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Navigating values in decision-making to shape the landscape of Bangkok's urban waterways

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ABSTRACT

Urban waterways are complex and vulnerable landscapes, particularly in rapidly urbanising cities where they are prone to flooding and degradation of cultural heritage. This complexity is reflected in decision-making processes about urban waterways, as they cross administrative boundaries and involve stakeholders from multiple disciplines who value the urban waterways in different ways. This paper aims to examine how fragmented decision-making contributes to the vulnerability of urban waterways. Focusing on the case of Bangkok, the research engaged those government agencies responsible for the city's waterways in collaborative workshops to collectively explore their values in decision-making processes. Findings show that practitioners and policymakers expressed differences in values about BUW, which explains the inertia of current waterways management in Bangkok. Findings also show that individually expressed expertise and values can be collectively expressed, demonstrating how collaboration can lead to comprehensive solutions to managing complex environmental challenges in vulnerable urban landscapes.

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Introduction

Dynamics in urban waterway management

Managing a city's waterway landscape is as dynamic as the water that flows through it. It involves diverse stakeholders, each with different perspectives, values, and disciplinary approaches regarding different social and environmental priorities (Reed et al., 2016). Taking a single perspective on the waterway, or treating it as one homogenous element of the landscape, not only fails to address complex challenges (Collins & Ison, 2009), but can lead different stakeholders to draw conflicting conclusions (Lecuyer et al., 2018). Research shows how managing complex landscapes well underscores the need for collaborative approaches (Berkes, 2009; Berkes et al., 2000) aided by bridging organisations (McGonigle et al., 2020) to foster trust, facilitate sense-making, promote vertical and horizontal cooperation (Berkes, 2009) and understand the social context (Folke et al., 2010; Gray et al., 2012; Selman, 2012). Literature shows how adaptive co-management can be found in 'chairs-around-the-table' (Forman, 1995), underscoring the importance of convening experts from diverse fields and disciplines to foster effective communication (Milder et al., 2014;

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Sayer et al., 2013). This involves considering shared values, establishing common ground (Lecuyer et al., 2018) and reaching agreement (Plieninger & Bieling, 2012) while promoting flexibility and adaptation through continuous learning and improvement (Armitage et al., 2008). However, these principles do not describe how the waterways in many rapidly urbanising cities, such as those in South-East Asia, are managed. Such cities face acute challenges stemming from fragmented decision-making, as seen in Jakarta and Ho Chi Minh, where this fragmentation has contributed to uncontrolled urbanisation (Lempert et al., 2013).

The same approach is taken in Bangkok's urban waterways (BUW) which are currently managed in a fragmented manner (Numsuk, 2025). This reflects a conventional management approach (Collins & Ison, 2009) where each department applies its own values and priorities. Decision-making is often dominated by a single authority. This is the Drainage and Sewage Department in Bangkok, which focuses solely on the drainage function of BUW as the only means of flood prevention (Numsuk & Dempsey, 2024). Jular (2017) described that when Thai authorities consider upstream and downstream management separately following the separated sectors, it resulted in ineffective flood mitigation efforts (Jular, 2017). Lebel and Lebel (2018) describe Bangkok's future flooding precarity predominantly arising from the conventional approach of assigning a single agency to manage flood risk (Lebel & Lebel, 2018). Saito (2014) identified how Bangkok's flood management has focused on maintaining infrastructural capacity without considering alternatives (Saito, 2014). Ratanawaraha (2016) revealed that flood management responsibility typically fell to civil engineers inclined towards infrastructural solutions (Ratanawaraha, 2016), including flood walls, flood dikes, and sandbag walls, resulting in social vulnerability (Marks et al., 2020). Similarly, studies on preservation practices in Bangkok's conservation areas have found that focusing on a single approach (Ratanawaraha, 2016) to protection has led to social inequality (Issarathumnoon, 2006). While existing literature on BUW therefore outlines its problematic outcomes, it provides no insight into the dynamics of real-world decision-making. This paper addresses this knowledge gap by exploring how decisions are made in relation to Bangkok's urban waterways by testing a new approach.

Calling on qualitative research conducted in three case studies in Bangkok, this paper will address three research objectives (RO):

RO1. To identify the concerns shared by decision-makers involved in urban waterway management;

RO2. To examine to what extent stakeholders prioritise individual values in their decision-making around urban waterway management;

RO3. To determine if a collaborative approach to decision-making changes outcomes compared to the 'business as usual' approach.

The paper will show how the usual approach to urban waterway management in rapidly urbanising cities is fragmented, making them more vulnerable, prone to flooding and degraded heritage and cultural landscapes. By engaging with practitioners and policymakers in Bangkok in a hypothetical exercise of collaborative decision-making, the paper will examine the current and potential decision-making processes to explore how collaboration might be a means of better managing the city's waterways. The paper first outlines the existing knowledge base on decision-making processes before explaining the methodological approach taken in this research.

Decision-making processes: values and inaction

How problems are framed can have implications for garnering or deterring stakeholder backing for planning decisions (Talen, 1996), e.g., around water catchments. Framing them as resource dilemmas emphasises complexity, uncertainty, interdependency, controversy, and multiple stakeholder perspectives (Dunham et al., 2018). This involves navigating multiple, sometimes

conflicting, practices and priorities that shape policy outcomes in complex ways (Barry, 2012). This process typically includes ongoing debates over priorities and challenges to decision-makers' directions, which may exclude alternative options (Conroy & Peterson, 2013). Cultural factors—such as differences in age, background, and positionality among individuals—can further influence these dynamics (Choo, 2002). The 'values' held by decision-makers reflect people's connections to the environment and the benefits they seek, with different sectors valuing landscape elements differently, shaping their management decisions. This can sometimes lead decisions away from their intended objective (Hoppe et al., 2017) towards a reluctance to acknowledge the inevitable trade-offs arising when pursuing joint goals. Moreover, there is often an oversimplification in balancing multiple objectives, leading to a focus on one objective at the expense of others (J. Reed et al., 2016).

Decision-making on complex issues, such as climate change or landscape management, which cross disciplinary and professional boundaries, is often challenged by competing interests and resistance to change. When individuals' or groups' interests feel threatened, decision-makers may dilute their commitments in practice. Those who oppose actions resist these policies by employing arguments that support inaction, and these arguments tend to influence decision-makers. Such logics of inaction—maintaining the status quo or increasing conservatism despite the original policy's intended goals (Sharman & Perkins, 2017)—are influenced by stakeholders' rhetoric, their underlying attitudes, institutional dynamics (Dobson & Dempsey, 2021) and differing values and priorities (Hoppe et al., 2017). As outlined above, literature from Thailand indicates that maintaining the status quo is how decision-makers currently address Bangkok's urban waterways, despite the complexity of the landscape as floodplain, water catchment, flood risk, cultural heritage and transport arteries. The implications of such logics of inaction for Bangkok's urban waterways are discussed later.

Harnessing value in decision-making

'Value' in landscape reflects how people connect with and benefit from the environment based on their needs and desires (Zube, 1987), while in decision-making, 'value' refers to the underlying principles that influence how knowledge is generated, interpreted, and applied (Elliott, 2011). In this context, the values held by decision-makers towards urban landscapes or natural resources play a critical role in shaping management outcomes (Numsuk & Dempsey, 2024). Values influence what data are considered important (Bell et al., 1977), how options are assessed, and ultimately how decisions are made, particularly in organisational decision-making (Lele et al., 2023; Todt & Lujan, 2014). Literature highlights the confusion between values (objectives) and science (data/information) in natural resource management, which often overemphasises data while neglecting values. Without fully understanding the values held by decision-makers, facts alone can lead to ineffective decisions (Conroy & Peterson, 2013).

In organisational decision-making, methodological learning (Todt & Lujan, 2014) involves using tailored methods that consider noncognitive values like environmental concerns rather than relying solely on cognitive values that pertain to internal processes like accuracy and consistency. Recognising the interplay between these two values is crucial (Heal et al., 2005). It can overcome a fundamental conflict between arbitrating roles (decisions relying on academic science and experts) and facilitating roles (where societal preferences influence decisions by social contexts). These approaches (aligned with social learning (Collins & Ison, 2009)) aim to generate knowledge and regulatory objectives and overcome conflict (Todt & Lujan, 2014), allowing for balance and trade-offs in decision-making (Bell et al., 1977; Lecuyer et al., 2018).

Researchers have examined the limited values and alternatives in decision-making in environmental management in Thailand. Sa-Nguanduan and Nititvattananon (2011) investigated urban water policies, arguing that Thai's state institutions should consider multiple criteria, such as environmental and health impacts, rather than their current focus on economic values.

They advocate for stakeholder involvement from the early stages of decision-making to promote alternative solutions (Sa-Nguanduan & Nititvattananon, 2011). Wittayapak and Dearden (1999) identified significant potential for flexible and adaptive decision-making processes in managing watershed communities in northern Thailand. Their study highlights decision-making that includes marginalised stakeholders to challenge state institutions' rigid and distant approaches (Wittayapak & Dearden, 1999). Scholars note that various stakeholders may value BUW differently from the state, e.g., experts often prioritise their disciplines, limiting integrated approaches (Numsuk & Dempsey, 2024), resulting in unintended landscape change of BUW (Numsuk, 2025). This paper presents the concerns and values that arise from individual decision-making and explores how group decision-making can facilitate the integration of values and perspectives from different disciplines.

Method: research materials and collaborative workshops

This research is grounded in social constructionism, which highlights the active role of individuals who construct their realities through meaning and interpretation (Ritchie et al., 2013). Within this framework, the diverse perspectives of stakeholders (here, the decision-makers) are not treated as fixed or objective but as socially constructed understandings that influence how problems and solutions are framed.

Due to Bangkok's recurring flooding and heritage degradation, which pose significant risks to the city and its local communities, practitioners who are responsible for the management of BUW were identified and invited to participate in a series of workshops to explore their decision-making processes. This paper explores to what extent values identified by individual decision-makers (Numsuk & Dempsey, 2024) can be integrated into a collective decision-making process. To do this, workshops were convened which focused on specific study sites within BUW.

Study sites

Three communities located along Bangkok's Urban Waterways (BUW) were selected (Figure 1) as case studies (Yin, 2003) to capture the dynamics of different urban contexts. Banpantom is a heritage conservation area with ongoing preservation and redevelopment plans, no recorded history of flooding, and is situated along the Banglampoo Canal. Minburi Upatum is a high-density residential and commercial area undergoing urban and transit-oriented development; although it is within a flood-protected zone, it has experienced significant flooding. Talad Nongchok is a low-density, agricultural community located outside the flood dike, with a history of severe flooding and ongoing flood protection initiatives, situated along the Sanseab Canal (see Table A1).

Research materials

Five scenarios and sixteen schemes (Table 1) were created to represent alternatives for managing BUW to shape future changes. These BUW alternatives were recommended by stakeholders during initial interviews conducted between November 2021 and June 2022. The cluster of scenarios and schemes was developed through data analysis, reflecting diverse interests, expertise, and values held (Numsuk & Dempsey, 2024). Twelve values of BUW (see Tables 2 and A2) were identified and embedded differently across the scenarios by the data analysis. Thus, the role of values, as identified by the research participants, and here, applied in the BUW context, was the starting point of this paper's exploration through the research material used in workshops.

These alternatives—defined as possible future pathways in the form of scenarios (Dinka & Lundberg, 2006)—were used to explore decision-making processes in the context of complex

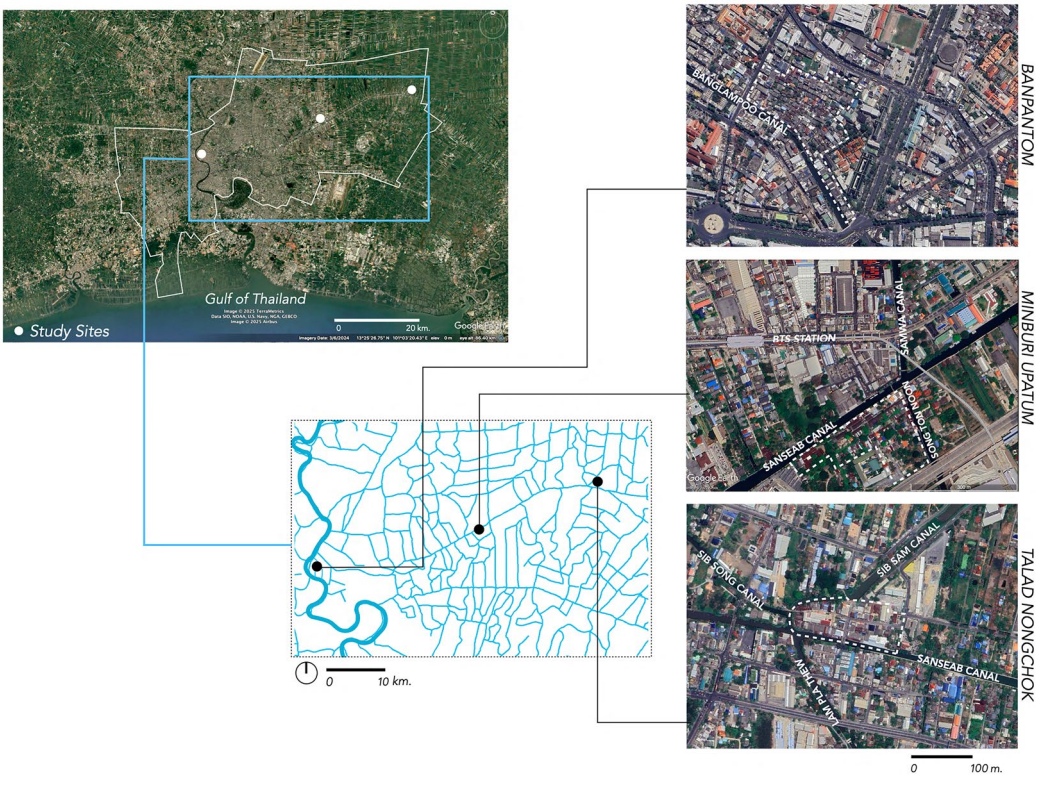

Figure 1. Three study sites (Numsuk, 2025) CC BY 4.0.

Table 1. BUW's management alternatives (after Numsuk & Dempsey, 2024).

Scenarios	Description
[I] Enhanced ongoing management	The current approach of BUW management. A combination of five management schemes: (1) Boundary control and relocation improvements, (2) Increasing detention areas, (3) Improving infrastructural capacity, (4) Improving wastewater treatment, and (5) Improving garbage collection.
[II] Natural restoration	Considers the natural condition of waterways and understanding the natural landscape of BUW as part of the network system. A compilation of two management schemes: (6) Restoring waterflow networks and (7) Restoring waterway banks.
[III] Prioritised benefits for residents	Addresses the requests and preferences of the local community. A combination of four management schemes: (8) Granting permission to inhabit and earn a livelihood, (9) Enabling access for routine consumption, (10) Coordinating the operation of watergates, and (11) Providing safety and security.
[IV] Floodable land use taking heritage into consideration	Focuses on the heritage dimension with flexible or adaptable land uses. A combination of two management schemes: (12) Floodable land use at the waterway edge. and (13) Considering heritage and/or identity of community areas.
[V] Improved urban functionality	Focuses on urban functionality to serve Bangkok as a capital city. A combination of three management schemes: (14) Emphasis on public water transportation, (15) Providing recreational public access, and (16) Involving investors and developers.

Note: Each scenario includes a specific set of schemes, and each scheme was examined during the workshops (refer to Table A2 for scheme descriptions).

problems and uncertainty (Sharpe et al., 2016) in BUW. The research materials were presented in the form of small cards and diagram sections (Figures 2 and 3) to facilitate both individual and group discussions during the workshops, allowing for easy handling and effective engagement.

Table 2. The integration of values in the workshop (adapted from Numsuk & Dempsey, 2024).

	individual decision-making					collective decision-making			
Perceived value of BUW	Enhance ongoing management [I]	Natural restoration [II]	Prioritised benefits for residents [III]	Floodable land use taking heritage into consideration [IV]	Improved urban functionality [V]	Integrated natural and historical significance [II] + [IV]	Balanced levels of infrastructural mea ures [I] + [II]	Justifying adaptive land use [IV] + [V]	Balance of local need and city identity [III] + [V]
Food production			/	/		/	/	/	/
Daily consumption			/	/		/		/	/
Transportation				/	/	/	/		/
Ecological		/				/	/	/	
Livelihood			/			/	/	/	/
Favourable settlements				/		/		/	/
Day-to-day cultural			/	/		/		/	/
Preservation				/		/		/	/
Local recreation			/			/	/	/	/
Urban public space	/			/	/		/	/	/
Natural inundation		/		/		/	/	/	/
Flood prevention	/	/	/	/	/	/	/	/	/

'/' value held in the decision-making process.
Note: Shaded cells indicate values incorporated during collective decision-making.

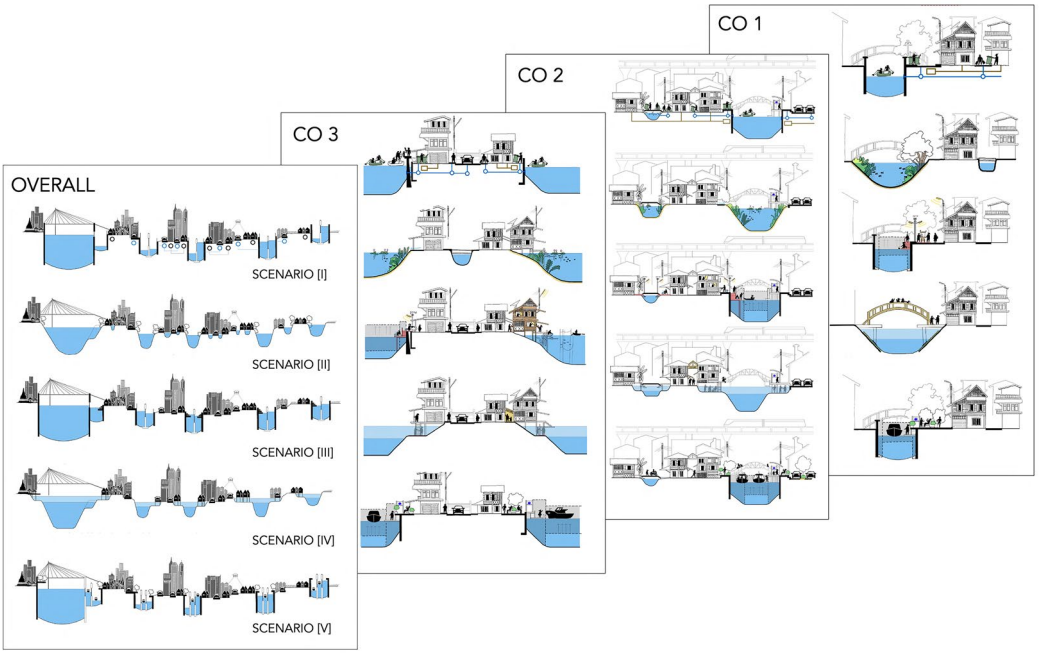

Figure 2. Diagram sections representing five scenarios in each context (Overall BUW as a city scale, CO3 Talad Nongchok, CO2 Minburi Upatum, CO1 Banpantom). *Source:* Lead author.

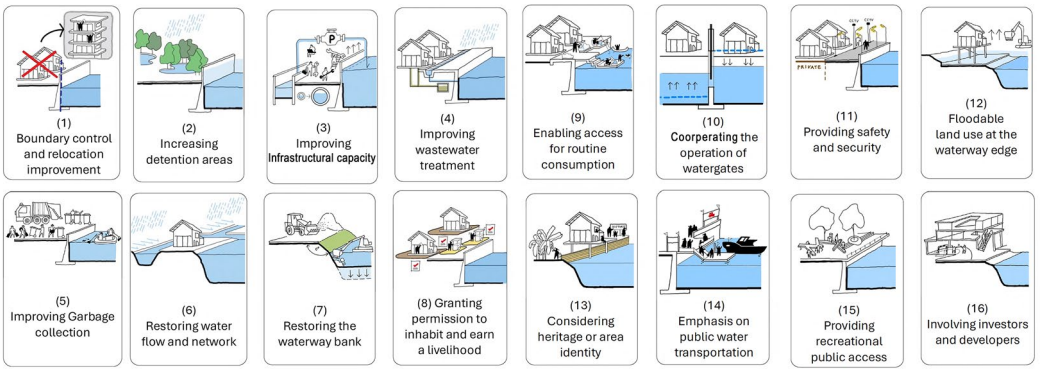

Figure 3. 16 BUW's alteration schemes. *Source:* Lead author.

Workshop activity

The research material was used as a toolkit to explore the decision-making process (Choo, 2002) through the workshops (Figure 4). The workshop activity was designed to assess collective sharing, shared expertise, and open discussion (Herk et al., 2011), aiming to understand whether and how involving various experts could construct solutions (Löschner et al., 2016) for BUW. The workshops captured the decisions made when individuals considered different alternatives (Figure 5A) and then came together in groups through schemes (Figure 5B) and scenarios (Figure 5C) to reach a collective decision. Workshop activities can capture participants' perspectives (Nyumba et al., 2017) such as decision-makers (Dobson & Dempsey, 2021), examine how they formulate views, potentially elicit a shared perspective (Fazey et al., 2014) and construct solutions (Löschner et al., 2016) for problems arising in the complex landscape of BUW.

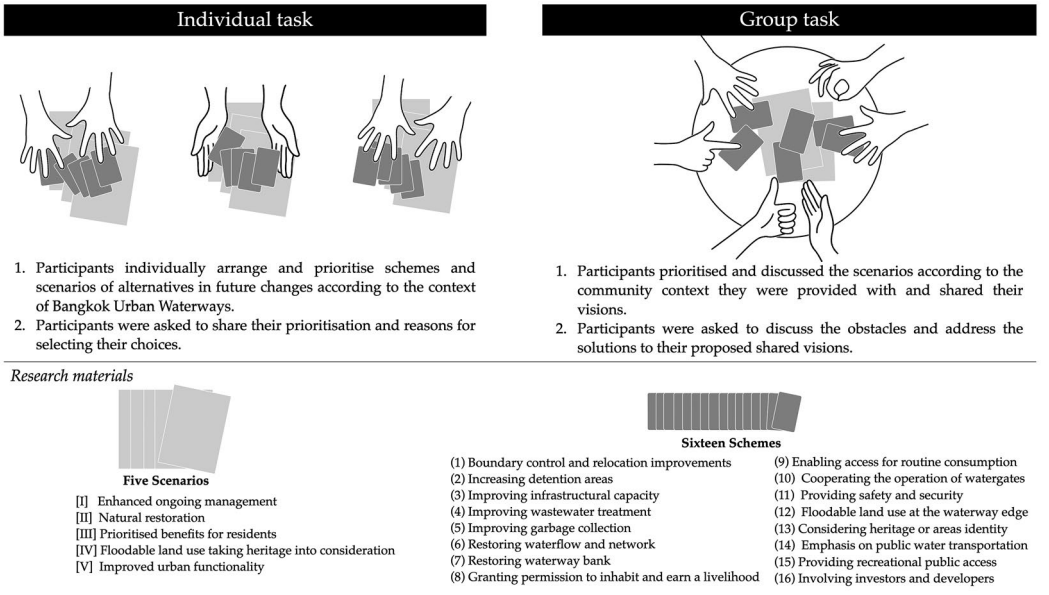

Figure 4. Workshop activity in the individual and group tasks. *Source:* Lead author.

Figure 5. Discussion of BUW alternatives through the schemes on cards (A), (B), and the diagram sections (C). *Source:* Lead author.

Workshop participants included those who worked in government agencies, practitioners, and academics. Consideration was given to their disciplines. *Waterbody experts* had expertise in water engineering (BE), $n=4$, and flood resilience management (FE), $n=8$. *Place-making* experts had expertise in urban planning (UP), $n=6$ and heritage conservation (HC), $n=6$. Eight workshops were conducted, with individuals from different disciplines in each group (Table A3 Participants list), between January and March 2023. The workshop conversations were recorded and transcribed, and thematic analysis (Braun & Clarke, 2021) was conducted using NVivo software (Meehan, 2021) through an abductive strategy (Thompson, 2022) to cluster the information presented in the following section.

Results

The paper illustrates how the decisions are made in relation to Bangkok's urban waterways by using the research materials. This section divides the research findings into two parts. The first part addresses the concerns and values that emerge from decision-making by individuals or single disciplines. The second section explores cases of group decision-making, where values and perspectives from multiple disciplines are integrated.

Individual task: considerations in decision-making

The findings from the *individual task* highlight the reasons behind participants' choices and preferences through a process of prioritisation. The data analysis revealed the value(s) expressed by participants reflected the scenario that they prioritised (Table 1). These findings identified four primary considerations in the decision-making process.

Level of change

When individual participants identified their priorities in relation to scenarios of possible future change, their responses revealed how they perceived and reflected on different levels of change.

- ***Substantial change that is pertinent (priority):*** Experts in flood resilience management (FE) and heritage conservation (HC) considered scenarios [II] natural restoration and schemes like (4) improving wastewater treatment to be priority as these alternatives will lead to substantial changes in both physical and regulatory terms (FE-01/04/06/07, HC-01/03/05/06). '…If we can change- let's make the real change- […] by recovering waterways [II]. FE-01: G-1'. This indicated that FE and HC prioritised ecological, natural inundation, and flood prevention values of BUW.
- ***Overwhelming change with resulting resistance (non-priority):*** Experts in water engineering (BE) and urban planning (UP) deselected scenarios like [IV] floodable land use because this could cause resistance following the land boundary change (BE-01/04, UP-04/05/06), as could schemes (6) restoring water flow. 'I am not choosing [IV] because this requires too much change from the existing setting. [This] would change Bangkok as a whole to no longer be Bangkok as we recognise [it]. BE-01: G-1'
- ***Minimal and irrelevant change (non-priority):*** BE and UP addressed schemes like (9), enabling access to BUW, (11) providing safety and security, and considered Scenario [III] prioritised benefits for residents as insignificant because they were minor changes and not urgent (BE-01/03, UP-02/03*)*. 'I don't choose [III] because that was the little change. […] It will influence nothing and no point in doing them [9,11]. BE-01: G-1'

Feasibility of implementation

In discussing scenarios of prospective change, individual participants identified priorities that revealed their perspectives on feasible interventions along BUW.

- ***Challenging but of great significance (priority):*** FE and UP remained committed to prioritising tasks like (2) increasing detention areas, Scenario [II] natural restoration, and [IV] floodable land use (FE-01/03/04/06, UP-01/03/05). Despite the challenges of their management cooperation. '…Mentioning them [2] only in policy papers hasn't happened recently. But I think they are important… At least, raising these choices in meetings would be a good start. UP-01: G-2'. This highlights the values held by FE and UP, such as natural inundation, flood prevention, and food production values.
- ***Extremely challenging and unlikely (non-priority):*** BE and UP did not prioritise schemes like (6) restoring water flow, (7) restoring waterway bank, and (10) coordinating the operation of watergates as they potentially require a high level of complexity and extended cooperation (BE-02/04, UP-04/06). '…Getting things [6,10] done in Banpantom will need a bunch of agencies to work together… Honestly, it is going to take forever to get moving. UP-04: G-6'.

- ***Simplicity and more possibility (priority):*** BE and UP considered scenario [I] enhanced ongoing management and schemes like (3) improving infrastructural capacity, (4) improving wastewater treatment, (5) improving garbage collection, to be priorities. This is because they have already established agencies responsible, which should be carried out easily and directly (BE-03, UP-03). BE and UP valued BUW primarily for its role as urban public space and for flood prevention.

Outcome assessment

By identifying priorities within possible future scenarios, individual participants demonstrated reflection on their long-term implications.

- ***Long-term outcome of considerable importance (priority):*** FE, HC, and UP considered scenarios [II] and [IV] important as they will yield long-term flooding mitigation and adaptability (FE-01/03/04/06, HC-01, UP-04/05) also enforcing the relationship between the waterways and locals (HC-04). 'I think scenarios II and IV could be the choices that the government should address… as this constitutes the most understanding solution to the existing condition […] and will solve the issues in the long term. UP-04: G-6'. This highlights the values held by FE, HC and UP, such as flood prevention, daily consumption and food production values.
- ***Short-term and inconsequential (non-priority):*** BE did not prioritise scheme (3) improving structural capacity as it typically remains effective for only two years (BE-04). FE, UP and HC explained scheme (10) coordinating watergate operations as unimportant as it is prone to human error (FE-01/03, UP-03, HC-01). '…Improving pipes or pumps… are hopeless. …they don't help anything, though- it doesn't the whole system, only location by location…and the outcome will be very short term. HC-01: G-1'.
- ***Significant knock-on effect (priority):*** FE and BE prioritised schemes like (1) boundary control with relocation improvement (FE-02,07 BE-01,04) and (8) granting permission to inhabit and earn a livelihood because they could identify land ownership (UP-01/04). '… the explicit rights and defin[ing] the land ownership is very important. The issue I used to face was the unclear land ownership along the waterways. I see this issue is the main thing that creates other problems afterwards. UP-02: G-3'.
- ***Sequential outcome and of little significance (non-priority):*** HC and FE did not prefer schemes (9) enabling access for routine consumption, (11) providing safety and security, (14) emphasise public water transportation, and (15) providing recreational public access because they could occur spontaneously after the improve of water quality (HC-01/06, FE-03/06). 'These [9,11,14,15] can easily be achieved after the natural system has healed. No need to prioritise them HC-01: G-1'.

Perceived benefits

Individual participants considered the benefits of the different scenarios when they were asked to identify their priorities.

- ***Benefits favouring specific groups (non-priority):*** BE and UP considered schemes (16) involving investors and developers, (3) improving structural capacity, unimportant as they will only benefit commercial and construction budgets (BE-02/03, UP-05/06). 'Normally, the investor seeks the benefit of value for money, one way or another […] It is improper to include them to gain or control the benefit. BE-03: G-4' FE and UP did

not select scenario [I] enhanced ongoing management because it could perpetuate a budget spending cycle that benefits specific stakeholders (FE-02/03, UP-02/04).

- ***Primarily profiting locals (priority):*** HC and UP prioritised schemes (8) granting permission to inhabit and earn a livelihood, (9) enabling access for routine consumption, (11) providing safety and security (HC-03/04/05, UP-02,03,04), (4) improving wastewater treatment, and (5) improving garbage collection. This is because they could provide essential services to community areas (BE-04, UP-03). The values highlighted here included daily consumption and local livelihood.
- ***Benefits serving the public with great importance (priority):*** FE, BE and UP considered schemes (1) boundary control and relocation improvement, (14) emphasise public water transportation, and (15) providing recreational public access, to be priority. They potentially offer shared benefits and support the city as a whole (FE-01/04/05, BE-01/03/04, UP-02/04/06). '…the [Banpantom] community, sometimes, has to sacrifice to get the shared benefit to the whole city. These [14,15] should be prioritised as the overall city benefits rather than focus only at the local scale. HC-06: G-8'. The values here include urban public space, transportation, and local livelihood values.

Group task: integrating values to overcome the dilemmas

Four collective sharing approaches emerged from the group task of addressing the different scenarios in the three community contexts (Table A4). Table 2 illustrates how participants demonstrated greater overlap in shared values when working in a group than when addressing the same scenarios individually.

Integrated natural and historical significance

The workshops first focused on two scenarios, [II] natural significance by experts in flood resilience (FE-02/04/07), and [IV] heritage significance by experts in heritage conservation (HC-01/04/06). The group discussion later reached a consensus that these two perspectives must be integrated. They agreed that the historical context should be considered alongside environmental studies in management decisions (G-1/3/4/6/8). The analysis shows various values embedded from both scenarios [II]/[IV] (Table 2). 'Banpantom and other conservation areas could be re-envisioned as more than just prioritising heritage sites. Instead, these areas could play a role in mitigating the impact of floods when the consideration of waterway restoration occurs […] This enhances the relationship between waterways and people as well. G-8'.

Balanced levels of infrastructural measures

Workshops participants discussed BUW's alternatives to flood prevention, focusing on the dilemma between the necessity of infrastructural capacity in the scenario [I] preferred by BE (BE-01/02/04), in terms of the role of BUW's free-flowing drainage, and scenario [II] emphasised by FE, who opposed infrastructural capacity, maintaining BUW's role of water detention (FE-02/03/04/07). A group discussion later agreed that these two roles—drainage and detention of BUW—must be integrated by determining the appropriate extent to which the massive construction of infrastructure can be adopted (G2/3/4/5/6/7). 'The waterway restoration must go together with ongoing improvement of the [infra]structural measures (G2)'. The analysis shows values from [I] and [II] being integrated (Table 2). Transportation and livelihood values were additionally expressed in the analysis through the workshops' comments on the need to control water levels to permit water transportation, for instance.

Justifying adaptive land use

After debating between scenarios [IV] floodable land use taking heritage into consideration and [V] improved urban functionality, the groups agreed on the notion of floodable land use [IV] with the potential for functionality for public use [V]. While neither of these scenarios [IV, V] explicitly addressed livelihood values, the analysis revealed that the group discussion later reflected the importance of livelihood values. This was interpreted through their comments about using infrastructure to facilitate the essential services for people to sustain their daily operations during wet seasons (G3/4/5/8). 'The traditional community settled along the Sanseab Canal here [Talad Nongchok] [which] demonstrates the adaptive land use benefiting flood mitigation through heritage preservation. This needs the support of the government to improve the infrastructure and renovate these existing antique houses, which need to be re-designed to serve functions like sanitation. G-4'.

Balance of local needs and city identity

Further discussions revolved around the dilemma of allowing the area adjacent to BUW to remain as private settlements [III] as preferred by HC (HC-01/03/04/06), or returning areas to the public [V] as proposed by UP and BE (UP-01/02/BE-02/FE-06). The group consensus later addressed the integration of these opposing views. The analysis shows this agreement was underpinned by livelihood and urban-public space values. This was interpreted from their discussion about a sense of belonging among locals, and how BUW could become a shared asset when locals help maintain BUW. This could also have wider public benefits (G2/G5). Day-to-day cultural value and preservation value were addressed when discussing residents and that waterways that could be restored to become an integral part of the city's identity, providing shared benefits to the urban city of Bangkok (G1/2/5/8). 'If locals perceive benefits from nearby waterways…, they should potentially take ownership of these waterways. […] When a wide range of functions is incorporated, more people will use the Sanseab Canal frequently. This increased usage will lead to a stronger sense of ownership among the [Minburi Upatum] community. They will be more likely to develop an affection for it and take measures to protect and preserve it. G-5'.

Discussion

The findings reveal various 'considerations in decision-making' that participants made individually, indicating how dynamic factors underpinned their choices. Even within the same set of considerations, participants would prioritise or de-prioritise certain issues based on their own expertise. These differing priorities initially led to 'dilemmas in decision-making' during subsequent group tasks. However, the group discussions demonstrated that participants with different expertise were ultimately able to reach consensus later on, not necessarily by choosing one scenario over another, but by integrating elements from both through 'collective decision-making' (Table A5, Figure 6).

Understanding the status quo in decision-making of BUW management

Figure 6 shows four key challenges in management decisions emerging from the dilemmas: prioritising natural vs. heritage significance, relying on infrastructural measures vs. natural solutions, occupying floodable land use vs. emphasising urban functionality, and allowing vs. restricting local land occupation. To illustrate, tasks like 'improving capacity of infrastructure' were prioritised by water engineering experts but de-prioritised by ecologist experts who addressed this as a solution prone to human-error. 'Natural restoration' was seen as a priority for ecology

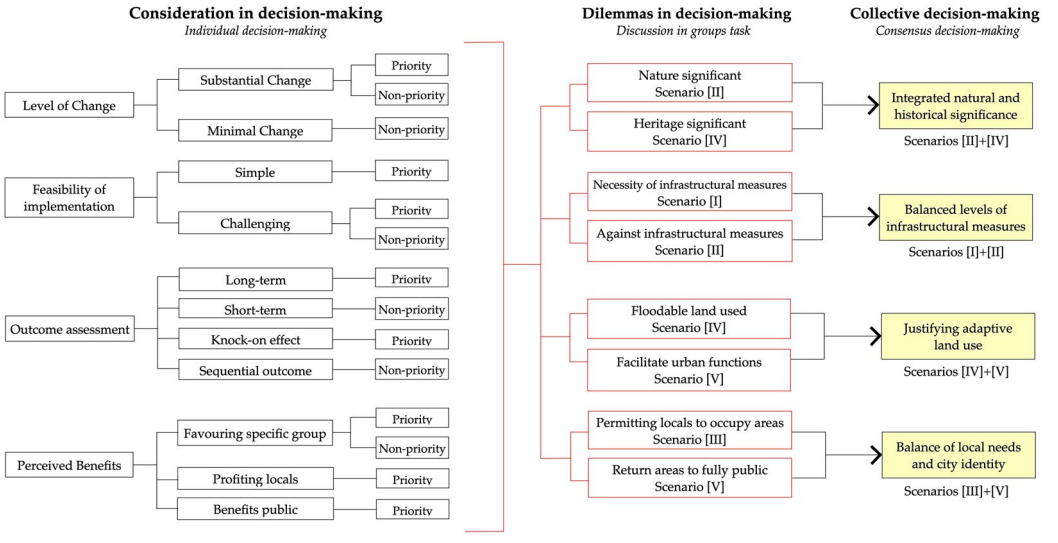

Figure 6. Considerations, dilemmas, and collective sharing in BUW decision-making. *Source:* Lead author.

experts, while urban planner experts viewed it as less feasible due to the overwhelming changes involved. This could cause controversy in dense settlements adjacent to BUW such as Minburi Upatum. This reflects individual self-interest (McGuire, 2012), contrary perspectives (J. Reed et al., 2016), and conflict of interest in decision-making (Sutherland, 2022).

This approach to restoration alternatives can be explained through the differentiation of values highlighted in the literature (Kendle & Forbes, 1997). Academic participants viewed the value of restoration in terms of learning, understanding nature, and fostering collaboration, which provide benefits even if the outcomes are not immediately apparent, i.e., process-oriented value. Findings further show that practitioners favoured outcome assessments that produce short-term results, such as increasing infrastructural capacity through pumping or piping. Because these tasks address an ongoing objective from BUW agencies, this aligns with conventional management, which tends to value output-oriented indicators (Collins & Ison, 2009).

Decision-making processes for schemes like floodable land use at waterway edges, or scenarios like natural restoration and taking heritage into consideration when treating waterways as detention areas, are unlikely to be called on, according to these findings. This is because of the difficulty in implementation, which would require cross-agency communication and considering BUW as a non-rigid boundary. For example, implementing these tasks in Banpantom would require collaboration from various disciplines, including conservation, urban development, water management, as well as local involvement. Conversely, tasks managed by water agencies alone, e.g., increasing the capacity of pumps, can be done directly due to their jurisdiction. This is what has happened in BUW. This business-as-usual approach reflects the tendency to oversimplify complex landscape management through isolated disciplines (Oosten et al., 2018) and fails to address complex challenges (Collins & Ison, 2009).

The dilemma between public goods and local benefits is also addressed in decision-making and is evident across three community contexts. Should Banglampoo Canal primarily serve the residents of Banpantom or symbolise the historical elements of Bangkok? A similar deliberation unfolds in Minburi Uppatum, where the role of Sanseab Canal is contested between supporting the citywide function of Transit Oriented Development or delivering direct benefits to the local population.

Findings further indicate the examination of these conflicting considerations, where priority is placed on either benefiting local profits or serving the broader public interest. It is challenging

to reconcile common ground (Lecuyer et al., 2018) with different expertise and differentiation in their problem framings (Talen, 1996). Striking a balance or reaching a compromise can pose challenges when factoring in the implications of flooding, which can constitute a 'messy situation' (Laquian, 2011) when considering the waterways as a component of this mega-city of Bangkok.

In addressing flood issues in Bangkok, the focus on collective goods for the entire city tends to overshadow the often-overlooked livelihood values from which locals have benefitted. This echoes an ongoing outcome of flood control in Bangkok, where vulnerable communities tend to be adversely affected while decision-makers prioritise protecting particular areas of high economic value and conservation zones (Marks et al., 2020). This hinges directly on how decision-makers face (or create) dichotomous decisions, e.g., prioritising advancements in economic growth and urban functionality or reducing environmental impacts and safeguards local residents' ways of living (Todt & Lujan, 2014). In the context of BUW, it shows clearly that the (arbitrating) roles and (noncognitive) values that emphasise economic growth are always prioritised in the decision-making around BUW management. This is also seen in other rapidly urbanising cities such as Jakarta (Colven, 2023) and Ho Chi Minh City (Lempert et al., 2013).

Regardless of the complexity of urban issues and the interconnected nature of flooding and heritage concerns in the waterways, decisions about BUW are made by the Drainage and Sewage Department alone, along the bounded rational mode (Choo, 2002), which applies long-standing rules. Moreover, the workshops highlight Thai cultural nuances (Jiraprasertkun, 2015), showing how open discussion does not occur easily among individuals from diverse disciplines.

Significance of integrated values in decision-making

The findings reveal that flood prevention in BUW remains a value shared by all decision-makers. Several other values—such as natural restoration, livelihood, and local recreation values—were underrepresented in individual responses but became more prominent during group discussions. This suggests that group dialogue facilitated the integration of diverse expertise, allowing for the recognition of different values, and emergence of shared knowledge. These findings initially suggest that values can shape knowledge (Choo, 2002; Elliott, 2011), reflecting the importance of aligning values with decision-making (Conroy & Peterson, 2013). Different values held by participants were called on in group exercises, emphasising a more holistic approach to addressing inherent environmental and social inequality through their collaborative input (Dobson & Dempsey, 2021; Lecuyer et al., 2018). This also echoes the international literature on water heritage initiatives (Willems & Schaik, 2015).

The outcomes illuminate the deliberations concerning the Banglampoo Canal. The standpoint of preservation-oriented participants is rooted in a robust dedication to preservation values. 'The old town has been protected since the city was established by the city wall. […] Areas have never been flooded. Why should we consider allowing more water to come? (HC-06)'. Later, the group discussion unveiled a collective understanding of natural and cultural significance, and a practical suggestion from various experts emerged: 'If the water could flow, let's prioritise areas for public use over private settlements (G-08)'. Their openness to finding compromises suggests that, at the very least, areas within BUW, whether protected or not, have the potential to enhance the city's resilience. Participants' expression of day-to-day cultural value was also underpinned by the belief that this could strengthen the relationship between people and the waterways when they could access them visually (and physically) (Nassauer, 1995; Stephenson, 2008).

Participants bridged the gap between each other's interests (Fazey et al., 2012; 2014) via the workshop discussions, which involved process-oriented and experiential learning (Collins & Ison, 2009). When the discussion considered local communities, this meant the dimension of heritage went beyond the idea of conservation. This integrated discussion not only considered natural ecology and heritage sites but also addressed community needs around livelihood by taking a

holistic approach and focusing on specific communities. This brought to the fore issues like poverty and insecurity (IUCN, 2021; McPhillips et al., 2022) not usually within the purview of these decision-makers. For example, a workshop discussing Talad Nongchok highlighted the need to improve infrastructure for locals living in traditional houses near the Sanseab Canal in order to occupy the water heritage initiatives.

This collective sharing directs attention to the idea that there should be no differentiation between conservation and non-conservation areas. This aligns with the principles of Landscape Character Assessment (Butler & Berglund, 2014), where character extends beyond just the most important ('best') landscapes and is closely intertwined with the range of values attributed to the character of the landscape itself (Butler, 2016).

Findings demonstrate the integration of multiple disciplinary domains (Divay & Wolfe, 2002; J. Reed et al., 2016), which requires involving stakeholders (Reed, 2008), knowledge exchange and integration (Fazey et al., 2012; 2014) to tackle waterway management holistically. Furthermore, the workshops demonstrated how the process of collective sharing is effective in addressing inherent problems (Raymond et al., 2010). This can prove to be a useful method to produce a decision-making process which requires knowledge from distinct disciplines and different viewpoints (or values) to be acknowledged (Todt & Lujan, 2014), as exemplified in the three communities. Findings further elaborate that there is no need to make dichotomous choices, e.g. local benefits or public goods. These 'opposing' interests can be integrated as discussions can permit the different expressions of often shared values.

Conclusion

This investigation into the expression of value in decision-making through workshops has uncovered a wealth of diverse perspectives held by participants. It highlighted that they shared concerns around balancing natural and heritage significance, structural and nature-based measures, functional land use and floodable spaces, as well as local occupation and regulatory control, which underlined the overlapping values they hold and express (Research Objective (RO1)1). The value of local livelihood was initially overlooked but emerged as an important shared value from the collaborative discussions and underpinned the discourse around how to understand future urban waterway management and its inclusion in creating alternative approaches. This underscores the importance of incorporating diverse value perspectives in decision-making processes. The influence of values on knowledge formation warrants further investigation, and future research should also examine the role of multiple knowledge systems in socio-ecological decision-making, e.g., in other rapidly urbanising cities.

Findings highlight the challenges when decision-makers are asked to take a holistic approach, as the norm is to prioritise individual (or economically driven) values and often resist any change to the current management paradigm (RO2). This tendency to prioritise involves a focus on short-term gains over long-term benefits, as the visible and quick outcomes of actions are more appealing than the gradual progress of natural restoration.

This paper also highlights the potential of a collaborative approach to decision-making (RO3) which remains underutilised in the Thai context. By demonstrating how a multi-value, collaborative process can reveal broader priorities and more integrated solutions, this study offers a fresh perspective on why change is needed and how it might be achieved. The findings go beyond the Thai context and underscore that fragmented expertise and values can be effectively integrated into cross-disciplinary discussion to provide stakeholders with the means of finding solutions to multi-dimensional problems. These findings are relevant for waterway decision-makers in many countries outside Thailand where conventional management and unilateral decision-making prevail. The research therefore underscores a collaborative approach which can help decision-makers to develop an understanding of waterways as integral and multifaceted elements of landscape.

Declaration of AI and AI-Assisted technologies

The first author utilised Grammarly for grammar and spelling checks and ChatGPT for refining complex sentences during manuscript preparation. All content was reviewed and edited by the authors, who assumes full responsibility for the final publication.

Disclosure statement

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Research ethics and consent

This study involved human participants who took part in focus group discussions. All participants provided written informed consent prior to participation. The consent process included an explanation of the study's purpose, procedures, and the right of participants to withdraw at any time without consequence. Participants were informed that their responses in the focus group—including dialogue from the discussions—would be anonymised and used solely for research purposes. Participants consented to being photographed during the activities, with the assurance that their faces would not appear or be identifiable in any published material. No identifying information has been included in the manuscript; participants are referred to only by their disciplinary background. Consent to publish anonymised dialogue and non-identifiable photographs was obtained, and participants providing consent were shown the relevant content of the article before publication. This study was reviewed and approved by the Department of Landscape Architecture Research Committee, University of Sheffield, on 08/11/2021.

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Nicola Dempsey's work spans sociology, wellbeing, urban design, and planning, focusing on how physical contexts shape everyday life. Her academic journey began with International Tourism, specialising in urban tourism's impacts, including Andorra's winter tourism. Transitioning to academia in 2003, she pursued a PhD while managing the CityForm-UK project, examining urban form's effects on sustainability. She later researched outdoor spaces' influence on quality of life and led the MP4 project on place-keeping in Sheffield. Nicola's global experiences, from Manchester to India, inspire her understanding of urban-rural dynamics. She has been a Lecturer in Landscape Planning at Sheffield since 2011.

Data availability statement

The original contributions presented in this study are included in the article and appendices; further inquiries can be directed to the corresponding author.

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