

Journal of Environmental Policy & Planning

ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/cjoe20>

How actors are (dis)integrating policy agendas for multi-functional blue and green infrastructure projects on the ground

Jannes J. Willems , Anna V. Kenyon , Liz Sharp & Astrid Molenveld

To cite this article: Jannes J. Willems , Anna V. Kenyon , Liz Sharp & Astrid Molenveld (2020): How actors are (dis)integrating policy agendas for multi-functional blue and green infrastructure projects on the ground, Journal of Environmental Policy & Planning, DOI: [10.1080/1523908X.2020.1798750](https://doi.org/10.1080/1523908X.2020.1798750)

To link to this article: <https://doi.org/10.1080/1523908X.2020.1798750>



© 2020 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 10 Aug 2020.



Submit your article to this journal [↗](#)



Article views: 149





View related articles [↗](#)



View Crossmark data [↗](#)

How actors are (dis)integrating policy agendas for multi-functional blue and green infrastructure projects on the ground

Jannes J. Willems ^a, Anna V. Kenyon^b, Liz Sharp ^c and Astrid Molenveld^a

^aDepartment of Public Administration & Sociology, Erasmus School of Social & Behavioural Sciences, Erasmus University Rotterdam, Rotterdam, The Netherlands; ^bSchool of Biological Sciences, University of Manchester, Manchester, United Kingdom;

^cDepartment of Urban Studies and Planning, University of Sheffield, Sheffield, United Kingdom

ABSTRACT

Local governments are increasingly considering blue and green infrastructure (BGI) in order to climate-proof cities. Because BGI can have multiple benefits beyond climate adaptation, policy integration is required. Since drainage services have traditionally been within the remit of a single department, this is new territory for water management. This article provides a dynamic perspective on the messy process of policy integration ‘on the ground’ in two BGI projects in Dordrecht, NL and Bradford, UK. Drawing on interviews with key actors involved in the cases, our research question is: *How are ambitions to integrate policies resulting in multi-functional BGI projects?* While previous research typically defines organisational structures as barriers for policy integration, our findings demonstrate instances of actors who are successfully navigating these structures as a route towards policy integration. Nevertheless, we found that actors who push for BGI lack resources and authority, so they mainly rely on more voluntary forms of policy integration that involve concerted action over a number of years. Overall, our cases demonstrate that space for policy integration exists and powerful agencies are sympathetic to this, but more support is needed to achieve this mandate.

ARTICLE HISTORY

Received 17 February 2020



Accepted 15 July 2020

KEYWORDS

Green infrastructure; policy integration; urban water management; climate adaptation; environmental governance

1. Introduction: the difficulty of delivering blue and green infrastructure

Climate change, urbanisation and an ageing infrastructure means cities in western Europe are increasingly confronted with the inadequacy of grey infrastructure to deal with climate change impacts such as increased drought, flood and water pollution risks (Jones et al., 2012). Blue–Green Infrastructure (BGI) refers to new features that use ‘natural’ water and plant processes to offer a potential solution to these water-related challenges, such as green roofs, raingardens in urban parks and permeable paving (Brink et al., 2016). In addition to their water-related advantages, well-designed BGI may also provide a variety of other benefits (Wingfield et al., 2019), including improving air quality, noise reduction, and public health contributions (Fenner, 2017). Despite these widely understood potential benefits of BGI, uptake of such interventions has been low and has met with implementation obstacles at the local level (Jerome et al., 2017). While new water-oriented BGI are typically the responsibility of urban water managers, the locations of proposed BGI inevitably overlap with other functions such as highways, parks and public space. To win wider support for BGI, the field of urban water management has been exploring whether and how investments oriented to climate adaptation can incorporate other municipal goals and/or how other municipal investments can be designed to incorporate BGI (Rauken et al., 2015; van den Berg & Coenen, 2012).

CONTACT Jannes J. Willems  willems@essb.eur.nl  Department of Public Administration & Sociology, Erasmus School of Social & Behavioural Sciences, Erasmus University Rotterdam, P.O. Box 1738, Rotterdam, DR 3000, The Netherlands

© 2020 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

For the purposes of this paper, the integration of water with any ‘non-water’ municipal agenda is achieved in any BGI which has been explicitly designed and implemented with other functions, like spatial planning, health or transport infrastructure. The ability to integrate policy agendas is presented as a vital factor to create more effective and/or more legitimate policy solutions, especially in the case of challenges such as climate change (Trein et al., 2019; Westling et al., 2019). The policy domain usually responsible for the creation of BGI, urban water management, is often typified as technocratic and engineering-driven, with limited involvement with other domains (Furlong et al., 2016).

Previous research has reported on the extent to which urban water management has been integrated with other policy goals, for example examining barriers for climate adaptation mainstreaming (e.g. Measham et al., 2011; Oseland, 2019; Uittenbroek et al., 2013). While this more top-down conception regards policy integration as an output (something that is either achieved or not; Tosun & Lang, 2017), it provides limited insights about actors’ rationales for pursuing policy integration. By considering policy integration as a more dynamic activity pursued by actors that may utilise different rationalities (Candel & Biesbroek, 2016; Huttunen et al., 2014), we can understand how and why government officials are deliberately *integrating* or *disintegrating* policy agendas. Following Sharp (2017, p. 200), there is no one perfect form of integrated policy making, but rather many various ‘integrations’ of topics and scales, cycling in and out of favour as different problems dominate our attention. Accordingly, policy integration becomes a continuously contested, political process, that is manifested at multiple scales and levels from formal governmental directive to ‘ground-level’ implementation. This multifaceted, dynamic perspective can be used to examine stakeholder involvement in different dimensions of policy integration and helps to understand how and why actors are engaged in policy integration. This understanding is applied to two cases where BGI was being pursued, one in Dordrecht, NL and another in Bradford, UK. Our research question is: *How are ambitions to integrate policies resulting in multi-functional BGI projects?* This research contributes, societally, to our understanding why BGI is difficult to deliver by providing more insights in the underlying process of policy integration. Scientifically, we apply a dynamic conception of policy integration to the ‘on-the-ground’ delivery of urban water management infrastructure.

This paper firstly introduces our model of policy integration in further detail and then describes the methodology whereby this model is applied to two case studies. This is followed by a discussion of the results and a reflection on our model and differences across the cases. The final section presents the conclusions and recommendations.

2. Theoretical framework: policy integration for BGI

2.1. Policy integration: an introduction

Policy integration has been widely covered in public administration research (Christensen & Lægreid, 2007; Peters, 1998). Also, the field of environmental governance has a long tradition focusing on how environmental topics integrate with other fields of policy (Lafferty & Hovden, 2003; Rauken et al., 2015). Recent overviews show that many studies have defined either the need for policy integration, or existing barriers to its achievement (Molenveld et al., 2020; Tosun & Lang, 2017; Trein et al., 2019). Likewise, Candel and Biesbroek (2016) describe how most of the literature adheres to a static conception of policy integration, as either achieved (or not). Instead, these scholars argue that policy integration resembles a dynamic process; they define policy integration as a verb in which multiple components work together, either enhancing or obstructing the reframing of previously separate policy agendas as interconnected. Policy integration hence becomes a process that is continuously contested by different actors, who may have different opinions in (dis)favour of integration between different units and across different scales (Sharp, 2017). Consequently, for a better understanding of the underlying mechanisms behind policy integration, more attention needs to be paid to the internal dynamics of policy integration (Candel & Biesbroek, 2016; Huttunen et al., 2014; Molenveld et al., 2020).

2.2. Understanding policy integration: an analytical framework

Unravelling the dynamics of policy integration could be done by examining four elements of policy integration (Table 1; Candel & Biesbroek, 2016). While the elements are not mutually exclusive, its categorisation and dynamic approach provides a pragmatic heuristic for examining policy integration. These elements will play out differently across cases, because policy integration is a complex and contextual process (Jordan & Lenschow, 2010). To illustrate, knowledge and expertise for BGI is dispersed among policymakers from different disciplines, so they jointly have to constitute what is knowledge, and thus how and why policy integration is needed (Sharp & Richardson, 2001). Candel and Biesbroek (2016) dynamic perspective adopts a more top-down stance focused on the government apparatus in operationalising the elements of policy integration, our framework looks explicitly at the ground level, examining the rationales of policymakers from different municipal units and non-governmental actors. As Huttunen (2015) puts it, these actors recognise the effects of policies in practice and they experience the organisational barriers of policy integration. Accordingly, examining how they are navigating their way through enables a novel ‘ground up’ insight into the challenges of policy integration (Huttunen et al., 2014).

The first dimension concerns *the policy frame*. A policy frame functions as a framework of understanding that demonstrates how a government perceives the world, but the policy frame also provides a set of strategies in order to translate the frame into practice. As governments deliberately highlight and downplay particular aspects in a frame, framing is a strategic activity (Van Hulst & Yanow, 2016) which is often associated with agenda-setting exercises in public policymaking (Hertin & Berkhout, 2003). In the field of urban water management, dominant policy frames are often technical and managerial (Willems, 2018). To illustrate, Fünfgeld and McEvoy (2014) show how a risk-averse frame developed by Australian water authorities promotes climate adaptation as a governmental risk management task, while a community resilience frame is more outward-looking – and hence policy integration with other social and environmental agendas becomes more likely.

The second dimension relates to the involved *policy domains*. In general, urban water management takes place within the limited remit of drainage services, which are increasingly seen through the lens of climate adaptation (Susskind, 2010), yet the potential overlap with other policy domains through BGI is much broader. For example, the presence of BGI can offer physical and mental health benefits, enhance biodiversity and provide spaces for social interaction (Fenner, 2017). Accordingly, BGI may prompt integration between water management and local land-use control, nature conservation, community development or public health. Policy domain is therefore concerned with the department or function which is seen as relevant to a task.

The third dimension of policy integration is *policy goals*. According to Candel and Biesbroek (2016, p. 220), this means ‘the explicit adoption of a specific concern within the policies and strategies of a governance system’, which are stated in policy documents or project plans. While urban water management used to be a sectorally-driven domain, notions such as Integrated Urban Water Management have invited the integration of multiple objectives (Furlong et al., 2016). The policy goals are therefore these explicitly articulated co-benefits.

The fourth and final dimension is the *policy instruments* that governments use to realise their objectives. Previous research has distinguished four categories of policy instruments for climate adaptation: regulatory, market-based, communicative and organisational (Henstra, 2016), but some instruments can bridge these categories. Urban water management has traditionally been provided by the state and is well-known for its hierarchical instruments, such as rules about the nature of domestic roof drainage (Furlong et al., 2016). The field

Table 1. Five dimensions of policy integration (based on Candel & Biesbroek, 2016).

Element	Description
Policy frames	Dominant <u>frame</u> or narrative
Policy domains	Which <u>actors</u> are involved (+ what role?)
Policy goals	<u>Goals</u> in project plans/strategic visions
Policy instruments	The <u>means</u> to realise these goals: zoning, living lab, pilot, subsidies, etc
Policy context	The <u>multi-level setting</u> in which BGI projects are developed

has also incorporated more managerial, market-based aspects that promote efficiency and accountability, such as the use of cost–benefit analysis as a route to assess flood-resilience investments in England and Wales (O’Hare & White, 2018). In addition, communicative instruments have been implemented in order to gain more legitimacy in some localities, for example, as a means of managing water demand (Sharp, 2006).

Because of the processual conception of policy integration, the framework primarily considers horizontal forms of policy integration. However, policy integration also entails vertical integration between different levels of government (Lafferty & Hovden, 2003). Although typically implemented in a local governance context, BGI can influence and be subject to both constraints and enabling influences from local, through regional, to national and global scales. Effective practice involves adapting to the unique conditions and trajectory of individual circumstances, requiring adaptation and interpretation of national policies in a local context which in turn will test local institutions’ ability to move towards integrated policy approaches. Therefore, we developed a fifth dimension in the policy integration framework by Candel and Biesbroek (2016) that captures this vertical dimension: ‘policy context’ (Table 1). The policy context can be defined as the multi-level context in which urban climate adaptation policies are developed. This relates to the ways responsibilities for urban climate adaptation are distributed among local, regional and national authorities (Bulkeley & Betsill, 2013). Although national and regional authorities have often developed climate adaptation policy programmes and funding schemes, an ‘institutional void’ exists regarding the role of local governments (Lundqvist, 2016). As a result, local governments have to navigate within this policy context for formulating BGI solutions. Depending on the interpretation of the context, the integration of policy agendas could either be enabled or obstructed.

3. Methods

3.1. Introduction to the case studies

This article builds from a comparative case study of European cities that participated in the Interreg-project BEGIN, which aims to demonstrate how cities can improve climate resilience with Blue Green Infrastructure involving stakeholders in a value-based decision-making process. Based on a questionnaire distributed late 2018, two cities were selected which had the highest ambitions regarding policy integration in their BGI project, in which ‘more integrated’ examples of BGI are likely. As such, they provide examples of ‘critical cases’ as understood by Flyvbjerg (2006), demonstrating what can and cannot be achieved in terms of the five dimensions of policy integration by ‘more active’ municipalities within the current system. The case study sites selected were Dordrecht (the Netherlands) and Bradford (United Kingdom). The projects are summarised in Table 2. Though both projects relate to BGI within cities, the Dutch example involves retrofitting the infrastructure into an existing neighbourhood whereas the Bradford project involves the regeneration of a larger area including the creation of a new neighbourhood connected by an urban water course and a newly widened road.

Table 2. Introduction to the case studies.

	Vogelbuurt, Dordrecht NL	Bradford Beck, Bradford UK
Type of BGI considered	Raingardens, new greenspaces (wetland, park)	Regeneration of land adjacent to planned highway expansion including new housing, de-culverting of a watercourse, improvements to accessible greenspace and facilitating active travel
Scale of the project	Neighbourhood (approximately 75 hectares)	Highway & waterway corridor along approximately 3 miles.
Project phase	Exploration and planning (started in 2018)	Public consultation started November 2019
Institutional setting	Water management and spatial planning are considered a public task in the Netherlands. Responsibilities are decentralised to the local level and assigned to different public actors, most importantly Dordrecht City Council and local water authority Hollandse Delta. Private involvement (residents, businesses, NGOs) is usually limited.	Surface water management and the management of local water courses is the preserve of local government. Highways are also managed by local government, but large investments are the preserve of the ‘West Yorkshire Combined Authority’ that manages overarching transport issues in the region.
Involved actors	Several municipal departments, local water authority, housing association, welfare workers, sport clubs	Several municipal departments (Landscape and Highways Department), community groups

Table 3. List of interviewees.

	Dordrecht	Bradford
1	Policy advisor BGI, Dordrecht City Council (D1)	Development Services Manager, Planning, Transportation & Highways, Bradford Metropolitan District Council (B1)
2	Policy advisor welfare, Dordrecht City Council (D2)	Health and Wellbeing Programme Manager (B2a), Bradford Metropolitan District Council
3	Project leader Urban Drainage, Dordrecht City Council (D3)	Health and Wellbeing Programme Manager (B2b), Bradford Metropolitan District Council
4	Project leader Renovation <i>Vogelbuurt</i> , social housing association <i>Woonbron</i> (D4)	Highways Design Unit engineer, Bradford Metropolitan District Council (B3)
5	Chair of local welfare organisation <i>Vogelnest</i> (D5)	Public Health consultant (B4)
6	Chair of Sport Council Dordrecht (D6)	Friends of Bradford Becks representative (B5)

3.2. Data collection and analysis

One-to-one interviews were carried out with six key stakeholders from each case study site (details in Table 3). We identified the professionals – both public and private – that are involved in the BGI projects and interviewed them to gain first-hand insights about actors’ rationales for BGI and their impacts. These were the individuals who were concerned with the conception, design and management of the project, and hence with making policy integration happen ‘on the ground’ (or not). We saw their accounts as providing complementary and sometimes conflicting stories about how policy integration was occurring.

Stakeholders were invited to take part by email or face to face. Invitations were sent to individuals from as many different departments and agencies as possible and interviewees received no reimbursement for their participation. Since the interviewees self-selected, the results cannot be considered to cover the full breadth of potential perspectives. Nevertheless, they offer a unique international comparison of stakeholder perceptions about policy integration in the context of BGI implementation in two different settings. Interviews were conducted between January and October 2019, and lasted between 30 and 90 min. The interviews examined stakeholders’ involvement in the BGI and whether and how their policy agendas were considered alongside those of others. Some additional material pertinent to the Bradford case was obtained from publicly accessible social media sites, such as the Facebook group page of the Bradford Cycling Campaign. All interviewed were audio recorded and transcribed, then transcripts were thematically analysed and coded. The first two authors reviewed the coding of transcripts from both countries to ensure consistency between case studies. The Bradford study was approved by the University of Sheffield ethical committee in September 2018. In our data analysis, we followed a three-step approach:

- (1) Setting out the internal dynamics for each case: looking at the five dimensions of policy integration (Table 1);
- (2) Comparing the two cases with each other;
- (3) Looking for the commonalities in relation to the mechanisms through which policy integration was supported or hindered in the two cases.

4. Insights from the two cases

This section discusses first the five elements of policy integration, both city by city and then in comparison, followed by a reflection on our findings.

4.1. Policy frames

In Dordrecht, two frames emerged. The first emphasises the potential benefits of BGI and joint responsibilities for climate adaptation. In 2018, a dedicated team for making Dordrecht a ‘blue-green’ city was created. Interviewees from this team said integration was important for effective climate adaptation: ‘[Y]ou can realise much

more if you do it together with the parties that can gain a lot from those [climate adaptation] measures'. (D3) The choice to create this team is in keeping with longstanding Dutch traditions of cooperating in the face of water threats (OECD, 2014). This tradition is particularly strong in Dordrecht, which was devastated by floods in the fifteenth Century and remains liable to sea, river and surface water flooding.

The second frame stems from neighbourhood organisations, such as the housing association Woonbron and welfare workers from Vogelnest. In this frame, the creation of BGI is perceived as a positive element in this deprived neighbourhood: *'We aim to create a more beautiful neighbourhood. More liveable for the people, you want that everybody feels proud of their neighbourhood. If there are plans that will make the neighbourhood more attractive, we always want to collaborate'. (R4) Interviewees stated that a more attractive neighbourhood may result in more satisfied residents, less deterioration and increased social cohesion. The frames are complementary because while the parties behind both frames may have different interests why to pursue BGI, but the BGI itself is not questioned. Both frames are in favour of policy integration, as actors' frames look for alignment and synergies.*

In Bradford frames centred around the concept of urban improvement, with all interviewees referring to how the regeneration could deliver improvements to an area. One framing emphasised the project's wide remit fulfilling multiple agendas (*'it hits so many things'* (B1)). The stakeholder considered this to be a new way of working *'making a very hard highways scheme move into different areas they're not used to'* (B1). This stakeholder perspective stressed a holistic perspective about how the different aspects of the investment worked together, but also noted that this wide remit created uncertainty and lack of clarity as well as scope and opportunity.

Other interviewees' interpretations of improvements varied and reflected their different organisational or departmental priorities, shaping their aspirations and goals for BGI interventions. Interviewees associated with the health and wellbeing perspective recognised the project was primarily a highways scheme but viewed it as an opportunity to inject a health agenda to bring about health improvements, for example through the provision of walking and cycling routes. Meanwhile, an interviewee from an environment-oriented community group considered the project as an opportunity to improve and restore the local stream. The highways engineer framed the project as providing improvements to the two transport corridors, defining the primary objectives as improving connectivity to support economic activity and growth, with secondary objectives to improve quality of life through safety, sustainable transport and reducing air pollution. This interpretation indicates an openness towards the multi-functionality of BGI, rather than a narrow framing of it as a function requirement to enable highways design.

In addition, a more critical frame emerged that questioned the twofold aims of highway expansion and BGI interventions. For example, a member of Bradford's Public Health team demonstrated awareness about the potential negative impact of road widening but strove to ensure that other aspects of the redevelopment supported health goals. *'... expanding roads might not be my preference ... but that's a decision that's already happened'* (B4). Notably, now that the details of planned road scheme have entered into public consultation, activists are voicing this frame on social media,¹ for example, one noted: *'I fail to see how this will improve air quality or tackle the climate emergency'*.

All Bradford interviewees regarded BGI as a way to ensure that a road project also improved local wellbeing, albeit in a variety of different ways. As the project advanced, however, more critical frames emerged that critiqued whether the primary transportation goal was compatible with quality of life improvements. Whereas the 'adaptation' and 'neighbourhood development' frames in Dordrecht can be seen as complementary (or at least only potentially competing for resources), BMDC's emphasis on local improvement can be seen as directly conflicting with the concern about road expansion voiced by environmental activists.

4.2. Policy domains

Based on the interviews in Dordrecht, those involved in the project were drawn from four policy domains. The first domain refers to climate adaptation and urban water management. After the elections in 2018, Dordrecht City Council identified a few city-wide challenges, including 'to make Dordrecht climate adaptive in 2030'. To

this end, the new organisational unit, responsible for the 'blue-green city' (see 4.1), was established. This small department was assigned to make the other departments aware of the need for, but also the benefits of climate adaptation, and to deliver BGI in the city. The department perceived the Vogelbuurt as a promising neighbourhood where they could do this. To this end, teaming up with the regular department of urban water management, responsible for the sewage system, was essential. The operational department has clear allocated tasks for replacing the existing sewage system and did not see the need to incorporate BGI without additional funding.

The second domain is housing. The Vogelbuurt neighbourhood has a large social housing estate, built in the 1950s, which the housing association Woonbron is currently renovating. As the housing association representative stated, this renovation will be done in a greener way, for instance with the creation of façade gardens and disconnecting the houses' roof drainage from the sewage system. The third domain relates to wellbeing. Both the key municipal department and the social entrepreneurs, Vogelnest, saw opportunities to involve citizens more in the maintenance of the neighbourhood, for instance in relation to the proposed green spaces, with Vogelnest acting as an intermediary connecting the municipality with local residents. The fourth domain is sports and recreation. The local sport clubs, adjacent to the Vogelbuurt, aim to become more visible in the neighbourhood and create a more pleasant sport park. For this party, the idea that the municipality will take blue-green measures is a window of opportunity: *'We have developed a vision how you should develop sport parks. And if [the municipality] is going to intervene, we take the opportunistic stance to "go with the flow"'* (R6).

The four domains currently operate largely independently from each other, each having their own investment agendas. In order to align these agendas more, the 'blue-green' department of Dordrecht City Council appointed a project leader for the Vogelbuurt who has the responsibility to bring the domains together. This potentially could lead to more policy integration, but has yet to be realised.

In Bradford five domains emerged: housing, health and wellbeing, highways, drainage and water management, conservation and biodiversity. As in Dordrecht, housing and wellbeing were ongoing themes. Creating more housing is viewed as one of the key aspects of the Canal Road regeneration area. Actors relevant to this domain include the housing department at Bradford MDC and private sector developers.

Many agencies and actors were invested in a health and wellbeing agenda, which was driven by the public health department. Similar to Dordrecht, one of the ambitions of the project is to improve the quality of and access to greenspace in the area. The Landscape Architecture department has been involved with developing cycle routes and infrastructure, an ambition which has also been supported by the Highways department who aim to enable sustainable active transport.

Enhanced water management and drainage involved actors from Bradford's Drainage Department as well as Yorkshire Water, The Aire Rivers Trusts (Friends of Bradford Beck), the Leeds and Liverpool Canal Society, and the Environment Agency. For the road to be widened the river, 'Bradford Beck' has to be de-culverted and moved, enabling ecological and aesthetic benefits to be delivered. A key additional hydrological benefit arises from the use of sustainable drainage to reduce the demand on sewer capacity.

The number of overlapping domains in the Bradford project indicates evidence of policy integration through collaborative working patterns and shared goals, although some interviewees remained sceptical regarding the importance, extent and success of such collaborations. The biggest difference in the domains between Dordrecht and Bradford is the creation of a dedicated 'climate adaptation' department in Dordrecht with no equivalent goal mentioned in Bradford, though the function of coordination was performed by the landscape department. Housing creation plays an important role in both projects as did better provision of open spaces and enhancement of health and wellbeing. In Dordrecht the latter involved developing sport and recreation facilities compared with a focus on active travel in Bradford.

4.3. Policy goals

The policy goals encountered in the Dordrecht case are fourfold. First, Dordrecht City Council aims at delivering BGI in order to make the city more climate-sensitive. Secondly, the Council also aims to replace the outdated sewage system. Thirdly, several parties state the objective to create a liveable neighbourhood and promote

social cohesion. For example, the housing association is renovating a large portion of the housing stock in the Vogelbuurt neighbourhood. A fourth and final goal relates to the sports park Reeweg adjacent to the neighbourhood. Its board argued that few people from the nearby Vogelbuurt actually take part in the sport activities and that the park is disconnected from its neighbours, because of a small stream. The board expected that the creation of BGI would involve the construction of a bridge, making the sport parks more accessible to locals.

Similar to the policy frames, the goals were brought together relatively easily. For example, the City Council took the lead in the development of a shared vision document that would improve the liveability of the neighbourhood through BGI. Actors were positively surprised that in a relatively short time (a few weeks), the different stakeholders could develop shared ambitions. However, many parties also stated their concerns: BGI is essentially of secondary interest to them. For instance, the housing association argues: *'We are just a housing association. We need to maintain our houses and renew them. That is our primary ambition. Other elements are of less importance'* (D4).

In Bradford Housing and Highways were mentioned as being project priorities. From the Highways department the overriding objective is to improve connectivity and support economic activity and growth, with secondary objectives to improve quality of life through safety, sustainable transport and reducing air pollution. However, the policy wording was described by an interviewee as *'woolly'* (B3) which could lead to frustrations in furthering goals. From a more instrumental perspective, the changes were viewed as an opportunity to achieve multiple and mutual benefits: *'It's getting away from the traditional ... It's bringing it all together in one so everybody is focused on the same things, multiple benefits. That's what the blue-green infrastructure project is about'* (B1).

The health and wellbeing practitioners viewed their goal as persuading others to support the development of good quality, accessible blue and green space in order to advance a health agenda. Similarly, the community group saw projects such as this as an opportunity to promote the development of the Beck, *'Every time there's a development along there, we try and engage with it, to try and make sure the beck gets some attention'* (B5). Despite giving ostensibly different policy goals, most stakeholders said that they felt that other stakeholders with whom they collaborated supported their goals. This suggests that while different departments still maintain their independent ambitions, that communication and discussion around shared goals is occurring successfully. In Dordrecht, the different domains appear to be even more unified between departments with shared overarching goals and semantics.

4.4. Policy instruments

The policy instruments that were employed in Dordrecht are organisational and market-based. Concerning organisational instruments, the appointment of a *'blue-green department'* made climate adaptation more prominent. To illustrate, three workshops were organised to hear from other stakeholders what they were doing and how this could relate to climate adaptation. A local government official explains: *'We invited everybody, really, the water authority, the province, but also IVN, Staatsbosheer (nature organisations), organisations like the Vogelnest (social entrepreneurs), sport clubs ... And to sit together and put your cards on the table, what is everybody working on?'* (R1) Many stakeholders were very positive that this setting helped them to look beyond their individual interest. For instance, another official states: *'We were there for the first time together. I saw colleagues who I have never seen. [People from] the sewage department, why should I meet them? Usually that is a separate project'* (R2).

However, interviewees also stated that a need exists for having something *'shared'*. The municipal *'blue-green'* department tried to do this by jointly developing a bid for a European subsidy, which would realise their joint ambitions. The subsidy could be added to existing budgets allocated for the housing renovation and sewage replacement. Since the funding was not granted to Dordrecht, the social network seemed to fall apart. Nevertheless, stakeholders argue that awareness is created and that within existing work practices more incremental steps can be taken for climate adaptation led by the municipality. Only the drainage department of the Council is more critical, as the current BGI have to be realised within the budget assigned for the sewage replacement. However, this department argued that it is bound to tight regulatory and financial

frameworks which make the current sewage replacement already difficult in itself, let alone the incorporation of new, blue–green notions. The instruments used ensure that policy integration remains a voluntary activity that does not come with obligations.

The policy instruments used in the Bradford context fall into four categories. Firstly, the Shipley and Canal Road Area Action Plan (BMDC, 2017) is a regulatory instrument which went through a formal process of adoption from 2013 to 17. This document offers the vision for the regeneration of the area. It provides guidelines about what development is permitted in different locations and is the background to the road widening and related BGI proposals.

Secondly, communicative instruments focused on presenting knowledge in the most effective format included aspiring to finding ‘the best model’ for collaborative working and using ‘the best tools’ to find ‘the best way forward’. Health and wellbeing stakeholders placed an emphasis on the importance of evidence-based decision-making, providing data and information that supported the development of the programme, for example cost estimates, collating information and carrying out a health impact assessment. Another stakeholder felt that commissioning a survey from an external contractor had been successful, stating: ‘*A lot of what’s now going to happen is what they [the contractors] wrote about ... so I’m really excited because it does mean at last something is going to happen*’. (B5). Additionally, the Action Plan (BMDC, 2017) cites several documents which have informed the approach on sustainability, health, and equality (such as an Health Impact Assessment), evidencing policy documents that reflect the need for a cross-boundary sustainable approach.

Thirdly, as in Dordrecht, organisational instruments were used for project development through meetings with other stakeholders. Stakeholders reported that historical collaborations drove current collaborations, although one stakeholder identified this as a shortcoming as it was considered just to the ‘usual crowd’ rather than fresh perspectives and another thought that council-run consultations were more of a ‘tick box’ exercise than a meaningful engagement. However, others found collaboration and communication of different projects and ideas an effective means to communicate their perspective and to develop ideas for the project. In addition, one council worker in Landscape and Architecture was mentioned by all but one of the interviewees as being a key contact for making and developing collaborations and ideas and driving the project forwards.

Finally, the highways component of the whole project is built on a bid by Bradford MDC to the West Yorkshire Combined Authority and hence relies on a market-based instrument. The West Yorkshire Combined Authority is responsible for transportation, economic development and regeneration across West Yorkshire. Improving connectivity and relieving current air pollution through road widening required that the de-culverting was undertaken. The proposals also enables new and improved accessible green space, improved highway drainage, routes to new areas of housing, and provision for more active travel.

4.5. Policy context

The local government officers typify the institutional context in Dordrecht as somewhat rigid, especially in terms of finances. An official illustrates:

The municipality has a lot of money, but a lot is allocated. [...] There are structures, there is a time frame. So if you are too late, or if you go too much beyond the [previously planned] scope, you will not manage to incorporate into the planning. Those structures will go through. (D1)

Consequently, the new blue–green department struggles with securing resources for BGI, even more because it was only recently established.

Also, collaborations between municipality and stakeholders are not so common yet. From a municipal viewpoint, an official refers to a new approach of ‘*building up a network to make progress*’, but ‘*municipalities are big, old organisations, for which it is difficult to work in a different way*’ (D1). External stakeholders state that they feel heard, but that speaking ‘the municipal language’ will result in more results. For instance, the Sport Council representative states:

We have experienced ourselves that our advices get a better response if you ensure that it fits within a framework, in this case the framework of biodiversity and water storage and green zones, within the plans that already exist. (D6)

In Bradford there was a strong sense that there was a sea-change in the culture of projects, with a more open, adaptive and collaborative approach emerging in contrast to a more rigid structure in the past. Funding streams were reported to be allocated to separate departments with collaborations funded by separate bids rather than the main institutional structures. One stakeholder felt that there was a lack of staff knowledge and expertise as well as siloed working and competing department requirements and agendas. Restrictions on funding and an unrealistic timeframe were also mentioned. In this respect a new project-based way of working was driven by outside funding. It is interesting, however, that by widening the road this same outside funding perpetuates the traditional motorised transport frame.

4.6. Discussion

The interviews revealed similarities and differences both within and between the two case studies as being illustrative of different perspectives on BGI projects. In both cases, we observe that actors are developing more integrative policy frames as a means to reach out to other stakeholders, secure additional funding, and to create legitimacy. Accordingly, BGI can mean different things for different people, but still manages to bring people together. The different actors may have different interpretations and/or intentions regarding BGI, but the varying goals are compatible in their joint call for BGI. These frames are usually strategically employed as a lever to convince other stakeholders to participate. Consequently, the dimension of policy frames becomes an important prerequisite for the other dimensions of policy integration. Once the frame is more integrative, it becomes more logical to include different policy domains and define broader goals. Ironically, integrated policymaking in Bradford via grants that expect road investment to also address the environmental agenda may be beneficial for climate adaptation, yet it may work against climate mitigation.

The actors that push for policy integration in our cases are constrained by the domains they represent. Despite individual actors being aware of and agreeable to wider shared goals, they were still working within the remit of individual departmental priorities. Working practices dictate that separate teams have responsibility for separate areas and as such different strands of the project still primarily 'belong' to different departments. The dedicated team in Dordrecht that pushes for BGI has limited resources to employ, although the City Council acknowledges the need for BGI. In Bradford, the transportation department has limited incentives to open up the process, while more remote parties (for example related to health) play a more marginal role. The 'key actor' can be seen to have invested significant personal energy in bringing different parties together to support the multi-functionality of the Bradford BGI. Their limited power arises because their work helps to secure the external funding, and also helps ensure that the scheme delivers many different positive features on a blue-green agenda, providing some defence in the face of the inevitable environmental critique. Nevertheless, frustrations emerge due to a contradiction between individual expertise and remit versus the vaguely worded expectations and commitments to integration without institutional structures and expertise to support such development. In addition, timing seems to be a crucial issue. For example, the health domain was not really involved in the early planning and development stage in Bradford and therefore difficulties were experienced incorporating this viewpoint into the project brief. This relative importance is also reflected in the policy instruments used, which are so far predominantly voluntary, less coercive instruments (see also Bauer et al., 2012). To illustrate, Dordrecht has mainly worked on awareness raising and shared meaning-making through organisational instruments. Policy integration, then, can emerge more from the bottom-up rather than forced integration.

5. Conclusions

Blue and green infrastructure (BGI) can have multiple benefits, yet the challenge of policy integration means that these benefits are hard to deliver at the local level. Therefore, this paper aimed to understand whether and how actors pursue policy integration linking BGI with other policy fields. Our research question was: *How are ambitions to integrate policies resulting in multi-functional BGI projects?*

This article defined policy integration as a dynamic activity that consists of five dimensions (Table 1), providing more insights about ‘on the ground’ mechanisms enabling or obstructing policy integration. Applying this framework to two case studies of BGI projects, we observed that policy frames were in favour of integration from the start, which opened up the possibility to connect more policy domains. However, the established policy context currently obstructs this. Some actors that push for BGI lack resources and authority, and hence they mainly rely on more voluntary, bottom-up forms of policy integration (Bauer et al., 2012). Other actors either have BGI as a secondary interest, or consider them too risky compared to more regular grey infrastructure solutions. As such, we see a change in discourse initiated by actors working both inside and outside the local authority, but we do not yet see a change in actual practices or deeper institutional structures.

This observation confirms how policy integration is a contested activity that reflects the existing power relations (Sharp & Richardson, 2001). In our cases, we can see that even when the remit of projects encompasses integrated policy aims, such as Bradford’s Highways department’s aspirations for the Canal Road Corridor, the structural and management challenges of working between agendas act as an impediment (Oseland, 2019). The integration we can observe in our cases has been ‘hard won’ through concerted action and external funding pressures. When marginal actors emphasise the combined nature of BGI, more powerful municipal departments are conceptually open to these ideas, but financial structures that have already been assigned limit the flexibility of their practices. Thus, there is space for policy integration, but more support is needed to achieve this mandate. Examples could be combined funding streams or a reward system for civil servants (Carey & Crammond, 2015).

Our framework on policy integration is a further refinement of recent advances in the literature (Candel & Biesbroek, 2016; Molenveld et al., 2020; Tosun & Lang, 2017). This framework moves beyond the binary observation of whether integration happened or not found in much of the previous literature, and rather examines the role of policymakers in integrating or disintegrating policy agendas on a day-to-day basis within local government. This dynamic, ‘ground level’ operationalisation underscores the political dimension of policy integration (cf. Van Hulst & Yanow, 2016). Moreover, this operationalisation can offer a heuristic tool that facilitates a more nuanced and dynamic interpretation of policy integration that previous frameworks have offered (Huttunen et al., 2014). The five dimensions are interrelated, but by disentangling them for analytical purposes we have shown how these dimensions contribute to policy integration. By adding a fifth dimension of policy context, also more vertical, multi-level dynamics are accounted for.

Future research can take two directions. Firstly, the dynamic view on policy integration assigns a central role for key individuals. As the policy context in both cases was the predominant factor obstructing policy integration, future research can delve into how these key individuals are able to modify this context, for which longitudinal studies can be helpful. Secondly, BGI is an appealing concept for many, but its actual operationalisation seems often rather limited. As such, it risks becoming an empty phrase that in worst case is mainly used as greenwashing (Anguelovski et al., 2019). Future studies can unravel how the concept of BGI is differently interpreted and used by actors in practice.

Note

1. These opinions for example have been expressed on the open Facebook group ‘Bradford Cycling Campaign’ in a debate on the 5 December 2019.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was supported by BEGIN project – Interreg VB North Sea Region Programme.

Notes on contributors

Jannes Willems is a postdoctoral researcher at the Department of Public Administration & Sociology, Erasmus University Rotterdam. He is involved in several research projects (both European and Dutch) related to urban climate adaptation, water management and infrastructure re-development. His expertise lies in institutional analysis, discourse analysis, and organisational learning.

Anna Kenyon's background is in the intersection of health, urban design, climate adaptation and public participation. She has been involved with the BEGIN project since 2017 and currently working with the public participation team in the department of Biological Sciences at the University of Manchester.

Liz Sharp is a senior lecturer in environmental governance in the University of Sheffield's Department of Urban Studies and Planning, and a leading member of the transdisciplinary Sheffield Water Centre. Working closely with engineers and water practitioners, she has spent 15 years examining how and why water utilities engage the public in making and delivering water policy.

Astrid Molenveld is affiliated with the Department of Public Administration and sociology of the Erasmus University Rotterdam and the research group on Politics and Public Governance of Antwerp University. She has a particular interest in applying multiple research-methods in her work, like QCA, Q-methodology and statistics. Her current research activities include comparative research on coordination and collaborative governance, with a special focus on cross-cutting and 'wicked' policy issues. She recently published in *Public Administration Review*, *Public Administration* and *Public Management Review*.

ORCID

Jannes J. Willems  <http://orcid.org/0000-0002-3318-9706>

Liz Sharp  <http://orcid.org/0000-0002-1611-9239>

References

- Angelovski, I., Connolly, J. J., Garcia-Lamarca, M., Cole, H., & Pearsall, H. (2019). New scholarly pathways on green gentrification: What does the urban 'green turn' mean and where is it going? *Progress in Human Geography*, 43(6), 1064–1086. <https://doi.org/10.1177/0309132518803799>
- Bauer, A., Feichtinger, J., & Steurer, R. (2012). The governance of climate change adaptation in 10 OECD countries: Challenges and approaches. *Journal of Environmental Policy & Planning*, 14(3), 279–304. <https://doi.org/10.1080/1523908X.2012.707406>
- Bradford Metropolitan District Council [BMDC]. (2017). *Shipley and Canal road corridor area action Plan*. <https://www.bradford.gov.uk/planning-and-building-control/planning-policy/shipley-and-canal-road-corridor-area-action-plan-dpd/>
- Brink, E., Aalders, T., Ádám, D., Feller, R., Henselek, Y., Hoffmann, A., Ibe, K., Matthey-Doret, A., Meyer, M., Negrut, N. L., Rau, A.-L., Riewerts, B., von Schuckmann, L., Törnros, S., von Wehrden, H., Abson, D. J., & Wamsler, C. (2016). Cascades of green: A review of ecosystem-based adaptation in urban areas. *Global Environmental Change*, 36, 111–123. <https://doi.org/10.1016/j.gloenvcha.2015.11.003>
- Bulkeley, H., & Betsill, M. M. (2013). Revisiting the urban politics of climate change. *Environmental Politics*, 22(1), 136–154. <https://doi.org/10.1080/09644016.2013.755797>
- Candel, J. J., & Biesbroek, R. (2016). Toward a processual understanding of policy integration. *Policy Sciences*, 49(3), 211–231. <https://doi.org/10.1007/s11077-016-9248-y>
- Carey, G., & Crammond, B. (2015). What works in joined-up government? An evidence synthesis. *International Journal of Public Administration*, 38(13–14), 1020–1029. <https://doi.org/10.1080/01900692.2014.982292>
- Christensen, T., & Lægreid, P. (2007). The whole-of-government approach to public sector reform. *Public Administration Review*, 67(6), 1059–1066. <https://doi.org/10.1111/j.1540-6210.2007.00797.x>
- Fenner, R. A. (2017). Spatial evaluation of multiple benefits to encourage multi-functional design of sustainable drainage in blue-green cities. *Water*, 9(12), 953. <https://doi.org/10.3390/w9120953>
- Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative Inquiry*, 12(2), 219–245. <https://doi.org/10.1177/1077800405284363>
- Fünfgeld, H., & McEvoy, D. (2014). Frame divergence in climate change adaptation policy: Insights from Australian local government planning. *Environment and Planning C: Government and Policy*, 32(4), 603–622. <https://doi.org/10.1068/c1234>
- Furlong, C., Gan, K., & De Silva, S. (2016). Governance of integrated urban water management in Melbourne, Australia. *Utilities Policy*, 43, 48–58. <https://doi.org/10.1016/j.jup.2016.04.008>
- Henstra, D. (2016). The tools of climate adaptation policy: Analysing instruments and instrument selection. *Climate Policy*, 16(4), 496–521. <https://doi.org/10.1080/14693062.2015.1015946>
- Hertin, J., & Berkhout, F. (2003). Analysing institutional strategies for environmental policy integration: The case of EU enterprise policy. *Journal of Environmental Policy & Planning*, 5(1), 39–56. <https://doi.org/10.1080/15239080305603>
- Huttunen, S. (2015). Farming practices and experienced policy coherence in agri-environmental policies: The case of land clearing in Finland. *Journal of Environmental Policy & Planning*, 17(5), 573–592. <https://doi.org/10.1080/1523908X.2014.1003348>

- Huttunen, S., Kivimaa, P., & Virkamäki, V. (2014). The need for policy coherence to trigger a transition to biogas production. *Environmental Innovation and Societal Transitions*, 12, 14–30. <https://doi.org/10.1016/j.eist.2014.04.002>
- Jerome, G., Mell, I., & Shaw, D. (2017). Re-defining the characteristics of environmental volunteering: Creating a typology of community-scale green infrastructure. *Environmental Research*, 158, 399–408. <https://doi.org/10.1016/j.envres.2017.05.037>
- Jones, H. P., Hole, D. G., & Zavaleta, E. S. (2012). Harnessing nature to help people adapt to climate change. *Nature Climate Change*, 2(7), 504–509. <https://doi.org/10.1038/nclimate1463>
- Jordan, A., & Lenschow, A. (2010). Environmental policy integration: a state of the art review. *Environmental Policy and Governance*, 20(3), 147–158. <https://doi.org/10.1002/eet.539>
- Lafferty, W., & Hovden, E. (2003). Environmental policy integration: Towards an analytical framework. *Environmental Politics*, 12(3), 1–22. <https://doi.org/10.1080/09644010412331308254>
- Lundqvist, L. J. (2016). Planning for climate change adaptation in a multi-level context: The Gothenburg metropolitan area. *European Planning Studies*, 24(1), 1–20. <https://doi.org/10.1080/09654313.2015.1056774>
- Measham, T. G., Preston, B. L., Smith, T. F., Brooke, C., Gorddard, R., Withycombe, G., & Morrison, C. (2011). Adapting to climate change through local municipal planning: Barriers and challenges. *Mitigation and Adaptation Strategies for Global Change*, 16(8), 889–909. <https://doi.org/10.1007/s11027-011-9301-2>
- Molenveld, A., Verhoest, K., Voets, J., & Steen, T. (2020). Images of coordination: How implementing organizations perceive coordination arrangements. *Public Administration Review*, 80(1), 9–22. <https://doi.org/10.1111/puar.13136>
- OECD. (2014). *Water governance in the Netherlands: Fit for the future?*
- O'Hare, P., & White, I. (2018). Beyond 'just' flood risk management: The potential for – and limits to – alleviating flood disadvantage. *Regional Environmental Change*, 18(2), 385–396. <https://doi.org/10.1007/s10113-017-1216-3>
- Oseland, S. E. (2019). Breaking silos: Can cities break down institutional barriers in climate planning? *Journal of Environmental Policy & Planning*, 21(4), 345–357. <https://doi.org/10.1080/1523908X.2019.1623657>
- Peters, B. G. (1998). Managing horizontal government: The politics of co-ordination. *Public Administration*, 76(2), 295–311. <https://doi.org/10.1111/1467-9299.00102>
- Rauken, T., Mydske, P. K., & Winsvold, M. (2015). Mainstreaming climate change adaptation at the local level. *Local Environment*, 20(4), 408–423. <https://doi.org/10.1080/13549839.2014.880412>
- Sharp, L. (2006). Water demand management in the UK: Constructions of the domestic water user. *Journal of Environmental Management and Planning*, 49(6), 869–889. <https://doi.org/10.1080/09640560600946933>
- Sharp, L. (2017). *Re-connecting people with water*. Routledge.
- Sharp, L., & Richardson, T. (2001). Reflections on Foucauldian discourse analysis in planning and environmental policy research. *Journal of Environmental Policy and Planning*, 3(3), 193–209. <https://doi.org/10.1002/jep.88>
- Susskind, L. (2010). Policy & practice: Responding to the risks posed by climate change: Cities have no choice but to adapt. *Town Planning Review*, 81(3), 217–235. <https://doi.org/10.3828/tpr.2010.5>
- Tosun, J., & Lang, A. (2017). Policy integration: Mapping the different concepts. *Policy Studies*, 38(6), 553–570. <https://doi.org/10.1080/01442872.2017.1339239>
- Trein, P., Meyer, P., & Maggetti, M. (2019). The integration and coordination of public policies: A systematic comparative review. *Journal of Comparative Policy Analysis: Research and Practice*, 21(4), 332–349. <https://doi.org/10.1080/13876988.2018.1496667>
- Uittenbroek, C. J., Janssen-Jansen, L. B., & Runhaar, H. A. (2013). Mainstreaming climate adaptation into urban planning: Overcoming barriers, seizing opportunities and evaluating the results in two Dutch case studies. *Regional Environmental Change*, 13(2), 399–411. <https://doi.org/10.1007/s10113-012-0348-8>
- van den Berg, M., & Coenen, F. (2012). Integrating climate change adaptation into Dutch local policies and the role of contextual factors. *Local Environment*, 17(4), 441–460. <https://doi.org/10.1080/13549839.2012.678313>
- Van Hulst, M., & Yanow, D. (2016). From policy 'frames' to 'framing' theorizing a more dynamic, political approach. *The American Review of Public Administration*, 46(1), 92–112. <https://doi.org/10.1177/0275074014533142>
- Westling, E., Sharp, L., Tait, S., Ashley, R., & Scott, D. (2019). Reflexive adaptation for resilient water services: Lessons for theory and practice. *Global Environmental Change*, 57. <https://doi.org/10.1016/j.gloenvcha.2019.101937>
- Willems, J. J. (2018). Beyond maintenance: Emerging discourses on waterway renewal in the Netherlands. *Transport Policy*, 72, 1–12. <https://doi.org/10.1016/j.tranpol.2018.09.011>
- Wingfield, T., MacDonald, N., Peters, K., Specs, J., & Porter, K. (2019). Natural flood management: Beyond the evidence debate. *Area*, 51(4), 743–751. <https://doi.org/10.1111/area.12535>