Living with Water

Exploring Urban River Restoration in Utrecht, Netherlands and Taipei, Taiwan

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Dedicated to my beloved city, Taipei

Acknowledgement

I am writing this section during a turbulent time in Taiwan. My studies have taken place alongside one of the most unsettled, but also one of the most vibrant periods for civil society in Taiwan—a society I am proud to be part of. In my beloved city, Taipei, I learned what it means to be an ideal citizen.

While studying for my Master's in the Netherlands, I often found myself complaining about spending too much time following the news from Taiwan. But I never regretted it—who knows, maybe one day Taiwan will disappear from the world map.

I want to express my deepest gratitude to my parents. Their support and belief in me have been my greatest strength throughout this journey.

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Abstract

The importance of rivers and water bodies has been recognised in contemporary urban planning. To make water environments more accessible, restoring the filled and concretely channelised waterways is getting more and more popular, both in practice and academic research. However, limited space and complex land use complicate river restoration within the urban areas. The object of this thesis is to understand the concept of river restoration as an aspect of contemporary urban planning. Using cases of Catharijnesingel in Utrecht, the Netherlands, and Huanggang River in Taipei, Taiwan, this thesis aims to explore how different actors collaborate with others and how they perceive river restoration for urban planning. To achieve this, it applies a qualitative method combining literature review, document analysis and interviews. The findings reveal that most actors recognise the positive impacts of river restoration on the economy, landscape and quality of life, but there is a need to address actors' concerns, such as flooding, during the communication and collaboration process. In addition, it is found that actors have different communication and collaboration strategies depending on the distinct context in which they try to convince others of the benefits of river restoration. The thesis concludes that urban river restoration represents a thinking shift in living with water, but the political, institutional and social context and public perceptions are challenges in promoting urban river restoration. Therefore, restoration has two meanings: restoring the water environment and restoring the relationship between people and urban rivers.

Keywords: *urban river; river restoration; urban planning; collaborative governance; perception; Utrecht; Taipei*

當代都市規劃愈來愈注重都市的河川與水環境。不論是在學術研究或是實務經驗上，再造、復育都市河川，使之成為可親近的水文空間亦逐漸受到重視。然而，擁擠複雜的都市紋理使得河川再造困難重重。本研究透過質性的文獻回顧、文件分析與訪談，研究荷蘭烏特勒支的運河再生以及台北磺港溪再造，梳理都市河川之於當代都市規劃的重要性，並了解行動者的合作關係與其對復育都市河川的看法。研究指出行動者普遍認可復育都市河川環境帶來的正面價值，例如生態系服務、生活品質等，不過他們仍存有例如洪水風險等疑慮。而在不同的社會體制與

脈絡之下，行動者有不同的溝通與合作模式，並且試圖透過不同的模式與溝通策略去說服其他行動者復育都市河川的效益。研究顯示，都市河川的復育與再生，體現了都市規劃重拾對都市水環境的重視，但是政治、體制、社會脈絡以及民眾的想法，是推動此類計畫的一大挑戰。因此，復育具有兩層涵義：一、復育都市的水環境；二：重新找回人與河流的關係。

關鍵字：都市河流；河川復育；都市規劃；協力治理；認知；烏特勒支；台北

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1. Introduction

As the importance of urban rivers continues to grow particularly through initiatives such as Blue/Green Infrastructure (BGI) or river restoration, water and river management have become essential elements of modern urban planning. In the urban context, rivers have long been modified for a variety of purposes and to reduce flood risk (Everard & Moggridge, 2012). Traditionally, urban rivers were controlled to protect cities and ensure resource supply, which was usually limited to a single sector, usually a water management agency, rather than an independent segment (Pahl-Wostl, 2015; Saikia et al., 2024). In the 60s and 70s, urban river governance was in the role of a service provider, controlling rivers through bureaucracy and a technical approach (Pahl-Wostl, 2015). In line with urbanisation and the goal of economic growth, natural rivers were filled in, channelled or paved over (Paul & Meyer, 2001).

The elegy of urban rivers saw an opportunity after the millennium. River governance is now facing a multifaceted transformation due to various driving forces such as climate change, the transformation of ageing inner cities, and the demand for urban nature (Levin-Keitel, 2014; Wohl et al., 2015). Hence, urban river governance is now becoming an integration with multiple interests, where complex issues need to be addressed across sectors. Therefore, contemporary urban river governance could then confront various opportunities and challenges. Cross-sector decision-making becomes the basis for policy formulation, leading to rethinking and liberating urban rivers. The call for restoring urban streams has been taken seriously, which has become an important element of contemporary urban planning.

In summary, urban river governance is now not only the management of floods, supply, and wastewater, but also multi-facets of river that should be integrated into a systematic perspective and cross-sectors governance. By comparing two cases of urban river restoration, the Catharijnesingel in Utrecht, Netherlands and Huanggang River Transformation Project in Taipei, the capital of Taiwan. where former trafficways that were once rivers were transformed back into waterways alongside green spaces, this thesis aims to investigate how river restoration is integrated into urban planning as cities shift away from a car-oriented approach.

1.1. Research Objectives

The aim of this thesis is to explore the restoration of the river as an aspect of urban planning and public space management. As extreme weather events have taught us that traditional urban river management measures - damming, channelling, keeping rivers out of people's lives - no longer meets the safety and quality of life needs of today's urban dwellers, the urban river is once again being released from its confinement in the role of 'mother river'. In this way, the various relationships between government, citizens, rivers, history must ultimately be realised through urban planning and the debate of ideal land use. Although some successful cases have been studied on the aspects of technology and its contribution to mitigating climate change, little research has been done on how the restoration project can be integrated into comprehensive urban planning, in particular the implementation varies in different parts of the world. Therefore, the object of study here is to explore river restoration as an aspect of water management/public space management planning processes, and how the actors in these processes collaborate and perceive this intervention.

1.2. Research Question

To address the problem discussed above, this thesis aims to answer the main research question:
How do different actors collaborate and perceive river restoration for urban planning?
Focusing on actors' involvement and collaboration, the following sub-questions are stated as:

1. What is the role of river restoration in contemporary urban river governance?
2. Who are the different actors involved and how do they collaborate?
3. What are the perceptions of the different actors involved?

2. Theoretical Framework

The theory presented in this thesis is mainly focusing on river restoration as an aspect of water management. To elaborate on this, it is necessary to delve into some of the theories that link these two concepts.

Urban water management is undergoing a paradigm shift worldwide. A new paradigm considers water not only as a material issue, but also as a social issue (Ran & Nedovic-Budic, 2016). With the increasing urbanisation, climate change and often extreme weather events, people realised that water is not only a material problem with binary properties, either a resource or a waste (Zwarteveen & Boelens, 2014). Instead, the urban water problem is also a multi-dimensional issue with social, cultural, economic and technical aspects that cannot be excluded from our urban lives (Bell, 2015). Based on this shift, three aspects of water management needed to be clearly articulated and elaborated. Firstly, there is a change in the way we view the urban river. The attitude of today's citizens to urban river has shifted from the traditional flood defence, engineering mindset toward a more natural, ecological way to govern urban river. Building on this discussion, the question of who should be involved in these planning processes also becomes important. Finally, it is about that within this paradigm shift, what do people perceive the new principle regarding urban river restoration.

2.1. River restoration as an urban water governance approach

Urban river governance is now not only the management of floods and wastewater but should be integrated into a broader perspective that also considers the different facets of water (Ran & Nedovic-Budic, 2016). Traditionally, the normative perspective on the environment has been of lower priority than the economy and the trend of the car-oriented approach, where the function of urban river governance is limited to a standard practice and a simple water service for supplying and monitoring (Furlong et al., 2017). People tend to build an artificial, mostly concrete structure to restrain water flowing. However, as attitudes towards water have changed, people have become more inclined to a better living quality with access to waterfront environment, and to make rivers more natural and 'wild'. Meanwhile, as the knowledge about hydrologic and ecological functions of floodplains gains, and as the unpredictable weather and extreme precipitation are beyond traditional engineered measures, calling for restoring waterbodies is increasing (Serra-Llobet et al., 2022). Therefore, a hard engineering approach is no longer the only guiding principle; instead, restoring or rewilding the old waterways has been introduced. This could be undertaken for various purposes, such as recreating the pasts, ecosystems services, flood control, improving water quality, etc. (Wohl et al., 2015). In the context of urban area, restoration projects are often performed by reflooding the floodplains, re-meandering the rivers, rewilding the riverbank, or restoring the 'original', 'natural' state of waterways (Eden & Tunstall, 2006).

2.2. Integration of Actors: Collaborative Governance

To deliver better quality of urban places and to manage complex environmental issues, the importance of collaborative relationships between stakeholders is widely recognised. Referring to multi-stakeholder cooperation, the collaboration usually led by the public sector, which aims to build consensus among stakeholders in order to generate public value (Bianchi et al., 2021). Ansell and Gash (2008) then converge the concept into the discussion among the government sectors and non-state stakeholders, which further led to the definition of collaborative governance by Emerson et al. (2012) as: '*the processes and structures of public policy decision making and management that engage people constructively across the boundaries of public agencies, levels of government, and/or the public, private and civic spheres in order to carry out a public purpose that could not otherwise be accomplished*'. Drawing on the framework presented by Emerson et al. (2012), collaborative governance can then be depicted as a framework with three dimensions: the general system context, which refers to the political, legal, socioeconomic, environmental factors that could generate opportunities and constraints that influence the dynamic of the collaboration; the collaborative governance regime (CGR), which encompasses the mode of public decision making, including principles, rules, norms, and procedures; collaborative dynamics and actions, which contains principled engagement, mutual understanding, shared motivation, and capacity for joint action (Emerson et al., 2012).

It is realised that a successful collaboration contains many factors. First, urban river is a highly politicised field, where a combination of forces pulling on each other to form the status quo. Regarding which, Levin-Keitel (2014) clarified the main actors categories and divided it into the public and private sectors, with the former comprising elected political leaders, government departments (including water, environment, planning, transport, and culture and history), and the latter comprising the real estate industry, interest groups, and citizens. However, literatures have revealed that the participation of non-traditional actors is often reduced to a formality rather than having a real impact, which then become a new Legitimate Injustice (Bickerstaff &

Walker, 2005). Studies have also found that the motivation of these non-traditional actors, especially citizens and local communities, is highly correlated with whether or not they actually influence the final outcome (Zscheischler et al., 2019).

Therefore, it is noticeable that the collaborative dynamics of planning processes is highly influenced by existing power relationship between actors. Drawing on the aforementioned studies, Bryson et al. (2015) then highlighted and developed a cross-sector framework of collaborative governance approach. They summarised and clarified the categories when it comes to cross-sector collaboration, including general antecedent conditions; initial conditions, drivers, and linking mechanisms; processes, structures, and links between them; endemic tensions or points of conflict; and outcomes and accountabilities. Also referring to Woldesenbet's framework regarding social context, governance structure, and collaborative process in his research in urban water projects in Addis Ababa City (Woldesenbet, 2020), this thesis proposes a theoretical framework for analysing the collaboration as follow:

General system context

This refers to the dynamics of the broader contextual factors, including the external political, institutional and social environment conditions. The effect of these factors may be deriving from the awareness of political leaders or policy makers, or due to the increasingly complex urban environment issues that can no longer be solved by relying solely on the public sector. In addition, the general system context includes the power dynamics between local communities and various levels of government. At this stage, the political, economic, and even media resources that civil society possesses are all important factors contributing to collaboration. It is noticeable that the overall social atmosphere, a critical moment or events, the sense of historical and cultural heritage, the state of the economy, the thinking of elected leaders may all influence this dynamic system, leading to a dynamic systemic context rather than static system and norms. Therefore, understanding the general system context will be helpful in analysing how collaboration is possible.

Initial conditions and drivers

This refers to the factors that facilitate the initiation of collaboration. Some key elements include the initial agreement on collaboration, existing network connectedness among actors, motivation for collaboration, and the leadership. The initial agreement ensures that all actors would follow the agreement and the formal procedure; network connectedness among actors include the relationship include inter-public sectoral, inter-private, and public-private relationships, which includes multi-level agencies, local community, experts, and NGOs. Besides, the political leader and leader of various organisations' sense of collaboration and an understanding of policy instruments could also influence the collaboration process.

Collaborative structures and processes

There are several factors that are wide recognised as key elements when it comes to collaboration. First, collaborative structures are related to the general political, socially and institutional contexts, which serves as the bases of collaboration, such as legal responsibilities, principled engagement or existing networks. Through several frameworks provided by literatures, these factors are proved to be essential during the collaboration process (Ansell & Gash, 2008; Bryson et al., 2015; Woldesenbet, 2020):

- Trust building: Building and maintaining trust between actors are essential for an effective collaboration and understanding of others' situation. Trust can be built through different levels of collaborative activities during the whole processes. However, it is not to say that trust can be built simply through face-to-face interaction or sufficient public consultations. Instead, the key is that collaborative leader and powerful, critical role should recognise that building trust is an important process.
- Commitment to the process: In the context of cross-sector collaboration, commitment to the process refers to the sense of responsibility and taking part into the project activities. This ensures all actors aligned, engaged and committed to overcome the challenges to achieve the shared goals.
- Communication and Shared understanding: Shared understanding can refer to the understanding of actors throughout the collaboration process at various levels, such as the definition of environmental issues, awareness of policy tools, mutual understanding of their roles, and understanding of engineering tools and common goals. To achieve this, communication between actors, which can be in both formal and informal ways, is thus highlighted.

Conflicts and Tensions

Conflict and tension are often unavoidable in the planning process. Therefore, understanding the source of these tensions can help us to minimise conflicts in the collaborative process. The common tensions often arise from power imbalances. Though some literatures reveals that it will be more effective and accepted when a formal policy-maker or actors with formal power are strongly involved in the planning processes (Agrawal et al., 2013), imbalance of power among actors is still the prime source of conflict due to the difference of influence on outcomes, organisation's resource and reputation, expertise and knowledge gap, and the formal authority (Bryson et al., 2015). In addition, the legitimacy and authority of the actors in the process will be part of the power structure, and this is also related to the existing regulations, rules, norms about cross-sector whether there is a set of mechanism in which all actors have the same power and influence. This is an important subject to explore, because the literature also points out that actors are no longer willing to participate in the discussion because they think they do not have any influence on the final outcome (Bickerstaff & Walker, 2005). Therefore, it is important to investigate (i) The differences in the power of actors, (ii) The capacity of all actors to participate in a meaningful way (Ansell & Gash, 2008).

2.3. How do actors perceive river restoration

Given the complexity of urban demographics and environmental issues, both public and private sectors and residents have their own visions of what an ideal river state should look like. Therefore, understanding what factors influence actors' perception on river restoration becomes an important material for contemporary issues facing the complexity of urban environments. Here, Levin-Keitel (2014) provides a framework for understanding actors with specific rationalities in the process of forming consensus (Table 1).

Table 1: Multi-actor, multilevel governance of urban riverscapes (Levin-Keitel, 2014)

Actor	Rationality	Instrument
Water management agencies	Water supply, water quality, environmental renaturation	Own laws, directives, plans, programmes and projects
Local planning authority	Urban planning and development, integrated issues	Own laws, land-use plans and construction plans
Environmental authority	Environmental renaturation, biodiversity, ecosystem approach	Own laws, environmental landscape plans, programmes and projects
Transport planning authorities	Infrastructure and mobility, riverscapes as linear connections	Own laws, directives, plans, programmes and projects
City council	Political decisions and strategies, legislative terms	Policy documents and decisions
History / culture authorities	Protection of historical, natural and cultural monuments	Comprehensive laws, directives, plans, programmes and projects
Real estate industry	Waterfront development, economic influence	Investments and financing, markets, lobbying
Port industry	Rediscovery of urban waters for economic uses	Investments and financing, markets, lobbying
Citizens and interest groups	Various rationalities, e.g. fishing, historic conservation, accessibility of riverbanks, etc.	Lobbying, landowners, democratic impact

Based on this, the framework proposed by Garcia et al. (2020) for river restoration can help analyse the factors that may influence the perception on urban river restoration. In this framework, there are three main categories of contextual factors that influence actors' perception on river restoration, which he calls “preference factors”, including physical factors, perceptual factors and socio-cultural factors:

Social-cultural factors

- Social demographic: Factors such as education, age, income, and culture background. Generally, highly educated and higher income people tend to accept the river restoration project. In addition, older people tend to support the implementations that are traditionally perceived to artificially ‘control’ the wildness (de Groot & de Groot, 2009).
- Knowledge, beliefs and values: People with knowledge about the river hydrology, the

ecosystems' function, or ecosystems services are prone to support a more natural river dynamic rather than channelised it. A significant instance is that when consulted on flood risk management, Scottish experts and NGOs actively lobbied policymakers by explaining that floodplain is part of the river natural state, rather than a land that can be abused by human beings (The Scottish Government, 2011; Werritty, 2006), which is also similar to 'Room for the river' concept in the Netherlands (de Groot & de Groot, 2009). That is, knowledge and values would influence both public and public sectors.

- Place attachment: This refers to the emotion connections to a specific location, including the surroundings river and environment. However, there is no absolute positive or negative relationships between the place attachment and the perception on river restoration, due to that residents could either tend to maintain the status quo or initiate a new attractive landscape.

Perceptual factors

- Naturalness: This refers to the quality or state of being natural. Given that the 'aesthetically' restored nature is likely to be appreciated by public, river restoration seems to be highly accepted. However, the pleasant landscape does not necessarily lead to healthy ecosystems.
- Risk and safety: Non-traditional grey engineering river restoration often raises flooding concerns to urban riparian. Therefore, the planning process requires adequate knowledge interpretation and trust building between actors to ensure the benefit of river restoration.

Physical factors

- Landscape biophysical characteristics: This refers to the overall biophysical riverscape formed by the river and its surroundings, including the riparian forest, the type of vegetation, water quality, biodiversity, etc. Literature also suggests that these factors may affect the public's perception of river restoration due to public preference toward a specific type of riverscape. However, the appreciated riverscape can be differed under different social, historical, and cultural contexts. (Pflüger et al., 2010).
- Design and functional features: The functions that urban rivers provide citizen are quite diverse. Some emphasise ecology and wilderness, some have waterfront and recreational functions, others may serve as transport routes. Therefore, the benefits and value of river restoration to the whole city and society will influence actors' perception of river restoration. Similar with the previous item on Landscape biophysical characteristics, these factors are

closely related to urban patterns, socio-cultural and economic development.

In summary, and in line with the discussion in section 2.2, it can be known that various factors would influence the attitudes of actors towards the urban river environment, even for the same action or measure. Also, different actors may consider different things important, which may affect their concern for the issue and their willingness to discuss and cooperate. It can therefore be seen that these factors are interrelated and influence each other.

2.4. Conceptual Framework

The model (Figure 1) shows how the concepts are operationalised based on the discussed theories. Firstly, the general system context, including the general political, institutional, and societal factors, forms the basic conditions and the general structures. Among which, conflict and tensions may occur due to deficiency of these context. Secondly, the initial conditions and drivers and actors' perceptions, which are the results of general context can also influence the actors' capacity and collaborative dynamics. Collaboration structures and the collaboration process, which are interrelated, form the collaborative dynamics.

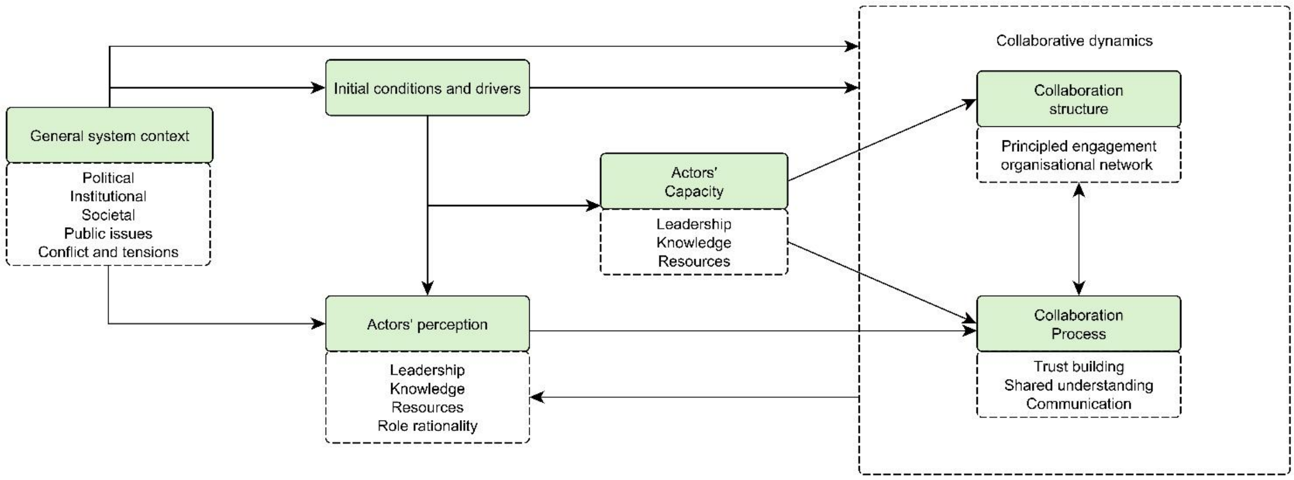

Figure 1: Conceptual framework illustrating the relationship between constructs.

3. Methodology

3.1. Research strategy

As this thesis aims to investigate how do different actors collaborate and perceive urban river restoration, qualitative research fits this research. It combines the multiple methods with the aim to explore how actors collaborate and what are their perception on urban river restoration. This thesis applied both deductive and inductive analysis. The theoretical framework provides the key factors that could influence the collaboration and perception, helping create interview guidance. Also, building on the collected qualitative data, knowledge about the collaboration and perception in different urban contexts can be developed. Qualitative research with documents analysis and in-depth interviews are adopted to develop a deeper understanding in different contexts. To better understand this, two case studies from different social, cultural and environmental contexts are conducted to provide a more comprehensive insight.

3.2. Case selection

This thesis studied two cross-national cases. The case of Catharijnesingel in Utrecht is selected as it is a significant urban water restoration project. Since the case of Catharijnesingel has inspired Taiwanese government in promoting urban river restoration, this thesis conducted the cross-national case studies between Utrecht and a case in Taiwan. Case study is valuable in exploring the 'how' and 'why' question, which allows insight into how theory and practical processes are implemented in a real project. In addition, cross-national cases in different social, cultural and environment contexts can give the reader confidence in knowing the ongoing phenomenon and allows for clarification of the critical factors in restoring the urban river in cities around the world. The cases in Taiwan have been selected based on following criteria:

1. The project is implemented in a compact urban area.
2. The project restored the waterway for one of the purposes mentioned in Section 2.1.
3. The planning process of this project involved multiple actors, including public and private sectors, and local organisations.

By searching for completed as well as ongoing cases in Taiwan, several cases were shortlisted, including Huanggang River in Taipei, Laojie River in Taoyuan, and Green River in Taichung. Laojie River project was the pioneering urban water restoration project in Taiwan, but it was completed a long time ago and has been well researched. The Green River project, on the other hand, has created a very artificial and concrete landscape that has lost the meaning of restoring the natural river in the city. As a result, the ongoing Huanggang River in Taipei, the capital of Taiwan, was selected.

3.3. Data collection

3.3.1. Literature review

Literature review was used to help answer the first research question: What is the role of river restoration in contemporary urban river governance? Google Scholar and Scopus were the main search engine used. In Scopus, the collection process was performed by searching the articles' title with the keyword "*urban*" and with the keywords "*restore**" or "*revital**" in abstracts (* represents various formats of the word, such as restoring, restoration). The keyword "revital*" was used because researchers have found that revitalise, revitalisation frequently appeared alongside "restore" and refer to similar concepts. This also applied to the searched keywords "*river*" and "*stream*", as in an urban context, these terms often represent relative concepts regarding the size of a water body rather than distinct classifications. To further narrow the searching scope down into the research topic of planning and river governance, the keywords of "*plan**" or "*govern**" *or* "*manage**" are applied. After excluding environmental, biological, and engineering sciences from the searching results, a total of 111 articles were identified.

As for Google Scholar, since its limitations in filtering search results based on keywords appearing within the abstract, the collection process was conducted by searching for the identified keywords in article titles. The following search query was applied: *"allintitle: urban river restoration planning OR plan OR govern OR governing OR governance OR manage OR managing OR management",* where river can be replaced by stream and restoration can be replaced by restoring, revitalizing or revitalization.

In summary, 111 articles were detected from Scopus, and 46 articles were detected from Google Scholar, of which 16 are duplicates.

In the second step, the abstracts of these 141 articles were scanned. The articles were considered relevant literatures when their core question aims to describe the following two issues

1. The significance of the river restoration cases for contemporary urban planning and environmental management

2. The actors involved in the case and their roles

These 71 articles were then read through carefully. From these 71 articles, 31 articles were deemed relevant because they address one or more of the following concepts: (1) What is urban river restoration and its significance; (2) Why restoring urban river; (3) Who involved in the project; (4) How did actors interact and collaborate with others; (5) How did actors perceive restoration

3.3.2. Documents collection

To understand the context and processes of the whole project, document collection was needed. By reading and analysing the documents, it is possible to answer the research questions by examining the officially engaged actors and their roles and responsibilities, as well as the vision behind the projects. This can be displayed in written documents, such as policy documents, city master plans and reports, and meeting minutes. Besides, snowballing was also allowed, which means that some of the data may have come from interviewees' suggestions.

The collection of documents of Catharijnesingel was done by searching some keywords in Google, both in Dutch and English. Keywords *"Catharijnesingel"*, *"Stationgebied"*, "*station area*", "*plan*", "*Gemeente Utrecht*" were used. Many of the search results lead to the Gemeente Utrecht's document database, which contains all documents related to the station area and Catharijnesingel project, including policy documents, project design plans and environmental, ecological and water quality test reports.

In the case of Huanggang river in Taipei, the collection of Huanggang River were done by searching the keywords in Chinese in Google, such as "磺港溪 (Huanggang River)", "再生/復育 (renewal/restoration)", "計畫(Plan)", "政策 (policy)" . The searching result led to Taipei City Governments' official web page containing all the related documents, including the project, environment assessment report, and all the official minutes from public hearings and workshops.

To answer the research questions, the documents were scanned and selected based on its relevance to the research questions and the conceptual frameworks. In summary, the documents that include the description about 1) how the project was initiated, 2) the motivation and vision behind the projects, 3) who were involved and their roles, were selected. Additionally, the minutes from public hearings and workshops were selected because they reflected the opinions of the participants. Those documents that focus on the technical test reports and design illustrations were excluded. These key documents were selected to create a clear insight on how the project was initiated and how the actors were involved, as well as their responsibilities (Table 2).

Table 2: Overview of documents collection

Document Title	Sector	City	Source
Structuurplan Stationgebied (Structure Plan Station area) (2006)	Gemeente Utrecht	Utrecht	Planviewer: Catharijnesingel
Catharijnesingel Definitief Ruimtelijk Ontwerp (Catharijnesingel Final Spatial Design)(2009)	Gemeente Utrecht	Utrecht	Planviewer: Catharijnesingel
Bestemmingsplan Catharijnesingel (Zoning plan Catharijnesingel) (2010)	Gemeente Utrecht	Utrecht	Planviewer: Catharijnesingel
Verslag consultatieavond Catharijnesingel (Report Consultation Evening Catharijnesingel) (2008)	Gemeente Utrecht	Utrecht	Planviewer: Catharijnesingel
Catharijnesingel Zuid Voorlopig Ontwerp (Catharijnesingel South Preliminary Design) Singel (2017)	OKRA (Consultancy)	Utrecht	Snowballing
UWO (Utrecht Weer Omgesingeld) magazine (2022)	UWO (Local community)	Utrecht	Snowballing
變更臺北市北投區都市計畫主要計畫案 (Beitou District Urban Planning Masterplan) (2021)	Taipei City Government	Taipei	Hydraulic Engineering Office
地方說明會會議紀錄 (Public hearings minutes) (2019, 2022, 2023)	Taipei City Government	Taipei	Hydraulic Engineering Office
共作坊會議紀錄 (Workshop minutes) (2019, 2021)	Taipei City Government	Taipei	Hydraulic Engineering Office
專家學者座談會會議紀錄 (Expert Symposium) (2019)	Taipei City Government	Taipei	Hydraulic Engineering Office
北投磺港溪願景論壇議題手冊 (Beitou Huanggang River Vision Handbook) (2019)	Local community	Taipei	Snowballing

3.3.3. Interviews

Semi-structured interviews were applied in this thesis. The interview outline based on the theoretical framework discussed in the previous section ensures that the interviewees were prepared and were able to freely and openly describe their involvement and perspectives from their own experience. Generally, the questions were following the concept discussed in the theoretical framework, mainly focus on these main topics: (1) Interviewee's background and their role (2) The collaboration experience and the challenge on collaboration (3) Their perception on urban river restoration (see Appendix 8.3).

The interview participants were selected based on the following criteria. First, the participant was involved in the project with working experience professionally. Second, the interview participant should belong to one of the following types: local government, water authority, local community, consultancy, or expert. The potential interview participants were first searched on Google and contacted through email or personal networks. Some of the interviewees were found through snowballing, which means they were introduced by existing interviewees. The full list of interviewees is shown in Table 3:

Table 3: Overview of interviewee categories

Participant	Type	Function	City	Interview Date
U-1	Local government	Project manager	Utrecht	12-02-2025
U-2	Water authority	Area manager	Utrecht	03-02-2025
U-3	Local community group	Founder	Utrecht	21-01-2025
U-4	Consultancy	Project manager	Utrecht	16-01-2025
U-5	Expert	Researcher	Utrecht	21-02-2025
T-1	Local government	Urban planning Policy advisor/initiator of the project	Taipei	10-02-2025
T-2	Local government (water department)	Director	Taipei	20-02-2025
T-3	Local government (water department)	Division Chief	Taipei	20-01-2025
T-4	Local community group	Founder	Taipei	17-02-2025
T-5	Local community group	Founder	Taipei	13-01-2025
T-6	Expert	Professor	Taipei	01-02-2025
T-7	Consultancy	Vice president	Taipei	24-01-2025

3.4. Data analysis

3.4.1. Literature review analysis

As mentioned above, five concepts were used to analyse the selected literatures. A description about these concepts is shown following. The identified texts and key concepts were then organised in Excel, which served as the data basis for further discussion (Appendix 8.2)

- **What is urban river restoration and its significance (Yellow):** To clarify what is urban river restoration under the specific project and context.
- **Why restoring urban river (Green):** To explore how the project was initiated and the motivation and vision behind it.
- **Who involved in the project (Blue):** To explore what kind of actors often be involved in the project, their roles and responsibilities under different context.
- **How did actors interact and collaborate with others (Red):** To explore the collaborative dynamics between actors, such as their communicative strategies, engaging instruments, and their tension or conflicts.
- **How did actors perceive restoration (Pink):** To explore actors' perceptions on the restoration projects and the reason behind their perceptions.

Table 4: Example excerpt of the literature review analysis (Pradilla & Hack, 2024):

- Yellow: What is urban river restoration and its significance

- Green: Why restoring urban river

- Blue: Who involved in the project

- Red: How did actors interact and collaborate with others.

- Pink: How did actors perceive restoration

The growing popularity of urban river restoration, is a promising approach to recover some of their lost ecological processes due to urbanization, reconnect citizens with rivers, and build more sustainable and resilient cities. Still, the creation of urban green and blue spaces cannot be done in isolation from social conditions, lest it worsens existing inequalities and exclusions. Our analysis indicates a tendency towards unbalanced river restoration goals, with a preference for ecological connectivity, recreational spaces, and disaster risk reduction, while objectives related to participation, equity and inclusion are often neglected. This is particularly concerning in the Latin American context, burdened by environmental injustice legacies and high vulnerability to Climate Change. In this light, detailed assessments of river restoration implementation are necessary.	As urban populations faced increasing pollution, ecological degradation, detachment from Nature, and climate change, diverse environmental and citizen-led activism has emerged. Lay citizens, not identifying as environmentalists, protest the loss of green spaces, advocate for pedestrian and cycling areas, and organize urban gardening; scientists conduct research and education underscoring the role of local ecosystems for urban sustainability; and mass protests oppose the exploitation of natural areas crucial for city water sources and climate resilience (Martinez-Alier et al. 2016). Often underestimated, such struggles and debates have been the melting pot for the emergence and consolidation of GBI in Latin American urban planning. Civil society has been a key driver in the urban nature conservation discussion (De La Mora-De La Mora and López-Miguel 2022), with stream ecological restoration having historically started as practitioners and citizen-led initiative (Wohl et al. 2015). Over the last four decades, grassroots and environmental organizations, practitioners, academics, and local communities in LAC have converged in struggles for basic urban services, land-use conflicts, and the protection of urban commons like hills, rivers, highland forests, wetlands, and *páramos*, through the re-appropriation of urban nature concepts, such as the Colombian EMS (Quimbayo Ruiz 2018). Policymakers, developers, and governmental bodies have played an ambivalent role, sometimes supporting these initiatives, while others showing reluctance or even dismissing arguments from environmental and grassroots groups, deeming them as 'non-technical'. A trend towards limited participation has prompted a reliance on legal action, through which citizens have resorted to mitigate power imbalances and gain more involvement in planning and management (Remolina 2015).

3.4.2. Documents and Interviews analysis

The documents of the Catharijnesingel case were firstly translated into English with the help of the online translating tool Deepl since the researcher does not understand Dutch. For the interviews, all the interviews were recorded and transcribed with the help of the Microsoft transcription tool. The collected documents and transcripts were analysed with a helpful tool, ATLAS.ti. The analysing process includes three steps: At the first step, an open coding was conducted, which means the texts and transcripts were reviewed, and assigned a code that links to the original texts. Secondly, these generated codes extracted from the documents and transcriptions were reviewed for common themes and were organised following the research questions and studied theoretical frameworks. That is, codes related to a specific element in the conceptual framework are categorised. These codes and their corresponding texts and quotations are then deemed to be important for the topic and research questions. At the last step, the identified codes and texts were reviewed again in-text and exported into Excel, which then serves as the basis for further quotation and discussion. By collecting multiple documents and interview sources, this thesis extracted the important feature among different data sources (multiple documents and interviews) to attain stronger evidence by avoiding the bias generated by single interviewers. Full coding book is shown in Appendix 8.1

Table 5: Coding excerpt: excerpt from the open coding and closed coding (Participant U-4).

Transcript excerpt	Assigned open code	Closed code group
I do understand. So in that way the Netherlands are way more democratic.	Democratic discussion	Political context/ collaborative structure
But the risk of more Democrat in a way, like if the mayor just decides. We used to work in Flanders, in Belgium for 20 years already and they're always the mayor takes the decision. So indeed if this mayor has the same vision then it's easy.	Politicians' support	
In the Netherlands there is always the risk that because all people should participate that at one moment you just take a stupid decision. But you know, in Catharijnesingel it works well, so I should not complain about it.	Risk of public participation	Political context challenge

4. Case description

This chapter provides case descriptions of two projects: the Catharijnesingel project in Utrecht, the Netherlands, and the Huanggang River project in Taipei, Taiwan. First, it describes how the plans emerged, providing background information on the projects. This is followed by a description of the current river governance in each city, providing an overview of the status quo, as well as the jurisdiction and responsibilities relating to river governance. Additionally, the actors involved in the project and their respective roles are outlined.

4.1. Utrecht: Catharijnesingel

Figure 2: Transformation from highway Catharijnebaan to the waterway Catharijnesingel (Gemeente Utrecht)

Emergence of the plan

Utrecht has been surrounded by canals for more than 900 years, since the city was granted city rights in 1122. In 1969, part of the canal, the northern part of the Catharijnesingel, became the Catharijnebaan, a motorway, as part of an urban plan to make the city accessible by cars. However, the resistance and protests never stopped. The UCP (Utrecht City Project), published in 1993, yet had never been approved, aimed to solve the problem of unsafe and increasingly crowded station area. Already at that time, to open a part of Catharijnesingel was in the programme. Although the UCP foundered few years later due to the financial disagreement between landowners (Buijze, 2013), it remains the basis for the coming Stationgebied. In 2002, a referendum was held in Utrecht, the traffic hub of the Netherlands, to determine the shape of the station area. Citizens were asked to choose between two options: Vision 1 'Stadshart

Compact' and Vision A 'Stadshart Verruimd'. Instead of turning Utrecht into a vibrant compact city with 24-hour appeal, as shown in Vision 1, the citizens chose the latter: a residential city with an increased connection between the city centre and a greener city, together with the authentic, relaxed and reminiscent atmosphere around the station area. The Catharijnesingel should also become a green canal instead of a stone canal with shops and restaurants (Figure 3).

Figure 3: The 2002 Referendum newspaper with description of Vision 1 and Vision A

In response to the results of the referendum, the Municipality of Utrecht presented a master plan in 2003 and a formal structure plan (Structuurplan) in 2006, which served as the basis for the future development of the station area, including the Catharijnesingel. With the strong growth of the west side of the city (Leidsche Rijn) and autonomous growth, this means a necessary expansion of facilities in the city centre, while maintaining the historical character of the city.

The structure plan includes three visions (Structuurplan Stationgebied, 2006).:

- Connect: By closing the gap between the west and the east side of the city, the plan aims to improve the accessibility of Utrecht city centre, especially for pedestrians and cyclists, by making the route more attractive and shorter the distance between west side (Leidsche Rijn) and the citer centre. In addition, connecting also refers to creating pleasant transitions between subareas surrounding the station area.

- Restore: One of the core projects is to bring back the old structure and the water of Catharijnesingel. This also means to enhance liveability, increasing social safety and the large-scale spaces that are open to public. In this case, demarcation among public and private areas should be clear, which means the transitions between ownership between real estate must be visible.

- Giving meaning: This refers to identify different areas in and around station area. For some places, existing identity is to be strengthened; other places are given a clear meaning. This can be done by inserting recognisable public areas or creating green spaces as the markers.

Catharijnesingel

Based on the structure plan, the Municipality of Utrecht launched a Final Spatial Design (Definitief Ruimtelijk Ontwerp, DRO) in 2009 and later the Zoning Plan (Bestemmingsplan) for Catharijnesingel in 2010, as both the design and legal basis for implementing one of the core components of the masterplan – rehabilitating the historic canal. The project aimed to transform the existing highway Catharijnebaan to the historic waterway Catharijnesingel. This ambition, which would connect with the waterway Leidsche Rijn in the west side of station area was expressed clearly by the citizens in 2002 referendum.

Urban water governance in Utrecht:

Dutch institutional governance structure mainly divided into three tiers: national, provincial, and municipal level. The governance system is basically a decentralised system in which province and municipality have their own power to manage internal affairs. Regarding spatial planning, national government creates the basic legal framework and determines the responsibility of actors; the provincial government is in charge of setting regional development goal, mainly within rural area (OECD, 2017). Municipalities are then the key roles to develop the spatial planning strategies, particularly in the urban areas. They have the power and responsibility to formulate land use regulation and its functions and restrictions.

Besides, in the Dutch context, Water board is another governance body who take control of water bodies. This unique organisation, which arouse in response to historical water governance in across Netherlands, till plays an important role in contemporary Dutch water governance. 21

regional water authorities are responsible for managing watercourse including natural river and canal, and their quantity and quality, within their district. HDSR (Hoogheemraadschap De Stichtse Rijnlanden) is the water board serve most of the province of Utrecht and a small part of the province of Zuid-Holland, including the river and canals surrounding Utrecht city area.

In summary, urban water in Utrecht is cogoverned by Municipality and regional water board HDSR. The former must establish land use and environmental regulations to ensure river space and wastewater discharge, while the latter is responsible for ensuring that residents are protected from flooding and is in charge of wastewater treatment.

Actors involved in the Catharijnesingel project:

Although the lands needed for restoring Catharijnesingl were solely owned by the municipality of Utrecht, the landowners involved in the whole station area include the municipality, NS Vastgoed, Royal Jaarbeurs and Corio (the manager of shopping mall Hoog Catharijne), In 2006, the agreement Bilaterale Ontwikkelovereenkomsten (Bilateral Development Agreements) between public and private sectors was signed to carry out the structure plan, including Catharijnesingel restoration.

Regarding local resident, citizen played an important role in initiating and calling for the back of the canal. Active group Utrecht Weer Omsingeld had been campaigned and initiated the first action to restore the initial section at the Weerdsingel. The 2002 referendum included all citizens in the discussion on the future development of the city, in which the form of the canal was an important part. Given the choice between a commercialised, concrete canal and a green, natural canal, residents chose the latter. After which, the restoration of entire canal was included in the Master Plan released in 2003.

Water board HDSR (Hoogheemraadschap De Stichtse Rijnlanden), the authority in charge of managing river and water, was indirectly involved in the project. As the regional water authority, HDSR did not directly participate in developing the project, but a supporting role regarding the issue such water quantity and quality.

4.2. Taipei: Huanggang River Transformation Project

Figure 4: Vision of Huanggang River Transformation Project (CNHW Planning and Design Consultant, 2022)

Emergence of the plan

Taipei used to be a basin dotted with rivers and canals, where settlements formed relying on agriculture and water transportation. However, with the rapidly growing population and the transformation of industrial patterns, majority of water bodies were to be covered, filled, or channelised with dull bricks and concrete. Huanggang River, a major river flowing through Beitou District of Taipei City, was gradually covered and channelised with concrete embankment after the 1950s and 60s to cope with the development of the urban area and the construction of the Beitou market (Taipei City Government, 2024).

However, due to the typhoon and increasingly heavy rainfall under climate change, together with the concerns about the drainage ability of traditional flood defence structures, the city government aimed to restore the natural form of Huanggang River by reshaping the riverscape and integrating blue-green infrastructure. With the launch of the Huanggang River Transformation Project in 2019, the river will be restored to its natural channel and connected with the surrounding environment and green spaces, thereby reviving its historical significance and creating ecological and cultural value for citizens. The project includes the following aims:

- Room for the River and Flood Resilience: By adopting low-impact-development, the project aims to restore the river to its natural waterway without concrete embankments. In addition, the project includes hydraulic and flooding modelling, aiming to enhance flood control capabilities in response to climate change.

- Ecosystem Services: By creating large blue-green spaces and adopting low-impact development and ecological engineering, the project aims to restore the landscape into its natural state. This can not only provide ecosystem services but also rebuild the connection between citizens and the river.
- humanity-oriented transportation: Restoring natural waterways and environments is not the only goal. The aim of Huanggang River project is to reshape the traffic within the surrounding area. Following the global trend of car-free and pedestrian-friendly cities, this project has set up a goal of humanity-oriented transportation to promote walkability.

To achieve these goals, a major part of this project is to remove the vertical concrete bank with replacement of grassy slope. By connecting with surrounding green spaces, current traffic way will be replaced by regenerated blue-green landscape, which will enhance human-centred living environment and natural landscape. The project was launched by Taipei City Government in 2019, and the main part of restoration is estimated to be completed by the end of 2025.

Urban water governance in Taipei

Unlike the municipal council in the Netherlands, Taiwan's local administrative system is led by the mayor, who is elected directly by the citizens. While the Netherlands is characterised by multi-party consociationalism, Taiwan has long been characterised by two competing political parties. The heads of government agencies, including the water and urban development authorities, are mostly appointed by the mayor.

In terms of water governance, river and water affairs are being managed by both national and local governments. Larger and cross-cities rivers are governed by national government, and the local government are responsible for smaller waterways. In this case, the management of Huanggang River falls entirely under the jurisdiction of the Taipei City Government. According to Taiwan's current institutional regulation, although the main management unit of the river is the water-related department, many of the responsibilities are dispersed among the various departments of the local government; for example, the environmental protection department is responsible for water quality monitoring, but for sewage discharge is however under control of the sanitary department.

Since water and river affairs are closely related to urban development and land use, urban development planning agencies also play an important role in water environment planning, and they are responsible for proposing or scrutinising long-term urban planning. In Taipei, the Department of Urban Development is the authority for urban planning and land use.

As the main task of the Huanggang River Transformation Project is to transform the current waterway mainly through, the project was carried out and managed by the Hydraulic Engineering Office of Taipei City Government.

Actors involved in the project

The Hydraulic Engineering Office of Taipei City Government plays the dominant role in the project, due to the main goal of the project is to restore the natural river and remove the concrete riverbank protection. As all the lands in the project area are publicly owned, there is no procedural issue of ownership change. However, due to the change of land use, revising zoning plan is a necessary process, which was approved by the Department of Urban Development, the agency in charge of urban land use.

In terms of private sectors, residents and local communities were not directly involved in project initiatives. Their main involvement is to advise the government and the consultancy during the planning and designing process. Various local communities and NGOs were consulted by city governments during public hearings and workshops. In addition, some working groups and NGOs were collaborating with city government with holding environmental educations and activities in order to publicise the project and deepen the relationship between the residents and Huanggang River.

5. Result

5.1. Literature Review

In this section, the results of the literature review were presented. In total, 31 academic articles were reviewed and analysed by five key concepts as described in section 3.4.1. The comprehensive table of the literature review can be found in Appendix 8.2.

What is urban river restoration and its significance

Out of 31 articles that were analysed, 16 articles have revealed the concept of what urban river restoration is and its significance to contemporary urban planning. Scholars view it as an approach to urban river management and a resonation with international sustainable agenda (Nayak et al., 2023; Novalia et al.), and most of the authors agree that contemporary urban river and stream restoration is as integrated process performed by collective actions, which include both social, engineering, and ecological concerns (Clifford, 2007; Guimarães et al., 2021; R. May, 2006; Moran, 2007; Otto, 2019; Samuelson et al., 2023; Scoggins et al., 2022). Some authors clarify that restoration must be understood in the context of economic activity, regulatory constraints and local culture (Otto, 2019; Scoggins et al., 2022). As described by Guimarães et al. (2021), this is an "integrated and synergistic set of varied legal, administrative, financial, and structural actions and techniques."

Urban river restoration is therefore a process of rethinking human-river relationship. This could be practiced by revising institution and regulation, integrating riverside landscapes, recognising natural and social value of river, or emancipating river channel. For examples, in Germany, restoration was done by following EU policies' goals of environment and ecological quality but was negotiated with local context of history, ecological knowledges, and governance (Zingraff-Hamed et al., 2017). In England, restoring streams in smaller cities has focused on the local vision discourses around 'building a sense of community' (Otto, 2019). In Columbia, grassroots activism has protested in order to protect urban commons, such as rivers, from being overlooked in urban development project (Pradilla & Hack, 2024).

In summary, urban river restoration as a river management approach represents not only the returning of the river but also a process of rethinking the relationship of residents, river authorities, politicians and the regulatory framework to the river because of its deep relevance to the lives of residents and the history of the city.

Why restore the urban river

Various motivations and visions could be behind the projects. Some cases were with the aim to improve the ecological and environmental quality (Chou, 2016; Deason et al., 2010; Zingraff-Hamed et al., 2017), while others highlighted aesthetic value (Rachel May, 2006; Prior, 2016), flood and environment control through building blue/green infrastructure (Wohl et al., 2015), or the growing awareness of the human-environment relationship (Clifford, 2007; Guimarães et al., 2021; Moran, 2007; Pradilla & Hack, 2024).

To be clearer, restoration has two meanings, and both are strong in motivating restoration. On the one hand, there are hydraulic engineering means to naturalise the disappeared or concretised rivers for the purpose of climate adaptation and flood control; on the other hand, there are some intangible aspects motivated by the social recognition of the river's importance in and of the emancipation of the river from institution and regulation. In many cases, these two aspects were intertwined. For example, in New Zealand, the goal of restoring the piped waterway and the reflections on colonial water management had led local residents to take actions such as discussing a shared vision of the river (Samuelson et al., 2023).

Although the motivations may not be the same, calling for restoring urban rivers has been spread worldwide. The call for restoration may come from anyone, such as a local resident's initiative (Pradilla & Hack, 2024; Samuelson et al., 2023), a government agency's policy (Moran, 2007; Zingraff-Hamed et al., 2017), or a random visionary policy advisor or expert (Otto, 2019).

Who are involved in the project

As described above, river and stream restoration is not only an environmental technique but also a socially inclusive process, of which stakeholders' awareness and their engagement greatly influenced the outcome (Nayak et al., 2023). In summary, there are different categories of stakeholders. Though the public sectors often played the role in implementing the project, the calling for restoring the waterway could be initiated by both public sectors (Chou, 2016; Otto, 2019) and local communities (Commission, 2024; Pradilla & Hack, 2024; Zingraff-Hamed et al., 2017). In some cases, scientists and related experts and schools play the role of providing scientific information or cultivating citizens with river-human relationships or environmental education (Rachel May, 2006; Moran, 2007). In addition, private sectors, landowners and business communities could also be involved in the project due to their ownership or economic interests being affected by restoration projects (Kim & Yang, 2023; Nayak et al., 2023).

How did actors interact and collaborate with others

Actors collaborated in urban river restoration through official governance, advocacy and public engagement. Since the restoration projects are usually cross-jurisdiction projects, government bodies often play a central role in building platforms for interactions (Novalia et al.). Landowners and citizens, those who are directly affected, usually come to an agreement with the government (Deason et al., 2010). In some cases, the government has resorted to legal means, such as expropriation and trading, to achieve its objectives (Chou, 2016). Civil society, such as local communities and NGOs, tend to participate and influence the project through calling for the water quality, a liveable environment or an aesthetic landscape. Two paths of citizen participation can be highlighted from these literatures. In some cases, citizens are the initiators who actively organise the movement, form the activist networks, and give community training and environmental education (Rachel May, 2006; Samuelson et al., 2023; Takizawa et al., 2020). Local governments, who possess the power, may respond to them by initiating a restoration project or launching environmentally friendly laws. In Columbia, for example, citizen organisation has protested in order to defend and reappropriate the rivers from being deprived by city master plan (Pradilla & Hack, 2024). While in some cases, governments took the position of initiators, and the citizens were involved to different extents. In some cases, government agencies actively involve them in the discussion and seek public support through public hearings, exhibitions, or other deliberative engagement processes (Chou, 2016; Nayak et al., 2023; Petts, 2007; Prior, 2016), but it can also be explored that residents' voices are not taken seriously in some cases (Kim & Yang, 2023).

How did actors perceive restoration

Actors' perception has long been investigated for the purpose of understanding whether it is worth restoring urban rivers. Perceptions used to be conceptualised through several indicators, such as flood defence and environment improvement (Diep et al., 2022; Sarvilinna et al., 2017), aesthetic and recreational value (Hong & Chang, 2020; Sarvilinna et al., 2017), and economic impact (Kim & Yang, 2023; Nayak et al., 2023; Yocom, 2014). Perception of restoration may differ among actors. In most of the cases, residents recognise the benefit of restoring rivers in bringing aesthetic value, historical meaning, ecosystem services, or recreational functions (Chen et al., 2017; Chou, 2016; Clifford, 2007; Zingraff-Hamed et al., 2017). While in some cases, flooding concerns may also be raised by residents that their properties may be at risk (Chou, 2016; Hong & Chang, 2020). Apart from residents, economic benefit is a major factor that may affect developers, landowners, and businesses' perception and assessment of restoration projects (Kim & Yang, 2023; Nayak et al., 2023; Yocom, 2014). Literature did not focus much on the perception of government units, while it pointed out that although government bodies recognise the value of protecting and restoring waterways (Asnake et al., 2021), they are sometimes ambivalent since they have to seek the balance between social, economic and environmental reality and impacts, as well as the interests among actors (Hwang, 2015; Rachel May, 2006; Pradilla & Hack, 2024).

5.2. Document and Interview

In this section, the results of document and interview analysis are presented. The analysis started with open coding, which generated 194 codes, such as Democratic discussion, Politicians' support, Risk of public participation (see Table 5, p.18). Then, the close coding was conducted using the conceptual framework, in which codes were categorised in seven main code groups with many subgroups: General context, Initial condition and driver, Actors' capacity, Actors' perception, Collaborative structure, Collaborative process, and others (see full coding book in Appendix 8.1). Each main code group is further described in the following sections.

General system context

In general, a mindset shift toward reconsidering the human-environment relationship occurred in both cases. However, elements such as societal, institutional, and legal contexts jointly affect the general context to different extents.

In the case of Catharijnesingel, all the interviewees mention a global trend that is against cars and the calling for well-being. Moreover, the awareness of quality of life, together with the aim for 'fixing the past mistake', formed the social atmosphere then in Utrecht, as reflected by interviewees:

> *"It was a shift in thinking. In the 70s, owning your own car, getting everywhere by car, that was the highest goal in life, right? And that thinking shifted in the 80s, or later, thinking about nature, environment, heat stress, it was the issue. So everyone has realised that it has changed, so it was not normal that in a historical city you could go everywhere by car." (Participant, U-1)*

> *"In the 60s or 70s they covered it a lot of concrete and loop for the cars and automobiles and then 20 years ago they thought Oh no, it's better to open it again, you know, for ecology but also for the quality of life as I said, more green more blue, less traffic." (Participant U-2)*

In addition to the global shift, some of the interviewees also mentioned the political context at that time. Back in 2000, Leefbaar Utrecht, which claimed to "Bring politics really demonstrably closer to the voters and give those voters more influence" (Lucardie, 2004), became the largest party in the municipal council. The political context did bring some changes in Utrecht at the time, which also led to the 2002 referendum.

"The party was progressive and very green, and they pushed it a lot and they gave the municipality support to start all this." (Participant U-1)

"It was called Leefbaar Utrecht. That was also not one of the conventional parties. It was a special party that said we are here for the people of Utrecht." (Participant U-3)

The trend towards ecological and environmental-friendly cities was also happening in Taipei, as agreed by all the interviews. While this trend did not lead to massive social transition, it has at least resonated with some key figures.

"其實 80%的公務員還是保守，大家寧願不找麻煩。只是說我們有幾個 leader，比如說前處長、像我，我們是比較敢去嘗試這些東西。"
"(80% of the civil servants are still conservative and would rather not get into trouble. It's just that we have a few leaders, like the former director, like me, and we're more daring to try these things.)" (Translated, Participant T-2)

It has been a challenge to implement such an innovative approach. The reason for this dilemma is closely linked to the overall social context, including public awareness and unclear responsibilities between agencies. Public sector interviewees all agreed that although an environmentally friendly policy goal already exists, it is rarely implemented. This is due to a lack of public acceptance of restoring natural waterways.

"過去二三十年上位計畫一直都有，只是說那個就是觀念上，但是沒有很好的計畫來做執行。"
"(Over the past few decades, there have been such concepts, but they are only conceptual, there are no plans for concrete implementation." (Translated, Participant T-1)

"臺灣人大部分的環境意識，還有對自然的認知，相對荷蘭的民眾是不一樣的，他們還是在擔心，特別是過去經過那麼多世代的洗腦，就是河川必須要擋起來，這樣才不會淹水。"
"(The environmental awareness of most Taiwanese people and their perception of nature is different from that of the Dutch, and they still worry, especially after

so many generations of brainwashing, that the rivers must be dammed so that they don't flood.)" (Translated, Participant T-6)

Interviewees also highlighted that the current land use planning and water management regulations are unfriendly to urban water bodies, which restrict the waterway and leave no room for ecology. The Water Act, the main regulation on which Taiwan's water authority is based, lacks environmental and ecological concerns ("The arrogance and prejudice of the Water Act," 2021), which not only limits the civil servants and innovative measures but also illustrates the current dilemma in Taiwan.

"最上位的是水利法，完全沒有提到保育兩個字，完完全全沒有提到，提到的是怎麼運用河川……，談的是說我們怎麼管理河川，但是是為了怎麼用河川來管理河川，然後是為了防洪，所以也跟保育是一點點的關係都沒有。"

"(The overriding regulation is the Water Act, which does not mention any single word of conservation. It does not mention it at all. It talks about how to use rivers... It talks about how we manage rivers, but it is how we manage them to use them, and then it is for flood control, so it has nothing to do with conservation." (Translated, Participant T-6)

The similar situation also applies to current land use planning, which is a legal system that is not friendly to the environment and rivers. These combined factors make it rather difficult to restore natural waterways.

"我們的都市計畫它不是從水的需求先考慮，它是人的需求先考慮的……其實應該把水的需求先把它規劃出來，然後再來考慮人的需求"

"Our urban plans are based not on the needs of water, but on the needs of people……We should first planning for water needs, and then consider people's need. " (Participant T-2)

In summary, interviewees from Utrecht pointed out that pursuing a better living environment with less traffic and more green spaces inspired both government and citizens to restore historic waterways. While in Taipei, citizens did not view the water in the city as essential. They, and even most of the civil servants, were still scared of water and would rather stick to the conservative, engineering-orientated, water-resisting regulations. Hence, key figures such as the government agency leaders played important roles in initiating the innovative projects.

Initial conditions and drivers

In Utrecht, the station area in the 1990s was a crowded, socially unfriendly area. This was the main motivation for transforming the station area with the aim of improving safety and mobility, including the restoration of the Catharijnesingel. In addition, environmental concerns and the poor state of the green spaces were the driving forces behind the restoration of the canal. This is reflected by several interviewees:

> *"There were a lot of problems with drug addicts, and in the old situation……, it was really another world where all of things happen you won't know. And that the way we thought about environment changed, the way we thought about car mobility, and the importance of green areas also for the well-being of owners of people who live in Utrecht." (Participant U-1)*

> *"It was a very crowded place, this part of the canal there were 30,000 cars per day riding there, and this part of the city for a very poor in green." (Participant U-3)*

Although restoring a part of Catharijnesingel was already included in the government's project, residents were still not satisfied. They campaigned and convinced the municipality to make the ancient canal surrounded again by fully restoring it, thereby leading to a pioneering project prior to the master plan launched after the 2002 referendum.

> *"We have always said when we are able to restore this part of the canal and show the people how nice it is, it's much easier to go further on." (Participant U-3)*

The 2002 referendum was an important milestone, as it represented the social consensus aiming for a greener, more relaxing environment (see 4.1: Utrecht: Catharijnesingel).

> *"It was really important, because it's very come from the people." (Participant U-1)*

> *"The people of Utrecht choose one of the plans, it was a lot bigger than just restoring. It has to be more water, more green, more trees." (Participant U-4)*

In summary, there are multiple objectives of the Catharijnesingel project. Apart from transforming the station area due to some social-safety issues and developing demands, visions on living quality and the historical meaning of the canal are also the key factors. As stated in the policy document: “The redevelopment of the Station area aims to develop a high-quality, multi-modal public transport hub combined with a prime location for working, living and amenities. An essential part of these plans is the restoration of the canal structure through the redesign of Catharijnesingel and a number of traffic intersections. This will restore the historical canal structure around the city centre.” (Translated, Zoning plan Catharijnesingel, 2010)

The situation in Taipei was quite different from that in Utrecht. The project was not driven by a specific problem but by a good opportunity to restore the waterway, combining ecological considerations with a human-centred living environment. This can be confirmed in the official planning documents: “本府強調以低衝擊開發、優化藍綠基盤的概念……認為該範圍可運用現有公園作為腹地，將磺港溪溪流河道進行改善、拓寬，擴大水域腹地並將磺港溪恢復為自然溪流之型態……並配合河道改道改善計畫範圍內之交通環境及人行空間…辦理本案都市計畫變更。” ” (The government emphasise on low-impact development and optimise blue-green infrastructure ......thinks that the existing park can be used as a hinterland to improve and widen the stream and restore Huanggang River to its natural form. ...... and to improve the traffic environment and pedestrian space within the project area consistent with the restoration project area……thus mandates this urban planning project. “(Translated, Beitou District Urban Planning Masterplan, 2021)

The then urban planning policy advisor of Taipei City Government played an important role in initiating the project. The interviewees all mentioned that the then policy advisor, who was an experienced environmental planner, first proposed the idea. This became the trigger of the project, as his experience and knowledge enabled the case to be tangible and to be taken seriously by the city government.

> *“他算是這個案子的靈魂人物。”*
> *”(He is the key figure in this project)” (Translated, Participant T-2)*

Apart from that, the project has been supported by the director of the water department and the elected politician. In addition to being inspired by the global trend of environmentally friendly construction and the case of Kallang River in Singapore, participants coincidentally cited the project's positive impact on political prestige.

“當初是我提案……剛好上面的長官他覺得這提案夠亮，而且跟新加坡那種國際的案例可以比對的話，那真的就要來試試看。”

“(I was the one who proposed it……. The senior official found this project as a major highlight which is comparable to the case in Singapore, and felt compelled to give it a try)” (Translated, Participant T-1)

In addition to these personnel, the conditions of the site itself were also an important factor in making this project feasible. Firstly, the site faces less flood risk, making it an experimental site for this pioneering. Additionally, since the Huanggang River does not cross city boundaries, it falls entirely under the city’s jurisdiction. Moreover, there are many parks alongside the river, making it an ideal site for integrating urban blue-green landscapes.

“沒有太多洪氾壓力的問題，我看到公有地或是看到旁邊不僅公有地還有公園，就做這樣的建議，讓這些公園跟綠地跟水系的藍色，可以一起評估跟一起合作。”

“(There is not much flood pressure, and I see that there are not only public lands but also parks next to the river, so I made this proposal so that these parks and green spaces and water systems can be assessed and cooperated with together.)” (Translated, Participant T-1)

In summary, restoring the entire canal in Utrecht was proved to be the effort done by both the local government and the local active group. The municipality aimed to incorporate partial restoration into an urban renewal project in favour of improving living conditions, while the active group convinced the municipality to fully restore it. This is followed by the referendum, where the citizen clarified their vision of a greener city. In Taipei, the initial conditions made the restoration suitable and feasible. In addition, support from personnel with power, such as elected officials and policy advisors, was also crucial to this project. Citizens, however, were not actively involved in initiating the project.

Actors’ Capacity

In Utrecht, the financial capacity of the municipality was always a challenge to be overcome, especially during the 1990s. Utrecht was financially locked under Article 12 municipalities, which were under the financial supervision of the central government. Despite the citizens' initiative in the mid-1990s and the support of many councillors for the restoration of the entire canal, the lack of funds made it difficult to carry out the sections that were not originally planned. Fortunately, the financial situation of the Utrecht City Council has been stabilised, and sufficient funds were made available around 2000. As a result, the forgotten section (Weerdsingel) was restored in 2001.

> *"What was important was that Utrecht had its finances back in order and there was money. …… When I came as alderman in 1998, Ger Mik (the then alderman) was still in favour of restoring the canal and then we said, 'We have to do this'." (Jan van Zanan, the then councillor and alderman of Utrecht, The one-off magazine UWO, 2022)*

Although the Water Board HDSR was not directly involved in the planning of the Stationgebied, it had a very important role to play in the water-related decision of the plan, which of course includes Catharijnesingel. Hence, consultations were held between the municipality and HDSR, forming an important basis for the present water paragraph. As reflected in the interviews with the Water Board member, the relationship between the municipality and the Water Board is rather smooth and strong:

> *"I know the people in Utrecht, we invest our relation, so they are almost colleagues of mine and that also makes it easier." (Participant U-2)*

The consultancy's extensive experience and relationship with the municipality were also important factors. As the main designer of Catharijnesingel, their passion and vision for creating an ideal public space formed the basic outline of Catharijnesingel. As reflected by interviewees:

> *"There are maybe over 1,000 people trying to steer the project or trying to redirect the project." (Participant U-4)*

> *"So those were the elements I need to fight for to protect my park area or my space from having all these kinds of super important features. I don't want to have them (parking space) over here." (Participant U-4)*

The working group played a crucial role in initiating fully restoring the ancient canal. As aforementioned, the original UCP included only a partial restoration of the canal. After the stalling of the UCP project and lobbying by the working group, the municipality was finally convinced to restore a section that was not part of the project. This was not only a pioneering example but also a demonstration of the residents' capacity. The working group took various actions, not only lobbying the politicians but also convincing the citizens. They went to the press, collected the signatures from citizens, and held talks everywhere with a banner saying, *"Singel lopen? Singel open."* In the end, there were 22,000 signatures collected (The one-off magazine UWO, 2022).

Achieving such results has not been easy. In addition to the long-term initiative, their strategy was also successful. Instead of discussing complicated issues, they made the goal of restoring the canal more accessible to the public through a simple and easy-to-understand strategy. As reflected by interviewees:

> *"We didn't say how will we restore it. What we said was just we want this canal back for the reasons of more green, more blue, less cost, and the historical profile of this city. Don't argue about how you want to do, but if you agree about it. If you discuss how you want to do it, you get many different opinions." (Participant U-3)*

It is also clear from other people's accounts that the strategies and actions of the working group were an important factor in raising public awareness:

> *"They also understood the art of bringing it broad, it was not a left and not a right party, not even about old or new Utrecht. What was so useful was that it brought so sympathetically and warmly, without any aggression." (Jan van Zanan, the then councillor and alderman of Utrecht, The one-off magazine UWO, 2022)*

In Taipei, leadership was a factor that was constantly mentioned by the interviewees. They consider the senior official or politicians the keys to promoting such a project, whether because of their passion for river governance, their power over decision-making and administrative tools, or political considerations.

> *"在這邊一些主事者、比較有決策權的人，我覺得他們也比較有開放的想法，比較 open mind，願意讓年輕的一代去嘗試新的工作。"*
> *"(People in Taipei who are in charge and have more decision-making power are more open-minded and willing to let the younger generation try new jobs.)" (Translated, Participant T-2)*

> *“我們也是這一路走來就會覺得說，需要讓市長副市長的層級看到這個議題，他們有行政資源……然後也要說服他們說，如果這裡改善了，他所獲得的回饋、在他的政治的 credit 上面有沒有加分。”*
>
> *“(We've been through so much and we feel that it's necessary to get the mayor or the deputy mayor to see this issue, because they have power and administrative resources……, and then to convince them that if they improve the river here, they'll get positive political credit for it.)” (Translated, Participant T-5)*

In Huanggang River project, the consultancy’s experience in the project area and their relationship with local people enhance their ability to communicate with local communities and local leaders. As reflected by interviewees:

> *“我們對這個地方確實很熟，地方、組織團體，我們很熟悉。然後里長呢，我們也都有打過交道，知道怎麼樣去跟他們應對，然後哪幾個議員很難搞，然後他會主導哪些議題，我們都熟悉，所以我們比較能夠提出來一個讓政府機關或者是民間團體都能夠接受的方案。“*
>
> *“(We know the place very well, ..., as well as the place, the organisations, the neighbourhood representatives. We know how to deal with them, and we know which local legislators are difficult to deal with, and what issues they will bring up, so we are better able to come up with a proposal that is acceptable to both the government and civil society.) “(Translated, Participant T-7)*

Besides, the local community have been investing on environmental education, which made the resident more aware of the urban water and the project:

> *“我們花很多時間是在做在地的學校的文化教育或者是環境教育……因為我們的目的主要是希望大家多多關心公共參與的議題 “*
>
> *“(We spend a lot of time on cultural or environmental education in local schools ...... because our aim is to get people more involved in public participation issues.)” (Translated, Participant T-4)*

In summary, actors’ capacities are crucial to realising the project in both cases. In Utrecht, apart from financial feasibility, the relationship between the municipality and related actors, such as water board HDSR, made the project proceed smoothly. In the meantime, the working group served as the mediator between the government and the citizens by strategically collecting public opinions and lobbying. In Taipei, leaders with vision on the urban water environment played a key role in promoting the project. In addition, consultancy and some local communities' knowledge and relationships with local people have made the idea easier to be accepted by the public.

Actors' Perception

In Utrecht, citizens showed their expectation for the restoration of Catharijnesingel. They expected a greener, ecological waterway, rather than a commercially concretised one. This can be reflected not only by the referendum result but also by interviewees:

> *"We didn't want commercialised water, we want to have a green canal. There was a commercial way of restoring the water, and we were against it. We were also against all these high buildings. Because we wanted to get rid of the traffic, if they have to make all these offices big offices and you introduce again all these cars to the city." (Participant U-3)*

The private sector and businesses such as Hoog Catharijne, the shopping centre next to the station, were initially opposed to the restoration project because they thought it would affect the accessibility of cars and therefore their business. They were worried that "It is hardly accessible anymore." (UWO, 2022). Therefore, communication and negotiation had to take place with these entrepreneurs. In the end, they were convinced that the project would make the city more attractive, which would also increase their profits.

> *"If those parties see profits in restoration the canals? Yes, I guess. The city became a far more attractive, so a lot of tourists and a lot of more student." (Participant U-1)*

> *"Finally, they devoted it because it was very important for the environment of this this area. And they also see the financial, the economy, they think it's good also." (Participant U-3)*

As for the municipality, their perception of restoring Catharijnesingel has also been updated over time. As described by the project manager from the municipality, the increasing value of urban green further enhances their perspectives and implementation on a greener waterway:

"During the years, you know the way we think about city green and get more important, we learn more about the effects of climate change and stuff and we try to put those elements in the plans, those were built later on." (Participant U-1)

However, as a public sector, the municipality has more to consider in terms of integrated urban development policy, and this goes far beyond the scope of river restoration, which is also the rationale that the municipality must adhere to.

"They have to think about all different aspects, they have to think about water, they have to think about housing, they have to think about enough green spaces, they have to think about parking spaces, streets, infrastructure but also amenities. All these kinds of things, and they have to balance all these different weights." (Participant U-5)

The water board of the Utrecht region also commented positively on the restoration project since it created more room for the water and the water circulation around the city, with benefits to water quality and water quantity.

"It was a good idea because you have more water, so you have more space for water, but also because it is better for the circulation because if it was a dead end, you have no circulation, so the quality was not that good." (Participant U-2)

"They opened this, so if there is a lot of pressure of when it rains a lot, it makes it easier to transport the water. That's one. And you have the circulation, it's much better. So we were supporting the idea to open it." (Participant U-2)

In Taipei, leaders from the city government, including the directors of related agencies and elected politicians, played an important role in promoting such a kind of project. Therefore, their perception of restoring waterways, whether it is motivated by personal vision or political considerations, is the key to the project.

"磺港溪來說，其實整個水利處都認為這件事情是有效的，是很有意義的，所以就這樣做下去了。"

"(In the case of Huanggang River, the entire Hydraulic Engineering Office

thinks that it is effective and meaningful, so we make it happen.)" (Translated, Participant T-3)

"如果我們還不到那個位置，其實這個事情還不一定推的動，只是剛好我們到了可以做決策，我們說要，下面就得要動。所以有決定權的人蠻重要的我覺得，因為政治人物他需要的是政績，你做出不一樣的東西他當然很開心。"
"(If we were not in this position, the project might not be achieved yet. We are now in the position where we have the power to make a decision. If we say yes, the whole office should act. So I think it is very important for the one who has the power to make decisions, because what a politician needs is a political achievement, and he will certainly be very happy if you do something different.)" (Translated, Participant T-2)

Although leaders' perceptions had an important influence on the project, the conservative mentality of civil servants was mentioned repeatedly by respondents. Interviewees described the perception of civil servants not only as a conservative bureaucracy but also as being constrained in their execution by the will of leaders and by rules, regulations and social atmosphere, and that the civil service and their conservative perceptions therefore posed a challenge to implement such projects. As reflected by the interviewee:

"如果社會覺得工程師就是要把工程做到一點都不能淹水，那我們就會出現這樣的法，就會出現這樣的氛圍。對工程師來講，這樣的心態，就會自我審查，自我約束河川的設計。這是一個雞生蛋蛋生雞的問題，民眾覺得我們一定不能淹水，工程師也想辦法一定不能淹水。所以整個社會的氛圍就是不能淹水，那工程師能做的就是約束河川。"
" (If society has the perception that engineers (civil servants) should design waterways so that there is no flooding at all, then we will have such a law; we will have such a social atmosphere. For the engineers, this kind of mentality will lead to self-censorship and self-restraint in the design of the river. It is a chicken-and-egg problem. The public thinks that we should not flood, and the engineers will also try to find ways to prevent flooding. So the atmosphere of the whole society is that we must not flood, and what the engineers can do is to restrain the river.) " (Translated, Participant T-6)

In Taipei, citizens have various perceptions of river restoration. Interviewees have described residents' main concerns about flood risk and space usage, as well as their reluctance to change.

> *"對他們來講現在這樣河道弄起來就很安全啊，那為什麼還要把它打開呢？還要佔用到我的使用、休閒運動空間，他就覺得沒有必要，他不會去考慮生態上的需求。"*
> *"(For them, the channelised river is very safe now, so why open it? They don't think it's necessary to take up my space for recreation and sport, and they don't think about ecological needs.)" (Translated, Participant T-2)*

> *"我說我要把水引到公園去，大家嚇死了。因為大家對水還是害怕，他們希望的還是安全。"*
> *"(When I said I was going to bring water to the park, people were scared. It is because people are still afraid of water and they still want to be safe.)" (Translated, Participant T-2)*

> *"我覺得蠻有趣就是一開始大家加蓋的時候是反彈的，然後後來開蓋的時候大家也很反彈，大家可能反彈的是改變這件事情。"*
> *"(It is quite interesting that at the beginning, when the river was paved, people were against it, and then now when the river is opened, people are also against it. It is 'change' that what they against.)" (Translated, Participant T-4)*

Although residents might be reluctant to change, they also see the economic and property interest in this project:

> *"我們拜訪了很多反對意見的領袖，親自去跟他們談了很久，然後告訴他說除了生態之外，其實周邊整體的景觀環境都會改變，當然他們最在意的，你跟他講說以後可能真的地價會因為這個增值非常多，他就有興趣了。"*
> *"(We visited many leaders of the opposing views and talked to them personally for a long time, and then told them that apart from the ecology, the whole landscape of the surrounding area would be changed. And of course, what they cared about most was if you told them that the value of the land could really increase a lot in the future because of this, then they would be interested.)" (Translated, Participant T-2)*

Nevertheless, many citizens expressed their support and expectations for this project. Their main motivation is that river restoration can bring a greener waterway and surrounding banking, which benefit the aesthetics and the landscape integration.

> *“它解決了地景破碎化的問題”*
> *“ (It solves the problem of landscape fragmentation.)” (Translated, Participant T-4)*

> *“可以串連原本的公園等綠地空間，達整體空間整合效果 “*
> *“(It can connect the existed parks and green space, which lead to spatial integration.)” (Citizen suggestion, public workshop, 2019)*

Moreover, citizens’ perceptions could also change over time, particularly when they have seen the benefits of the project:

> *“蠻多人沒有辦法想像他沒看過的東西。他不會看圖，他也不會看模型，所以你跟他講他也很難去想像最後到底會變成什麼樣子，所以他可能前面不喜歡，然後看到後來感覺還不錯。”*
> *“(Many people can't imagine something they haven't seen before. They don't understand pictures and models, so it's hard for them to imagine what it's going to be like in the end, so they might not support it in the beginning, but they would like it in the end.)” (Translated, Participant T-4)*

Such large-scale urban planning projects are never easy for the authorities, as they have to take into account the views and interests of all parties. The Catharijnesingel was no exception. In Utrecht, despite initial differences of opinion about accessibility and economic impact, all actors eventually recognised the benefits of the restoration. Not only the financial, economic and tourist benefits perceived by the entrepreneurs, but also the physical water circulation leading to a better water environment was supported by the water board. Citizens were also pleased to see the restoration as a green waterway rather than a commercial one. In Taipei, rivers in the city did not seem to be easily accepted by the public at first, as citizens were not used to living with a 'natural' waterway. Key opinion leaders in both government and civil society played an important role in initiating and convincing citizens. As a result, citizens were able to accept this innovative project through continuous communication and concrete results.

Collaborative structure

In Utrecht, interviewees agreed that the strong and non-hierarchical relationship between actors was the key factor in implementing the project. Not only the existing network, but they spent lots of time and discussions to build up their communication and connections. As reflected by interviewees:

> *"First of all, put a lot of effort in relation, that's what we did as a water board, you know, relations with the municipalities. "(Participant U-2)*
>
> *"On an equal basis, we can talk with the people who made the plans directly, not afterwards that authorities were making a plan and you could say yes or no." (Participant U-3)*

With the aim of 'planning together', lots of discussions as well as the principled engagement were made during the project planning.

> *Always a lot of talking and trying to get together and make plans together. And that's sometimes also frustrating, right? Because you want as many as to convince everyone. And there were the local advice moments when everyone has to get their opinion. There was a process of participation with groups of citizens, we talked about the plans we have made and then try to explain why we made choices and put their input in outlines and try to make it better. (Participant U-1)*

The consultation evening was also repeatedly mentioned by interviewees as well as documents. During this public open activity, citizens, entrepreneurs, municipality were able to have face-to-face communication.

> *"When you do have these kinds of projects, for example, at the Catharijnesingel, there are also these evenings, residents, for example, can go to and they can express their voice." (Participant U-5)*

For the Huanggang River project, the impact of the collaborative structure on public sectors during this specific project was not specifically mentioned by the participants, but rather the general institutional and organisational deficiencies that would be a challenge for urban river management in general. Interviewees have revealed that unclear responsibilities among government agencies could make the collaboration more difficult.

“比如說我管防洪安全對不對？我就提防做一做就不關我的事了。然後河川的水質呢？環保局他只負責監測。但是問題是汙染的來源可能很多民生廢污水是衛工單位在做的。”

“(For example, I am in charge of flood prevention and safety. I just have to build a levee, and then other things are out of my hands. What about river water quality? The Environment Protection Department is only responsible for monitoring. But the problem is that the source of pollution can come from domestic sewage, which is managed by Sewer Engineering Department.)” (Translated, Participant T-2)

For the government agencies, they have to overcome regulatory and institutional problems. While for civil society in Beitou, several interviewees mentioned that the energy of the community is also the key to adequate social communication with residents.

“那個地方的社區能量是有的“

“(It is a place with much of community energy)” (Translated, Participant T-6)

“我覺得公部門大部分都對北投居民蠻尊重的，會開特別多場的公聽會，可能也是北投人過去也抗爭過不少，所以公民參與在北投算是蠻用力在做的啦，包含公聽會其實也都收集蠻多意見。”

“(I think most of the public sectors are quite respectful of the people of Beitou, and they have held a lot of public hearings, probably because the people of Beitou have fought a lot in the past, so public participation in Beitou is quite engaged, including the consultants' public hearings, where they have collected quite a lot of opinions.)” (Translated, Participant T-4)

It is clear that the collaborative structure is the basis on which actors work together. In Utrecht, actors deliberately invested in their relationships, including informal relationships and principled engagement. Interviewees agreed that an equal basis and parallel communication contributed to shared understanding. In Taipei, although the institutional dilemma remained a problem to be solved, this deficiency was not reflected in this project. This might be due to the fact that there was a consensus among the government agencies and that it was a relatively simple case. As for the citizens, although they were not closely aware of the river restoration, communication between the government and the community proved to be strong and continuous.

Collaborative process

In the case of Catharijnesingel, interviewees agreed that the communication process was extensive and was going smoothly. Interviewees have pointed out that it was key to have a clear and shared goal during the collaboration, which helped communicate with other actors.

> *"It helps to tell the story of what should be the achievement of this project. So designing a place for inclusive for all people, not only people, but plants and animals as well, climate adaptive. As soon as people do understand this, then they understand that there's no space for all kinds of other stuff." (Participant U-4)*

> *"The policy of the municipality is more or less the same ambition as for water quality for climate adaptation. And that makes it easier." (Participant U-2)*

Throughout the projects, lots of efforts, lots of discussion and face-to-face communication were made between actors, including all aspects of the project. When the researcher asked about tension and conflicts, actors said they did not see any conflicts.

> *"No, not really. We are working very well with the municipality of Utrecht." (Participant U-2)*

> *"The municipality did very well by seeking a collaboration with those parties. And we're saying we're all a part of this area. So we have to collaborate to get it right. And everyone says interesting to make this area better, and not in the contracts but seeking collaboration and that works very very well." (Participant U-1)*

> *"We talked whole procedure, we talked about how to do it. And that made some things possible to do with nature also for nature, green nature was important. So we wanted to have a nature friendly part of the nature friendly banking, a green banking in the water." (Participant U-3)*

In the case of the Huanggang River, there was a lot of discussion and communication between actors, mainly between local people, the city government and the consultant. In addition to formal communication, interviewees also revealed that informal communication, especially environmental education, was effective in convincing people and making them accept this new approach to water management.

“我們是用稍微非正式的溝通方式，當然也有正式，但是就是效果沒有非常好，所以我們才甚至用比較柔性的一些溝通方式進來。慢慢的當然也因為溝通就是要持續不間斷的，這樣花多一點時間。要人家接受一些概念，也要讓人家有辦法消化。”

“(We use a more informal way of communicating. Of course there are formal ways, but the results are not very good, so we use a more flexible way of communicating. Slowly, and of course because communication should be continuous and uninterrupted, it takes a bit more time. We want people to accept some concepts, and we also want them to be able to digest them.)” (Translated, Participant T-2)

“我們在那一次的活動(環境教育活動)裡面，半天就觸及到大概就兩三百人，跟那種一場工作坊，3、40 個人是很不一樣，所以我覺得這件事情在這一次的磺港溪再造裡面，我個人覺得他是蠻特別的”

“(In the activity (environmental education activity), we have reached about two to three hundred people in half a day, which is very different from those workshops with thirty, forty people, so I think this activity is very special in this Huanggang River restoration project.)” (Translated, Participant T-4)

Moreover, actors also showed their communication skills and strategies during the project planning, which made the project more convincing, appealing and tangible. As reflected by the policy advisor, the initiator of the project:

“我們當初提案，把那個畫面做給他們看，就 before vs after 的畫面，就把這些事情講得非常浪漫。”

“(We made a proposal and we showed them (the mayor, the public sector) the before-after envision, and we made it look very romantic.)” (Translated, Participant T-1)

When promoting such new concepts to government agencies and the public, experts also have some communication strategies.

“我們可以去帶風向。我會故意說國外都是這樣的趨勢，就是用比較聳動的方式說人家很重視這個。我們在寫文章的時候，或者是我們在演講的時

候多多少少都會有一些策略，那個策略就是你希望大家聽到什麼樣的訊息。"

"(We can do some framing, like I would deliberately say that this is an international trend. We can say in a more sensational way that people are taking this very seriously. When we write some articles, or when we give speeches, we more or less have some strategies, and that strategy is what kind of message you want people to hear.)" (Translated, Participant T-6)

In summary, in both cases the collaborative processes went well, but with different approaches. Interviewees agreed that creating a greener, healthier city was the clear goal shared by both the public and private sectors. On this basis, bilateral communication and collaboration were actively achieved. In Taipei, the collaborative process was mainly one-way communication, as it took time to convince citizens and some conservative officials. Therefore, policy advisors, experts and civil society opinion leaders have communication strategies and techniques, such as romanticising results or expressing the importance of global trends, to maximise acceptance.

Challenge and Opportunity

It was frequently mentioned by interviewees that the majority still prioritise economic or property interests. This can be both an opportunity and a challenge when it comes to restoring urban rivers. On the one hand, a traditional landowner would value the interests of new construction or new business areas. On the other hand, if actors, including landowners, value the property interests that river landscapes and urban blue-green environments bring, this would be an opportunity for them to actively restore the water environment. This may be reflected by respondents in both cases:

"(Restoring Catharijnesingel) is very good for the economy, also it's good for the prices of the houses along this canal." (Participant U-3)

"我們認為要開發沒有關係，但是這一條這麼棒的河道，要是能夠把它保留下來……那有河道的開發區它的房地產價值是更高的"
"(We are not against development, if we can preserve such a great river, ... the property value of the development area with the river in it is much higher.)" (Translated, Participant T-5)

Although the equal basis between actors and lots of discussions made the Catharijnesingel project satisfactory to major actors, interviewees also saw some problems, mainly regarding the timeframe, that could be improved.

> *"We could have done things faster, but if you want to do everything with all the parties in a good harmony, it takes time." (Participant U-1)*

Limited space in urban areas is the main obstacle, as there is no space left for the restoration of waterways. In Utrecht and the Netherlands in general, the interviewees see the new development area as a challenge but also an opportunity due to the growing urban population. With the new Environment and Planning Act, the role of the municipalities is becoming increasingly important. The attitude of political parties and municipalities could therefore have a major impact on future environmental plans.

> *"The demand for housing in the Netherlands continues to increase, so new development areas are to be expected. It is a challenge to keep enough room for the water. The new environment plan is led by the municipality, so the role of the municipality and the political environment are particularly important." (Participant U-5)*

> *"You will see that some municipalities prioritise green and space for water for example, but there are also municipalities who do not really prioritise that, and it also depends a bit on the political colour of a municipality, so Utrecht is a municipality a bit more left wing." (Participant U-5)*

In Taipei, although limited space and unfriendly legal frameworks remain the major obstacles, more and more local governments across Taiwan recognise the importance of urban rivers, and the people are getting more and more confident in this new approach to governing urban water. Particularly, some pioneering examples, such as the Huanggang River, can have a positive impact on future spatial planning and public perception.

> *"我覺得磺港溪告訴我們，只要有空間，河流可以稍微被解放，只要一段一段地被解放，長期下來，特別是以臺北市來講，或是任何一個人口在減少的地方，河流都是長得回來的。"*
> *"(I think the Huanggang River Project tells us that as long as there is space, the river can be liberated, and as long as it is continually liberated, in the long run, especially in Taipei City, or in any place where the population is decreasing, the*

river can come back.)" (Translated, Participant T-6)

"有案例了，那慢慢民眾就可以有一點相信專業或是相信公部門的說法。這個部分就是我們現在目前在建構，就是案例越來越多，才能夠在臺灣有更多的機會。"

"(If there are some successful cases, then the public will be able to believe in the profession or the public sector. That is what we are working on. So more and more cases, then there can be more have more opportunities in Taiwan.)" (Translated, Participant T-1)

Existing land use largely limits urban river restoration. Large-scale restoration in historic city centres is difficult to achieve due to limited space. Nevertheless, there are many opportunities to contribute to a better urban water environment. In the Netherlands, a growing urban population is leading to the development of new urban areas, where municipalities have the planning power to provide sufficient space for water. Therefore, the attitude of municipalities and the governing party towards the water environment is key to the planning of new urban areas. In Taiwan, although restoration is challenged by the current dense land use and public awareness is still limited, projects such as Huanggang River can serve as a pioneering example. The stagnant, even declining, urban population is an opportunity to gradually emancipate the river in the future.

5.3. Results analysis

Having conducted a literature review, document analysis and interview analysis, this section analyses the result findings based on the conceptual framework.

5.3.1. Understanding river restoration

First, according to the reviewed literature, urban river restoration can be understood as a contemporary approach to water governance, which tends to restore the natural waterways that have been channelised concretely in recent decades (Eden & Tunstall, 2006). In addition to the engineering intervention itself, restoration also faces challenges arising from regulatory constraints, public acceptance, and economic activities (Otto, 2019; Scoggins et al., 2022). The similar results can be identified through multiple evidence from documents and interviews (Participant U-1, p.30; Beitou District Urban Planning Masterplan, p.34), as they pointed out that restoring waterways is a new measure to govern urban rivers. Interviewees confirmed that global thinking has shifted from car-centric design toward a human-centric living environment with fewer cars and blue-green landscapes (Participant U-1, p.30; Participant T-1, p.31). However, this paradigm shift has affected the two studied cities to different degrees. In Utrecht, the pursuit of natural waterways and human-centric approaches extended across civil society and public and private sectors. In Taipei, on the other hand, this shift seems to be tied to a few key figures (Participant T-2, p.31). The results also indicated that civil society and the regulation are relatively conservative and stick to the traditional engineering approach (Participant T-2, p.31; Participant T-6, p.32). Therefore, restoration points to other meanings than the river itself but to a rethinking of the relationship between humans, institutions, regulations, culture, and the river (Guimarães et al., 2021).

There are various drivers and motivations behind the restoration projects. Literature revealed that the common goals are aesthetic value (Rachel May, 2006; Prior, 2016), building blue-green infrastructure, quality of life (Chou, 2016; Deason et al., 2010; Zingraff-Hamed et al., 2017), and social awareness to emancipate the river from traditional institutions and regulations (Samuelson et al., 2023). This echoes the Catharijnesingel project in Utrecht, where the initiatives and referendum from both local people and policymakers declared the same goal of making a greener, less-congested city (Participant U-1, p.33; Participant U-4, p.33). It is noted that the terrible situation of the city added to this motivation (Participant U-3, p.33). However, the case in Taipei was rather different, where the project was initiated by public sectors

(Participant T-1, p.35). This difference also echoes the findings that the trend of river restoration was not widely accepted by the public, but only by some key figures in the public sectors and NGOs (Participant T-2, p.31).

5.3.2. How do they collaborate?

Collaborative dynamic includes collaborative structures and collaborative processes. The relationship between actors and the current social, institutional and legal context formed the basis of the collaborative structure in both cases. In Utrecht, the referendum and the formal agreement between landowners (Bilateral Development Agreements, p.22) served as the basis for this transformative project. In addition, the actors' existing network of actors and their idea of 'planning together' (Participant U-3, p.44; Participant U-1, p.44) led to a flat structure, in which actors can communicate and collaborate on an equal basis and are able to share their opinions directly with others. In Taipei, the fear of water (Participant T-6, p32; Participant T-2, p.42), the conservative bureaucracy without an innovative mindset (Participant T-2, p.31, p.41; Participant T-6, p.41), and the legal framework that embraces traditional engineering (Participant T-6,p.32; Participant T-2, p.32), created an unfriendly structure for a massive, innovative change. Nevertheless, the support of leaders (Participant T-2, p.37), professional policy advisor (Participant T-1, p.35), and the consensus of the public sectors (Participant T-3, p.41), are proved to be crucial in making the restoration happen.

It is found that a clear, shared goal of making a good, greener, healthier city was recognised by actors in Utrecht (Participant U-2, p.46; Participant U-4, p.46). This shared vision further made the communication and collaboration easier. In Taipei, the goal was mainly shaped by the government and supported by actors such as consultants and some local communities. Although many residents were still sceptical about river restoration (Participant T-2, p.47; Participant T-4, p.43), the results showed that key actors from public sectors, consultancy, and even experts have their own communication strategies and skills aiming to passionately communicate with local people, such as informal environmental education (Participant T-2, p.47; Participant T-4, p.47) and strategic statements (Participant T-6, p.48). These findings from documents and interviews are in line with the diverse collaboration found in the studied literature, that in some cases, citizens are the initiators who actively organise movements and lobby policymakers (Rachel May, 2006; Samuelson et al., 2023; Takizawa et al., 2020), while in some cases, the government actively involves them in the discussion and seeks public support (Chou, 2016;

Nayak et al., 2023; Prior, 2016).

Actors' capacities are shown to be deeply intertwined with collaborative dynamics. Firstly, the existing relationship between actors served as a basis for having smooth conversations between actors. For example, the congenial relationship between the water board and municipality in Utrecht (Participant U-2, p.36) and the experience and networks of the consultant with local people in Taipei (Participant T-7, p.38) have a positive influence on the progress of the project. In addition, the professional knowledge and vision of the constant also played a role in promoting the public acceptance of the project (Participant U-4, p.36; Participant T-7, p.38). Leadership was a key factor in the Huanggang River case, as leaders' ambition to create showcase projects and visions to follow the global trend of river restoration have made the communication with local people more patient and easier (Participant T-1, p.35; T-2, p.37; T-5, p.38). Although their motivation might be political, it still helped the project to move forward. Leadership, however, was not often mentioned by Utrecht interviewees. They tended to refer to the municipality as a whole (Participant U1, U2, p.46), rather than to a specific leader, policy maker, or politician.

5.3.3. Perception by actors

Different actors perceive river restoration differently. Although there is somehow a global consensus on creating a greener, healthier city, flood risk is the most common concern raised by residents. This is particularly in the case of Taipei, since there is still a social atmosphere that considers concretely channelising the waterways the best way to prevent flooding (Participant T-6, p.41). This can echo the findings that the citizens in Taipei were reluctant to change since it was hydraulically stable and safe to remain status quo (Participant T-4, p.42). Therefore, actors with power and knowledge, especially the government leaders and managers from consultancy, were investing lots of discussion to communicate with the citizens. Flood risk, however, did not arouse much concern in Utrecht. Instead, social safety, sufficient green spaces, and mobility are the main indicators when the actors evaluate the project.

In both cities, interviewees (Participant U-1, U-3, T-2, T-5) have frequently pointed out that economic and property interests are still one of the major factors that could affect the acceptance of restoration projects. In the Catharijnesingel case, local authorities and businesses were opposed to the project due to car accessibility in the beginning; however, they have seen the economic benefits that would be brought by creating an attractive city (Participant U-1 p.39, U-3, p.39, p.48). In Taipei, the benefits of real estate are probably the most important concern of landowners and the most critical factor in communicating with them (Participant T-2, p.42; T-5, p.48). Moreover, political achievements and political prestige perceived by politicians are a key element in promoting such cases in Taipei (Participant T-1, p35; T-2, p.41; T-5, p.38). Hence, it is noted that actors' perceptions could change or even strengthen over time, and this change is the result of multiple factors, such as a global paradigm shift toward climate resilience (Participant U-1, p.40), economically persuasive communication (Participant U-1, U-3, p.39), continuous communication and collaboration (Participant T-2, p.47; T-4, p.38; U-3, p.39), or visible pioneering flood-preventing cases (Participant T-1, p.50).

5.3.4. Result summary

Table 6: Summary of results

Understanding Urban River Restoration	**What** - Restoring waterways that were filled or concretely channelised is a contemporary water governance approach - Toward a human-centric living environment with fewer cars and blue-green landscapes - Rethinking the relationship between river and people, institutions, regulations, culture **Why** - Natural aspect: Flood management, ecology and water quality improvement, ecosystem services - Social aspect: Ecosystem services, quality of life, human-centric living environment
How do they collaborate?	**Collaborative structure** Utrecht - Referendum and a formal agreement among landowners served as the basis - Existing networks, thought of 'planning together' led to a flat collaboration structure Taipei - Fear of water, conservative bureaucracy, and an engineering-oriented legal framework formed an unfriendly structure for innovative change. - Support and knowledge of government leaders and professional policy advisor are crucial to make the project happen **Collaborative process** Utrecht - Shared goal of making a good, greener, healthier city

	- Continuous communication on an equal basis and bilateral communication. Taipei - Public sectors, consultancy, and influential experts have their communication strategies, such as informal environmental education and strategic statement.
Perception by actors	Utrecht - Actors saw the benefit, such as better living quality, economic and property interests - Entrepreneurs were fearful of car accessibility and commerce decline, but they were convinced at the end due to the attractive vision. Taipei - Citizens were concerned about flooding and tended to remain in the status quo, though they could change their minds when seeing beautiful landscapes and flood resilience - Actors saw the political prestige; landowners saw economic and property interests

6. Conclusion

6.1. Answering Research Questions

This chapter concludes the findings and answers the research questions. Each sub-research question is first addressed, then the main research question can be answered. This is followed by a discussion section addressing what policymakers and urban planners can take from this research and the limitations of this research. Finally, a recommendation for planners and future researchers is presented.

6.1.1. SRQ1: What is the role of river restoration in contemporary urban river governance?

The literature and some key quotation from the documents reviewed and interviews can answer the first question. The literature revealed that urban river restoration is not only a contemporary approach to managing the urban water environment (Nayak et al., 2023; Novalia et al.), but also a negotiation process needed to be understood in a social context, including economic, institutional, and local culture (Otto, 2019; Scoggins et al., 2022). Restoration can be based on different objectives, such as ecological and biodiversity value, human-centric quality of life and greener, healthier living environments, and the historical and cultural significance of a city. For example, in Utrecht, the transformation of the station area and the restoration of Catharijnesingel aimed to “develop a high-quality, multi-modal public transport hub combined” (Zoning plan Catharijnesingel, 2010, p.34), and in Taipei, the restoration project aimed to “restore Huanggang River to its natural form and to improve the traffic environment and pedestrian space” (Beitou District Urban Planning Masterplan, 2021, p.34). Urban river restoration faces various obstacles due to institutional and regulatory barriers, limited space and the compact nature of urban areas (Participant U-5, p.49). Therefore, initiating an restoration project is not only testing social consensus on living environments but also an opportunity to position the role of urban rivers (Hwang, 2015). Despite the growing acceptance of a greener quality of life with fewer cars, the dilemmas of balancing socio-economic and environmental impacts still need to be negotiated politically, institutionally and regulatory (Participant U-5, p.49). Restoration is therefore a process of prioritising rivers over human needs and rethinking the relationship between people and rivers (Participant T-2, p.32). In these two cases, restoration projects are politically supported and socially feasible because jurisdiction and land ownership are straightforward. However, if the restoration project involves cross-regional jurisdiction or land exploitation, there would be a major challenge. Hence, Samuelson et al. (2023) argue that restoration activities are both a product and a process of co-creating an ontologically plural space for the renegotiation of what river restoration means for a city.

6.1.2. SRQ2: Who are the different actors involved and how do they collaborate?

There are five types of actors that are commonly involved in urban river restoration projects, including local government; water authority; residents, businesses, and landowners; academics and NGOs; and consultants. Local government is usually responsible for overall urban development, planning and land use regulation. The water authority is responsible for water management. Residents, businesses, and landowners are the actors directly influenced by the changed river landscapes. In some cases, academics and NGOs have also been involved to varying degrees in advocating or supporting in activities (Rachel May, 2006; Moran, 2007). In addition, the experience and knowledge of the consultants in the delivery and implementation of the project was a key factor in driving the project forward, as shown in the two cases in this research. (see Actors' capacity, p.35). Actors' responsibilities and involvement may vary in different contexts. For example, a water board is a water authority that is independent of the local government in the Netherlands, whereas in Taiwan, a water authority is institutionally integrated into the local government. In some cases, local communities and landowners include large entrepreneurs (see 4.1) or small businesses and vendors (Kim & Yang, 2023), while in some cases, a new development area may not involve residents. In summary, five types of actors are the main actors in urban river restoration, and each actor may play different roles to different extents due to different institutional, regulatory and social contexts.

Once the main actors have been identified, collaboration between them is then discussed. First, there are some normative foundations, such as the referendum and the agreement signed by landowners in Utrecht (See 4.1). In Taipei, the Huanggang River Project was launched as a formal policy (See 4.2). The different formalisation routes illustrate the different ways in which a restoration project can be initiated. In Utrecht, residents and the municipality worked together. The former made their voices heard through advocacy, lobbying, and the outcome of the referendum; the latter used administrative resources to enable the financial feasibility and the landowners to work together to realise the project. In Taipei, the policy advisor and the city government launched the project first, while they had to seek the support from the residents. As a result, both formal methods, such as public hearings, and informal methods, such as environmental education, helped to win over sceptical residents. A conclusion that can be drawn is that in Utrecht the communication between the residents and the government was more parallel and on an equal basis, whereas in Taipei we can see that the residents usually play the role of being informed and consulted, while the government takes a leading role. This may also be the reason why leadership and support from elected officials is often mentioned by Taiwanese interviewees (Participant T-1, p.35; T-2, p.37; T-5, p.38), because the public is not aware of the global trend; therefore, the public sectors, who have the resources and power, take responsibility for initiating innovative policies. These findings are in line with the current literature which reveals that in a more bureaucratic systems, leaders' attitudes and support may be more influential in promoting progressive projects that contradict traditional and conservative norms (Lundy & Morin, 2013). In Utrecht, however, most actors were aware of the clear goal of creating a greener, healthier city (Participant U-1, p.33; U-3, p.37; U-4, p.46). Meanwhile, a non-bureaucratic, parallel system allowed them to collaborate on an equal basis (Participant U-3, p.44), with the process constantly being discussed and revised (Participant U-1, p.44). This is also the reason why the interviewees thought that the case took so long.

In conclusion, the project of Catharijnesingel was more of a social consensus. They shared the same vision of creating a greener, healthier historic city centre, and it was the flat structure that made the project possible, with an equal collaborative relationship between actors. In Taipei, it was more of a government-led policy, where citizens were uncertain about the outcome. Therefore, it is the government's responsibility to convince the actors and to present a clear, wonderful vision.

6.1.3. SRQ3: What are the perceptions of the different actors involved?

Actors' perceptions are key to successfully restoring urban rivers. Different actors have different perceptions of it. While some actors may be opposed to it because of flood risk, reluctance to change, or fear of economic decline, most of them have seen the positive impacts. In Utrecht, for example, residents expected a greener city with less traffic, and the government were pleased to have an attractive city (Participant U-1, p.39). In Taipei, the restoration of Huanggang River was not only an innovative way of managing urban water (Beitou District Urban Planning Masterplan, p.34) but also followed the global trend of creating a liveable city with sufficient blue-green infrastructure (Participant T-1, p.35). Different actors oppose or support the restoration project for different reasons. For example, most residents in Utrecht were in favour of making a good, greener living environment. Residents in Taipei may have the same perception, but they were still worried about flooding. Landowners and businesses also support the project if they believe that a more attractive city can bring economic and property benefits.

It is striking that actors' perceptions can be influenced by collaborative dynamics and thus change over time. In Utrecht, for example, businesses such as Hoog Catharijne were against the project because they feared economic decline due to car accessibility. However, they agreed with the project as they were convinced that a more socially and pedestrian-friendly station area would attract more people. In Taipei, some citizens were against the project because of concerns about flooding and reluctance to change, but they changed their minds when they saw a greener landscape and a better living environment (see Actors' Perception, p.39)

Actors' perceptions can also lead to different types of communication and collaboration. In Taipei, for example, much of the conversation was focused on convincing citizens, as most were still suspicious of the outcome and the benefits it could bring. To achieve this, both formal and informal ways, such as public hearings, environmental education and influential articles, were used by public sectors and opinion leaders to communicate with and build trust among actors (see Collaborative process, p.46).

In conclusion, actors' perceptions vary due to their distinct roles, personal preferences, and affected interests. On the one hand, it shows that collaborative dynamics can shape and change actors' perceptions. On the other hand, actors with power, knowledge and influence can take actions to persuade, lobby and allay the suspicions of others. Actors' perceptions are thus dynamic, not only as a result of the social context and the collaboration but also intertwined with the collaborative dynamics.

6.1.4. Main research question: How do different actors collaborate and perceive river restoration for urban planning?

Based on the above discussion, it can be noted that in recent decades there have been calls from the public sector, local communities and academics for the restoration of urban river landscapes. This notion of restoration aims to restore not only the appearance of the water but also its natural functions and historical significance, reflecting the drive for quality of life and the need for climate resilience in contemporary cities (Eden & Tunstall, 2006; Herringshaw et al., 2010). In the context of urban planning, river management is therefore facing a shift in both thinking and practice. On the one hand, rethinking the role of urban rivers and how they should be managed is provoking debate in society; on the other hand, there are challenges posed by the current state of compact land use and regulatory and institutional barriers. These multiple dilemmas are the reason why scholars pointed out that the transformation from technical management to the integration of human dimensions remains slow (Pahl-Wostl, 2007; van de Meene et al., 2011). Actors also have different concerns regarding restoration due to their roles and affected interests, such as residents' concerns for safety and quality of life, landowners' concerns for property interests, businesses' concerns for economic benefits, government agencies' concerns for flood protection and balanced urban development, and so on.

In addition to formal agreements and officially launched policies, it is clear that successful restoration requires a variety of communication strategies and collaborations that respond to the concerns and interests of actors in different contexts. In Utrecht, for example, collaboration was based on a flat structure and parallel conversations. It was the social consensus between the public and private sectors that enabled them to have a smooth, ongoing conversation and collaboration. In Taipei, many residents were still sceptical about the urban river, and a traditional regulatory and bureaucratic system was a major obstacle to innovative restoration projects. Therefore, influential leaders and key figures within government agencies are key to driving this type of innovative project forward.

In conclusion, different forms of collaboration emerge in different social contexts. It could be a flat, equal collaboration between actors, as in the case of Catharijnesingel, where social consensus was built through sustained dialogue; in contrast, the Huanggang River Project illustrated another approach, where the government initiated the project and sought to gain public support. Some literature also reports that citizens could play a role in initiating and forcing the government to restore the disappeared waterways (Pradilla & Hack, 2024; Samuelson et al., 2023). These examples reflect how actors' initial perceptions vary based on their positions within the social structure. As a result, different modes of collaboration serve to communicate, persuade, and reshape perceptions in pursuit of a shared understanding and social agreement.

6.2. Discussion

From this research, we can see that urban river management is now undergoing a global transformation – from technical, engineering intervention to the integration of social dimensions in river restoration. The significance and implications of this transformation for scientific research, planning policy and practice, and society as a whole are discussed further in this section.

6.2.1. For the scientific research

For the academic field, this study highlights a shift in urban river management where restoration has become a key approach. Different actors initiate restoration in varying ways across social institutions and social contexts, which is closely related to their values, knowledge and resources. For instance, when residents prioritise the benefits of industrial or commercial area over the ecosystem services, it can lead to the disappearance of rivers. Moreover, this research suggests that collaboration and social debate can significantly influence people's perceptions. Environmental improvements, for example, can enhance public confidence in restoration. This research explores the formation, negotiation, collaboration, and perception of an urban planning project through the lens of river restoration. It shows that restoration is not only about restoring a river to its natural state but also about re-establishing urban dwellers' connection and reliance on them.

The global trend of restoration also signals a shift in urban planning. As a tool for regulating land use, planning for the water environment reflects the changing values of land use and urban forms. This also contributes to and extends the ongoing discussion of human-centred cities, that human-centred cities are not solely about infrastructure and traffic safety but also about rethinking land use through a human-centred lens, with rivers as a central focus.

6.2.2. For the planning policy and practice

This research presents two distinct policy-making processes. Although the study focuses on only two cities, it highlights two typical types of government and policy implementation– bureaucracy and consensus-based consociationalism – although scholars have also pointed out that consociationalism is gradually fading in the Netherlands due to secularisation and class homogeneity (O'Leary, 2019).

In Utrecht, the project proved to be time-consuming. This is not only due to the scale but also because it has been discussed for a prolonged time. Yet it was this strong civil society and a parallel, flat discussion process that led to the project being widely regarded as a success story by citizens and outsiders alike and has been replicated in many cities. In contrast, in a more hierarchical, bureaucratic system, or in a society where the system gives more power to the leader, such as the mayor, it is crucial to have a leader with knowledge and vision. In such a context, lobbying key figures may be a more effective strategy to advance innovative initiatives.

Legal frameworks and river management systems also play a vital role. Since rivers often cross borders, their management poses unique challenges. A growing global trend is watershed-based management, which integrates land, water, biota, and other resources (Heathcote, 2009; Wang et al., 2016). However, whether it can be applied to congested urban water environments needs to be debated, as urban rivers are deeply engaged in citizens' everyday lives and remain in a close, dynamic relationship with them.

6.2.3. For the for society as a whole

For the public, the study points to the importance of civic awareness and the strengthening of civil society. In Utrecht, for example, citizens' insistence on the city's history and the full restoration of the Catharijnesingel were key to driving the project forward. In Taipei, although citizens' awareness of the city's rivers is relatively low, a pioneering example can stimulate civic awareness and be replicated in many places. The study also confirms the impact of precedents on civic awareness. In other words, appropriate publicity from influential people in government and opinion leaders in society can have a positive impact on promoting civic awareness.

Therefore, civil society has two meanings for urban rivers: first, civil society itself has a strong and positive civic awareness of urban rivers; for example, citizens rely on urban rivers for the values of greenness, health and ecosystem services; second, a strong civil society with NGOs, opinion leaders and local communities has sufficient agency to influence government policies. To recapitulate, the meaning of restoration is not only the actual creation of the water environment but also the social system and cultural awareness of river emancipation. Therefore, a strong civil society with a high level of civic awareness is crucial for promoting urban river restoration both geographically and institutionally.

6.2.4. Issues beyond this research

Admittedly, this study does not delve deeply into the economic aspects, such as property and land value debate, as this is beyond the scope of the research. Issues such as the shifting property prices due to changing land use need to be explored. Intuitively, such innovative planning approaches may not appeal to everyone—particularly property owners and developers.

Although the actors appear satisfied with the outcome of this departure from the traditional definition of urban development in both cases, it is important to acknowledge that this new form of urban planning is often criticised for the consequences of gentrification. Whether intentional or not, the potential impacts of (green) gentrification should be carefully considered, especially in historical areas where river restoration often takes place. The appeal of a restored river landscape may conflict with high density and established land uses in these areas. In other words, although the improved river environment may be appealing, it can still affect the economic activities and social dynamics of residents through shifts in land prices.

6.3. Limitation

This research focuses specifically on urban river restoration, as it reflects both the historical development of cities and a rethinking of urban life that signals a transformation in contemporary urban planning. However, urban planning is much more than this. Beyond the need to balance it with other aspects of urban life, technological advancements have enabled cities built far away from water—such as Dubai—to reshape traditional urban forms, making rivers less central to human activity.

Additionally, this study considers only river restoration as one approach within contemporary urban planning, but it does not delve deeply into what constitutes a good restoration. For instance, is transforming a river into an artificial water park—like the Cheonggyecheon in Seoul, Korea—considered restoration? While it may not be an ecologically restored river, it still offers extensive water-friendly public space and is widely appreciated by the public. Moreover, restoration should be discussed alongside other aspects of urban water management, such as stormwater and wastewater, particularly in the context of climate change.

In terms of methodological limitations, a major limitation relates to the selection of cases. Firstly, two case studies were carried out in order to gain an in-depth insight into the aim of the thesis. This means that the results of this study can hardly be arbitrarily interpreted as a universal phenomenon, as the social contexts differ from city to city. In addition, the issue of language may limit this study in terms of data collection. For example, the policy documents are only available in Dutch or Chinese, which led to imprecise terminology when translated and analysed in English. The same problem occurred with the interviews, where some terms were difficult to translate accurately into English. Also, since English is not the native language of either the researcher or the interviewees in Utrecht, the conversation may be limited. In addition, the researcher did not interview developers and residents with opposing views, which may be insufficient to understand the full story of both projects.

In conclusion, this research aims to explore the general pattern of urban river restoration. While this study explores how a restoration project is formed and how it is perceived by actorss, it also acknowledges several limitations of the research scope, method and data collection that need to be addressed by future researchers.

6.4. Recommendations

Overall, this research can be informative for policy makers and urban planners aiming to restore urban water environment:

- Understand the social atmosphere: Urban planners and policy makers should understand how the public perceives urban water. This can be done by gathering public opinion in a variety of ways, such as sufficient public hearings or workshops and environmental education with local schools and communities. This basic work will enable them to understand what factors can appeal to citizens and what risks they are concerned about and to develop collaboration strategies. They also need to secure the support of leaders and elected officials or others with power and authority. As intermediaries between residents and government leaders, policy makers and urban planners should use their knowledge, skills and capacities to promote a better urban water environment.
- Integrate policies and resources and clarify responsibilities: Due to the spatial constraints and complexity of land use in urban areas, the management of urban rivers is often characterised by unclear responsibilities or trivial, conflicting policies. Therefore, as society places increasing value on the functions of urban rivers, policymakers and urban planners should take steps to clarify responsibilities and formulate policies that are more in line with the pursuit of natural landscape and environmental quality in contemporary cities. Watershed management, for example, is an institutional approach to managing rivers based on basins and catchments rather than dividing them between local authorities. In summary, clear institutional ownership of urban water is key to effective management. In terms of policy, urban development is no longer just about land and industrial development; a human-centred city can also bring economic and quality of life benefits

to the city.

- Clear objective and meaningful public engagement: It has been found that having a clear objective makes it easier to move the project forward. The objective does not need to be very detailed about how it will be achieved, but it should be sufficiently discussed, whether it is initiated by the public sector or by civil society. In Catharijnesingel, for example, the goal of creating a greener, healthier city was agreed with most citizens through a referendum. Public debate is necessary because it empowers the public with information and knowledge. The public sector and urban planners should therefore ensure that citizens have access to sufficient information and deliberation processes. This can be done by introducing the international examples, empowering citizens with more agency in the system, such as lowering the threshold and cost of participation in policy discussions and deepening social cohesion and consensus through meaningful interactions.

According to the findings in this study, there are some suggestions for the future academic research:

- Quantifying the benefit of river restoration: While the positive effects of river restoration are recognised by actors, the value it brings is rarely quantified, which makes it less convincing when it comes to policy making and persuading actors. Therefore, future research on the economic and social values of river restoration, such as property prices, tourist values, place attachment, will be very helpful to city governments around the world when restoring urban rivers.
- Measuring Gentrification: Gentrification is a potential outcome of restoration. There is still a lack of academic research on whether a restored landscape would lead to gentrification. While similar arguments have been made in some research on green gentrification, research into the effects of restoration is still crucial, as it is likely to be a more government-led policy with a greater realisation of public power.
- Expanding the research scope to the new developing area: This research looked at the case of an existing urban area, especially the old town areas. However, urbanisation has resulted in an increasing number of new development areas. Therefore, the results of this study may not be applicable to the urbanising areas. Future research could then focus on river governance in more newly developed areas.
- Exploring citizens' perceptions and motivations for participating in the policymaking

process: Although previous research has shown that citizens are more likely to participate in policymaking when their interests are directly affected, contemporary urban dynamics — such as rapid demographic shifts, an ageing population and a growing desire for urban nature — are continually reshaping people's expectations of their living environment. Therefore, ongoing research into public perceptions and motivations is important for policymakers to understand changing urban patterns.

6.5. Conclusion

This research examined how river restoration is integrated into urban river governance and how actors perceive and collaborate with each other. Two case studies were examined: Catharijnesingel in Utrecht, the Netherlands, and the Huanggang River in Taipei, Taiwan. Qualitative methods were adopted for this research, including a literature review, document analysis and interviews. The findings reveal that river restoration is considered a contemporary approach to river governance. The global trend of urban river restoration indicates that actors value the positive impact of urban rivers, such as providing a greener environment, promoting human-centric transportation and conveying historical meaning, as well as fostering a sense of identity among citizens. However, restoration is challenging due to complex environmental issues and social, political and institutional factors in urban areas. It is therefore important to understand how actors perceive restoration and how they collaborate with each other. This research reveals that collaboration varies due to distinct social, institutional and regulatory contexts, and that actors perceive restoration differently due to their preferences, roles and considerations of their interests. Different collaborative approaches serve to communicate, persuade, and reshape perceptions in pursuit of shared objectives and social consensus. The patterns of thinking and collaboration among the actors identified in this study could inform the work of policymakers and urban planners when designing and promoting river restoration projects in different contexts in the future.

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8. Appendix

8.1. Coding book

general context	general context	awareness of the past	actors' perception	citizen perception	natural waterway
		awareness to make a change			citizen's perception
		general mindset change			positive public comments
		realising the mistake			public acceptance
		environment concern			water environment
		public consensus			fear of changing
		new concept of hydraulic engineering			used to current status
		priority shift			citizen have no vision
	political context	politicians' support			complaint about construction
		political context			pedestrian friendly
		politic credit			landscape benefit
		politician's action			impression of river
		democratic discussion			historical identity
	intsitutional context	Increased importance of water board		civil servant perception	traditional practices
		urban planning as a tool			Dilemma faced by civil servants
		institutional issue			Mindset of civil servants
		conservative bureaucracy			active civil servant
		expectation of catchment-based water authority		actors' perception	park as part of river

		integration of water management			awareness of responsibility
		sufficient discretion			prioritise waterway
		absence of ecology authority			leader's thought
	status quo	restricted waterway		Leader perception	politic credit
		space usage			politicians' support
	financial capacity	sufficient funding			afraid of economy decline
		financial capacity		business perception	afraid of car inaccessibility
		historical meaning			business commercial thoughts
		Emancipation of traditional thought			property developer's interest
		Social thinking shift			property interest
	societal context	developing-oriented in the past		interest consideration	interest of landowner
		motivation of nostalgia			interest consideration
		collective period			interest conflict
		housing demand			financial responsibility
		land ownership			actors' responsibility
		national policy			legislators' support
		european framework		actors' responsibility	unclear responsibility between agencies
		regulation deficiency			responsibility for urban planning
	legal context	urban planning regulation			awareness of responsibility
		expectation on change of regulation			unclear responsiblility
		regulation prioritise human need		government rationality	safety as priority
		importance of legalisation			municipality's jurisdiction

		outdated regulation
initial condition and driver	initial condition driver	relationship with municipality
		professional design
		initiation of the project
		emergence of the project
	driver	driver
	motivation	awareness to make a change
		problem around station area
		transforming the central station
		awareness of making a good place
		unfriendly condition
		poor of green
		thinking of decreasing the cars
		environment protection
		reference case
		community development
	referendum	referendum
		public decision
	leader capacity	politician's action

		things to prioritise
	water authority rationality	maintaining and monitoring
		water authority safety concern
		focusing on water quantity
	consultancy perception	consultant respect local opinion
		meaningful measure
		social meaning of public space
		consultancy vision on city life
		consultancy pursuit of human life
collaborative structure	conservative bureaucracy	conservative bureaucracy
	collaborative structure	communication between agencies
		relationship with municipality
		community's energy
		consultation evening
		Equal basis
collaborative process	communication	communication between actors
		compromise through communication
		communication skill
		misunderstanding
		lot of discussion

		relationship with municipality			continually communication
		Advocacy strategy			respectful communication
		accepting new concept civil servant			information spreading
		environmental education		Clear goal	Clear goal
		citizen campaign			successful project
		citizen's action			Expectations for the future
		citizen's influence			Expanding the imagination
		community's energy		impact of the project	human-water relationship
	citizen capacity	sympathetically and warmly			pioneer case
		citizen communication strategy			liberate the river
actors' capacity		local campaign history		opportunity	opportunity
		bottom up			new developing area
		environmental education	other		function of urban river
		system approaches			recreational function
		design of ecological waterway		function of urban river	heat stress
		nature inclusive			role of canal
		consultancy insist on important feature			landscape integration
	consultancy capacity	understanding public thought			risk of public participation
		consultancy capacity			unproper decision
		consultancy knowledge		challenge	balance between economy, well being
		experience in designing walkability			balance between safety and ecology
		consultancy background landscape			balance between human and waterway

	expert's capacity	expert's ability communicating strategy		limitation	limited space limitation unclear responsibility between agencies
	government capacity	lack of ecological experience public sectors' support cross-discipline knowledge government insistence municipality's capacity			
	water authority capacity	We also are the party that gives permits. flood preventing ecological measure role of water authority			
	citizen instrument	public opinion citizen initiation slogan strategic movement workshop & empowerment petition through legislator			
	leadership	leader's thought Administrative measures of superior chief leader's ability leader's promotion			

8.2. Literature review

	title	author	year	definition / what	motivation/trigger/why	who	how do they perceive	what action done and how did they collaborate
1	An urban rivers renaissance? Stream restoration and green–blue infrastructure in Latin America – Insights from urban planning in Colombia	Pradilla, G., Hack, J.	2024	> recognizing the vital role of nature > a promising approach to recover some of their lost ecological processes due to urbanization, reconnect citizens with rivers, and build more sustainable and resilient cities.	>urban sustainability became a global policy goal and cities began to be understood as socio-ecological systems. >sociotechnical transition that revalued river space > a shift toward multifunctionality, connectivity, and integration of green/blue and gray elements.	> citizen: > civil society	> policy makers, develoopers, government bodies sometime deem them as 'non-technical'	> civil society: reliance on legal action, mitigate power imbalance and gain more involvement
2	Connecting place and multilevel governance for urban river restoration	Novalia, W., Suwarso, R., Nurdin, I.	2024	> Restoration, as one approach to river management, typically involves achieving multiple objectives and addressing multiple		> community > government > local leadership		> political legitimacy, participating regulation > administrative continuity clear normative call > government bodies as central role in building platforms for cross-jurisdictional interactions > local leadership, issue-based network and

				stressors across geographical and temporal scales.				place connector, place attachment
3	FLUCTUATING CURRENTS; Balancing urban growth and restoring native riverine synergies in Mumbai - the case of Dahisar River	Nayak, A., Keluskar, K., Pawar, V.	2023	> significance: resonating with international agendas for sustainable development	> the transformation toward creating healthy cities > the narratives of healthy cities can be driven with a blend of awareness about impending threat and promise of positive change	> government bodies, NGO, local community, private sector entities	> local ownership: tangible economic benefit > the degradation of river trigger concerns of health and perception of city's liveability and aedthetic	> conscious communication strategies > implementation of strong governance, effective governance, ensuring policies, resources, stakeholders engagement > both top down and bottom up, collaborative partnership > The advocacy component complements governance by helping mobilise public support, fostering awareness, and pushing for policy changes that align with the goals of urban river restoration
4	The challenges of urban river restoration and the proposition of a framework towards river restoration	Guimarães, L.F., Teixeira, F.C., Pereira,	2021	> is an integrated and synergistic set of varied actions and techniques (legal,	> to prevent new occupation > healthier environment		> public: the more vegetated and natural a river is, the better it is perceived	

	goals	J.N., ... Veról, A.P., Miguez, M.G.		administrative, financial, structural)			> local community: recovery of river's ecological indicators	
5	Integrating river restoration goals with urban planning practices: the case of Kebena river, Addis Ababa	Asnake, K., Worku, H., Argaw, M.	2021				> city government recognize the value of protecting and restoring waterway, and adopting regulatory issue	> policy document: distinguish the responsibilities
6	The role of community-based organizations for urban river restoration projects in zenpukuji river, Tokyo, Japan	Takizawa, K., Seino, S., Watanabe, T.	2020			> community, school, government body		> civic organisation: creating citizen science and learning opportunities, forming network, communicating, promoting participatory construction> repeatedly discussed the vision > building intergovernmental consensus
7	River restoration as an element in sustainable urban development	Skrinar, A., Misik, M., Janota, M.	2019		> to increase quality of life > to use the potential of river for relax, recreation > to create the connection integrating human activies and environment	> local government, river manager	> not only scientific understanding, but also acceptance and support of urban communities and integration with urban planning	> restoring the natural character of the banks, replacing insensitive bank reinforcements by an aesthetic and nature-friendly alternative > to declare the public's interest of vision performing > the vision of the final outcome be supported

8	Identifying Societal Preferences for River Restoration in a Densely Populated Urban Environment: Evidence from a Discrete Choice Experiment in Central Brussels	Chen, W.Y., Liekens, I., Broekx, S.	2017	> paradigm shift from traditional ecological concern toward utilitarian concerns (public preferences, social welfare) > uccessful restoration have to include not only biophysical alterations, but also reconnect residents (cognitively and behaviouly) with river system		> residents, environmental organisation	> achieving good water quality, a more natured river was preferred	
9	Societal drivers of european water governance: A comparison of Urban river restoration practices in france and Germany	Zingraff-Hamed, A., Greulich, S., Wantzen, K.M., Pauleit, S.	2017		> partially driven by EU policy (WFD) (limited, but it set a great value and ecological standard) > historical relations between citizen and rivers matter (morphological development of river)	> citizen	> citizen value the benefit of urban green spaces (France are higher than germans) > recreational demands are increasingly important > historical relations	

					> germany has long initiated ecological river restoration due to its industrial histories			
10	Achieving successful river restoration in dense urban areas: Lessons from Taiwan	Chou, R.-J.	2016	> multi-functionality-framed approach that strives to restore rivers' ecology, scenery, and ecosystem services	> an distinct example of Cheonggyecheon	> local people, government	> supported by local people to improve environment quality, but raised flood concern, may raised miscommunication between expert and general public > positive attitude towards river restoration mainly related to landscape aesthetic and recreational value	> flood risk communication > general public is not confident about green-engineered solutions > the use of plain language, people-friendly and web-based map systems

11	Urban river design and aesthetics: a river restoration case study from the UK	Prior, J.	2016		> aesthetic valuations as objective	> public, local residents, school	> public concern about flooding risk, increasing visitors leading to noise	> local community be kept closely informed about the project, to foster a sense of community awareness and acceptance of the project> public meetings, school visits, exhibition, brochures, newspaper articles, and the presence of a community liaison officer
12	Learning about learning: Lessons from public engagement and deliberation on urban river restoration	Petts, J.	2007			public	> Contextually participants (particularly public) might have felt more engaged with the project being 'on their door-step', and hence open to learning	> instrumental and communicative learning can be valuable outcome of deliberative engagement process > encouraging the use of narrative to weave local understanding
13	River restoration: Paradigms, paradoxes and the urban dimension	Clifford, N.J.	2007	> in europe, river restoration displays a collective identity	> growing awareness of the scope and scale of human-induced envrieonment changes > concern for improved environmental regulation > an opportunities created by post-industrial changes,		> renewed interest based around restoring ecological, recreation and amenity value	

					such as decline of primary industries (in EU)			
14	“A river runs through it”: Using small urban rivers as catalysts for revitalization in post-industrial New England cities	Otto, J.	2019	> must be understood in the context of the networks of economic activity, regulatory constraints, local culture, > the work of formulating and implementing revitalization is still mainly the province of elites and technocrats(urban planners, lawyers, elected officials) > capitalist mechanism like	> start with a 'spark': who see a neglected river	> local governement		> clear overall vision with different stakeholders > good graphics help to clarify projects for non-specialists

				wealth creation or interest, rather than increasing social equity or ecological restoration > in smaller cities, the discourses more around 'building a sense of community'				
15	Restoration as reconnection: A relational approach to urban stream repair	Samuelson, L., Blue, B., Thomas, A.	2023	> a process of co-creating an interconnected more-than-human community > restoration activities are both product and process of co-creating an ontologically plural space for the renegotiation of what stream restoration means.	> working through a related sense of responsibilisation or atonement, driven by politics of colonisationand a shift towards 'collective ownership'	> communities,	> community: urban streams are understood as places of more-than-human vitality and entanglement where relationships could be closer and more intimate	> community engagement: understand more about the history and the politic of the place

16	Rethinking Cheonggye Stream Restoration Project: Is urban greening strategy socially inclusive?	Kim, Y.-J., Yang, H.J.	2023			> business community	> oppositions from business community	> consultation and participatory process and a series of efforts to reduce the fears of the business > recreate agglomeration benefits> the merchants could not actively participate in compensation negotiations > formal meetings only held few city official and merchants representative
17	Community-powered urban stream restoration: A vision for sustainable and resilient urban ecosystems	Scoggins, M., Booth, D.B., Fletcher, T., ... Wagner, S., Wenger, S.	2022	restoration is a complex social process, driven by legal and regulatory requirement, economic and value of stakeholders		> resident	> resident: no seperation between human communities and nature systems(indeginous peopole)	> intentional engagement > training for all (community, institutional staffs) > early effort could yield conflict and reticence from communities
18	Closing the gap on wicked urban stream restoration problems: A framework to integrate science and community values	Murphy, B.M., Russell, K.L., Stillwell, C.C., ... Macneale, K.H., Smith, R.F.	2022			> local government, local communit, consultant	> managers prioritize local community engagement	> Gaining community support is important for the success of stream restoration efforts > leadership from government agencies

19	Residents' perception of flood risk and urban stream restoration using multi-criteria decision analysis	Hong, C.-Y., Chang, H.	2020			> residents	> residents: importance of riparian conservation and improved water quality, urbanite's lifestyle and outdoor recreational activities > Downstreams resident tend to concern about flooding > citizen's perception be centered on the inconvience of everyday life arising from the flooding	
20	Are Urban Stream Restoration Plans Worth Implementing?	Sarvilinna, A., Lehtoranta, V., Hjerppe, T.	2017		> urban stream as a part of urban nature for future generation	> residents	> residents: urban stream has the value of urban nature	

21	Restoration of urban streams and transforming lifestyle patterns: Two cases in Seoul, South Korea	Hwang, S.W.	2015	> urban-stream restoration has shifted from a mere functional objective to a socioeconomic regeneration strategy that extends out from the restored stream to revitalize the surrounding urban area > from a urban-design perspective, existing underdeveloped, deteriorating, and abandoned open spaces in urban areas should be utilized and developed into public spaces that are easily accessible and focused on user's need	begun at the time when urban sustainability and environmental concern were increasing	> citizens, local government	> local government: long-term view that considers the fundenmental impact and balance of social, economic and environment objectives	> constant management and maintaince is required> long-term view that considers the fundenmental impact and balance of social, economic and environment objectives

22	Building Watershed Narratives: An Approach for Broadening the Scope of Success in Urban Stream Restoration	Yocom, K.	2014	> narratives approach: the history of changing in the system and understanding of interaction between landscape and culture.	> three programme goals: addressing stakeholders needs, ecological perfoemance, and facilitating learning		> priorities were set not based on an objective analysis of watershed conditions, but on the economic realities and value of perceived benefits from the project.	
23	Stream restoration projects: A critical analysis of urban greening	Moran, S.	2007	> recent river restoration are becoming networked and institutionalised > restoration initiatives could have richer impacts extending into local communicity	> governmental mandate to reverse the road construction > interests and concerns of local people	> citizen, local community, government > both more-established organization and less-established organization > scientists		
24	Integrated planning framework for urban river rehabilitation	Deason, J.P., Dickey, G.E., Kinnell, J.C., Shabman, L.A.	2010		> river stressors (pollution) evokes a policy response tied to specific statutory authorities governed by investment and regulatory			> collaborative partnership > communicating through a mutually developed planning framework > building consensus among federal agencies, nonfederal agencies, and other stakeholders

					frameworks			
25	"Connectivity" in urban rivers: Conflict and convergence between ecology and design	May, R.	2006	> connectivity as a key concept for riparian and landscape, as a measure of natural integrity	> to restore connectivity between human behavior and the idea of natural hydrological process, around our homes, streets, parks. > aesthetics, long-term ecosystem health. immediate survival	> engineer, politician, people	> engineer: restore the levees that separate the river and the city > politician and people: return to a state of stable distinction between river and city	> construct memorials > teaches about the cultural and ecological dynamics
26	The Importance of River Restoration Projects in Urban Landscape	Güneroğlu, Nilgüna; Pulatkan, Müberrab	2022	river restoration are activities that are carried out with different objectives and methodologies in order to enhance the nature structure of rivers and riverbanks and return them to cities	> to increase natural biodiversity, clean the water, recreational facilities, bring cultural values to the forefront			

27	“It won't work here”: Lessons for just nature-based stream restoration in the context of urban informality	Diep, L., Parikh, P., Duarte, B.P.D.S., ... Dodman, D., Martins, J.R.S.	2022			> residents, community groups > municipality	> flood issues > stream pollutions > ecological health	> flood regulation, > having been informed or involved during the planning phase of both projects > poor community engagement despite the consultation organised by the municipality
28	Development and restoration of the urban rivers: Examples from old downtown Tokyo, Japan	Gotoh, H., Takezawa, M., Maeno, Y., ... Nishimura, Y., Ohta, M.	2009		> deforestation > flood damage	> local government > inhabitants		> Based on the historical evidence of flooding in the area > inform and educate inhabitants in high flood-risk areas of the dangers of flooding
29	Highlighting assumptions of community engagement in urban stream restoration	Cross, D.A., Chappell, J.C.	2022			> community members > Land managers > restoration manager	> hesitant to engage in discussions	> community has solutions to contribute to the technical aspects of the restoration effort > understanding of the community and its existing socioeconomic capacities before integrating community stakeholders > Invest resources in communication

30	Urban River restoration and planning in Latin America: A systematic review	R Mondragón-Monroy, J Honey-Rosés	2016		> general public calling > the recovery of the river’s space and sanitation	> general public >government > commerce	> commercial and fluvial transportation needs. > public space, ecological restoration or public participation > connection between the population and the river	> Involving students and universities in the early stages help generate new ideas and creative approaches
31	Integration or disintegration of the ecological and urban functions of the river in the city? A polish perspective	Kubiak-Wójcicka, K., Chodkowska-Miszczuk, J., Rogatka, K.	2017				> residents > tourists > investors	> should not be treated as a barrier in the settlement and socio-economic development of the city, but as an integral element of the urban space. > Ecological and urban functions

8.3. Interview protocol

Date :

Interviewee :

Occupation :

Location :

Introduction

Hello, I am Ting-Yu Kan, a master's student from Wageningen University & Research. I am currently doing my master thesis research about urban river restoration in Utrecht, Netherlands, and Taipei, Taiwan.

Firstly, thank you so much for accepting my interview invitation and making time for me, and thank you for taking the interview in English. I would like to ask you some questions about urban river restoration and this project. I have been reading a lot about this case and I am very curious to hear about your experiences and what you think about it. This will be very helpful to my research.

For the research purposes, are you fine with me recording this interview? I will transcribe it anonymously and delete the recording after the end of the thesis. The details and recordings of the interview will be used only for this research, without any external purposes.

Do you have any questions before we start?

(start recording)

General information

- Please tell me about yourself and your previous work experiences. Could you tell me about the project in your own words and your involvement in it?

Urban river restoration

- Could you describe how urban river restoration projects happen in your city (by your organisation)?
  1. Do you think it's done well? Or not? Why?
  2. What factors are involved in the planning and design of such projects?

    a. Who is involved and when?
    b. What were the opinions of those involved?
3. Did the project achieve its goals (what were they)? why?

- Is this project typical for water management of your city
  1. How does it affect future river management of your city?

Collaborative governance

- Could you tell me about your different experiences of working with different stakeholders (agencies, local communities or NGOs)?
  1. What kind of instruments do you possess?
     a. Do you experience barriers regarding instruments or institutions? Why?
  2. What was challenging? Would you do it again? Why
     a. What do you do to resolve conflicts (only ask if applicable)?
     b. Do you experience the current policies as being helpful? If so, why? If not, also why?

Closing

Thank you very much for your time, I have learned a lot.

Is there something that we have not discussed that you find that I should know about?

Is there anyone else you think I can contact for interviewing about this topic?

How did you find the interview? Is there something I can improve?

I will transcribe the data, and it will be anonymised. I can send you the transcript for approval. The transcript will be stored on the university server until the end of the thesis. The audio recording file will be deleted at the end of the thesis.

If you find it this topic interesting, I can invite you to my colloquium and share my thesis summary.

Thank you!