.

Despite new nature-based and multi-purpose strategies, several authors have pointed towards the ongoing dominance of a sectoral, technical approach to urban water management (Brown & Farrelly, 2009; Furlong et al., 2016). This suggests that the discourses of urban water management might have changed, but we do not know whether the actual practices have changed too. In this paper, we first study the extent the shift from mono-sector towards multi-stakeholder and collaborative urban water management has been made. Second, this paper aims to identify which factors influence the extent to which the urban water management system opens up to this multi-stakeholder perspective. Our analysis is based on a case-study comparison of ten West-European cities, which all started blue-green infrastructure projects.

2. Understanding multi-actor governance in urban water management

The shift in urban water management from a closed shop to an open process for other stakeholders can be analysed internally, within the municipality, and externally, between the municipality and other stakeholders. First, the extent to which municipalities are open to multi-stakeholder approaches can be understood with insight from the literature on joined-up government, which looks at horizontal coordination between municipal departments (Pollitt, 2003; 6, 2004). In this paper, we examined for each case which departments are involved in blue-green infrastructure projects, and how they work together. Second, we are interested whether the municipality is open to other non-governmental actors. We used insights stemming from collaborative governance, which Ansell and Gash (2007: 544) define as *"where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets."* In this paper, we analysed which stakeholders participate in blue-green infrastructure projects, and to what extent this participation can be considered collaborative (rather than just consultation).

Both elements were analysed in urban water management projects in ten Western-European cities[1]: Aberdeen, Antwerp, Bergen, Bradford, Dordrecht, Enfield, Ghent, Gothenburg, Hamburg and Kent. All cities face climate change, for which they are developing innovative water management

[1] These cities collaborate and exchange experiences in the Interreg-project "Blue-Green Infrastructures through Social Innovation" (BEGIN), see https://northsearegion.eu/begin/.

approaches. The data gathering consists of a multi-method approach (ongoing at the moment of writing). First, we distributed a questionnaire among all municipalities late 2017 and 2018 in order to gather the perceptions of civil servants about their projects. Second, observations at regular meetings of the ten cities, including field visits to the projects, provided additional insights. We analysed the questionnaire by looking at the project scope, which departments were (not) involved, and which stakeholders are (not) collaborating. Consequently, we are able to present a preliminary overview of the degrees of joined-up government (internal collaboration) and collaborative governance (external collaboration) in the ten case studies. This overview will be triangulated with findings from a series of interviews with key stakeholders late 2018 and early 2019.

3. Internal and external collaboration in urban water management

3.1. Current practices

This section provides a brief overview of current practices in the ten European cases. Regarding collaboration within the municipality, we witnessed two developments. First, the departments that join the collaboration are mainly closely related sectors that are also responsible for public space, such as departments of Spatial Planning, Landscape Design, Parks & Recreation, and Roads. Less explored are linkages with welfare and health care, which relate for instance to liveability, social cohesion and neighbourhood improvements. However, project documents often state the social benefits of blue-green infrastructures, such as recreation opportunities or the contribution to general wellbeing. Departments related to social affairs are nevertheless not involved or only from a distance, which seems motivated by separated funding streams and policy agendas.

Second, across the projects, we witnessed that new, unusual linkages are created with departments related to participation, education and communication. To illustrate, the City Councils of Antwerp and Ghent use the expertise from their municipal “CityLab”, which helps in organising particular pilots and participation with the wider public. This leads not only to engagement of external stakeholders, but also to a better alignment between internal departments. Indeed, living labs bring together departments that usually interact irregularly, which increases the understanding of each other’s role and responsibilities. The result of the living labs are prototypes that are tested in the public space. In addition to participation, the City Councils of Gothenburg and Aberdeen explicitly state education purposes in their projects, related to raising awareness. For instance, Aberdeen aims at involving the Fernielea School in the preservation of the Den of Maidencraig, whereas Gothenburg focuses on wider involvement of children, schools and families in redeveloping the Frihamnen harbour district.

With the inclusion of departments that help developing new participation forms, new stakeholders could be expected. However, this seems not the case in the ten cities. The local stakeholders are well-known. With them existing ties are strengthened through the use of collaborative approaches and structures, such as living labs and experiments. For instance, the Living Lab Spatial Adaptation in Dordrecht resulted in a shared commitment between different governments, a housing association and local citizen initiative. The City Council of Gothenburg has developed multiple prototypes with local stakeholders for temporary use in Frihamnen over the last four years. The City Council of Antwerp is planning something similar along the Scheldt Banks.

Wider stakeholder involvement occurs in cases in which the Spatial Planning department takes the lead. Cases in which the water management department is leading often fall back (or stick to) a technical approach to the projects. In these cases, urban water managers seem to prioritise their goals over other needs and desires. Urban water managers often have an urgent need to address and want to get started as soon as possible. Here, we observe a mismatch between the interest-driven urban water managers (related to e.g. climate adaptation, water storage) and place-driven stakeholders (e.g. residents who want to improve their neighbourhood). Spatial planning departments can play a role in connecting both worlds.

3.2. Motivations for collaboration

The ten cases have applied ideas from joined-up government and collaborative governance to different degrees. The cities can be grouped into two set of cases, with each group having its own motivations why (not) to pursue joined-up government and collaborative governance.

The first group translates blue-green infrastructures into a need for more nature-based solutions (e.g. Hamburg), for instance called sustainable urban drainage systems (e.g. Aberdeen, Enfield and Kent). From this perspective, change is sought in the urban water system itself, visible in new, greener forms of infrastructures, such as raingardens and parks. These concrete interventions become visible at specific plots. For example, Enfield City Council has constructed raingardens along main streets to release pressure on the sewage system. Likewise, Hamburg City Council has executed technical improvements at particular sites. For this group of cities, the shift from grey to green infrastructures is predominantly a task for the urban water management department. The focus is engineering-driven, albeit with a sharper eye for green issues. A continuation of valuing engineers often fits with the organisational legacy of the departments, which have often strongly relied on engineering and expert knowledge. With the technical angle, there is no necessity for a more prolonged engagement with other municipal departments or stakeholders. Other departments and stakeholders can already express their opinions during established consultation moments. However, we witnessed more engagement with local residents (charities, community groups), because greener solutions lead to a higher use of public space. For instance, Enfield City Council has developed a collaboration with a local charity in preserving the Pymmes Brook Catchment.

The second group of cities frames the need for blue-green infrastructures as an opportunity to revitalise neighbourhoods or even city districts. To illustrate, Bergen, Gothenburg and Bradford have ambitious plans to regenerate former industrial neighbourhoods and corridors. Accordingly, delivering blue-green infrastructures moves beyond delivering climate adaptation measures. Also social issues such as liveability, wellbeing and recreation are explicitly incorporated in these blue-green infrastructure projects, led by spatial planning departments. These departments often start pilots in order to initiate redevelopment. Blue-green infrastructure projects are thus deliberately positioned outside the regular ‘mother organisation’. For instance, Antwerp City Council has started the Living Lab ‘Sint-Anneke Plage’ for improving part of the Scheldt Banks. Similarly, Dordrecht City Council has used a funding opportunity to bring the fields of water management and social affairs together in a living lab. In Dordrecht, more water storage and better water discharge is combined with improving the social housing stock and better access to the neighbouring sport fields. Gothenburg City Council has appointed the Jubilieumsparken as a place for experimentation, in which temporary use is allowed. These instances

often result in prototypes and showcases. Pilots and labs can foster either joined-up government, collaborative governance, or both. In the case of Antwerp, the Living Lab is mainly used as a tool to bring together the different municipal departments (e.g. water management, spatial planning, and energy) and the waterway authority. The City Council hopes that these newly established ties will also continue once the living lab is finished. Dordrecht and Gothenburg City Council have established in their pilots new collaborations with external stakeholders, such as social entrepreneurs, semi-public agencies like housing associations, and local residents. Cities indicate that the challenge is to connect them to regular organisational structures to prevent that they remain just an experiment.

4. Conclusions and discussion

Blue-green infrastructures seem to require an opening up of urban water management, both internally through joined-up government and externally through collaborative governance. The ten European cases all use a more integrated discourse when they adopt the idea of BGIs. However, they show different degrees of opening up. Our preliminary analysis suggests that the degree of opening up seems to be mediated by three factors (summarised in table 1): (1) framing of the issue, (2) the lead department, and (3) positioning the projects outside regular work processes in 'living labs'.

Table 1. Three factors that influence the opening up of blue-green infrastructure (BGI)-projects.

	Closed BGI-projects ⟷	**Open BGI-projects**
1. Framing	BGI requires *nature-based solutions*: climate adaptation as the principal project aim	BGI as *opportunity to revitalise neighbourhoods or city districts*: climate adaptation as one of the aims and trigger for other values
2. Lead department	Led by engineering departments (focus on maintenance)	Led by spatial planning departments (focus on development)
3. Organisational strategy	Executed within regular practices and procedures	Established in pilots and experiments, separated from regular work

These factors mutually enforce each other: the lead department has a decisive impact upon how BGIs are framed and which strategy is chosen for implementation. The organisational positioning of projects, and thus the administrative tradition a project is embedded in, can have significant implications for the way in which a project is worked out. For all municipalities in our analysis, opening up often resulted in strengthening ties with known stakeholders rather than developing new relationships. The ten cases are altering their practices, albeit in an incremental way, which points to a strong influence of the municipal organisational legacy. For the cases that are smaller-scale and engineering-driven, change is seen in the inclusion of greener elements in their projects that lead to a more pleasant living environment. For the cases that are led by spatial planning departments, change is seen in the establishment of experiments for testing new interventions and prototypes of more multifunctional infrastructures.

Table 1 can also be regarded as a first step for a research agenda, in which the interrelationships between internal and external collaboration are further investigated. The question arises whether ideas from joined-up government and collaborative governance can complement or contradict each other. In

other words, are municipalities on the horns of a dilemma, forced to trade of one for the other? Or can they bridge both ambitions, and if yes, under which conditions? To illustrate, the living labs in the cases are aimed at incorporating non-governmental stakeholders, but often also trigger the incorporation of other municipal departments. Collaborative governance, then, seems to become a vehicle for obtaining joined-up government. Future research can explore supportive organisational conditions that enhance internal *and* external collaboration, leading to successful multi-stakeholder approaches required for future urban water management projects.

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Conflict of Interest

The authors declare no conflict of interest.