



Repairing urban water governance

How can southern cities advance towards water sensitivity?

The book showcases how reparative capacities for water sensitive governance are leveraged through informality in the Indian cities of Bhubaneswar and Bhopal

Neha Mungekar

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Capacities to enable reparation by leveraging informality  
to achieve water sensitive governance in India

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# **Repairing Urban Water Governance**

Capacities to enable reparation by leveraging informality to achieve water sensitive governance in India

# **Repareren van stedelijk waterbeheer**

Capaciteiten om reparatie mogelijk te maken door informaliteit te benutten voor water-sensitief bestuur in India

Thesis

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For Katharina, Derk, and Anelli —the empathetic  
supervisory committee who showed me how to live  
repair. This thesis is its written manifestation.

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## Abbreviations

ACT:	Arid Communities and Technologies
AR:	Action Research
AIILSG:	All India Institute of Local Self-Government
BHADA:	Bhuj Area Development Authority
BMC:	Bhopal Municipal Corporation
BNP:	Bhuj Municipal Council
CAA:	Constitutional Amendment Act
CAG:	Comptroller and Auditor General of India
CEPT:	Centre for Environmental Planning and Technology
CMA:	Catchment Management Agency
CSO:	Civil Society Organisation
DRIFT:	Dutch Research Institute for Transitions
DST:	Department of Science and Technology
DTCP:	Directorate of Town and Country Planning
EU:	European Union
GUIDE:	Gujarat Institute of Desert Ecology
GWP:	Global Water Partnership
GWSSB:	Gujarat Water Supply & Sewerage Board
HIC:	Homes in the City
ICWE:	International Conference on Water and the Environment
IDFC:	Infrastructure Development Finance Company
IITGn:	Indian Institute of Technology Gandhinagar
IUWM:	Integrated Urban Water Management
IWA:	International Water Association
IWRM:	Integrated water Resource Management
JSSS:	Jalsrot Sneh Samvardhan Samiti
KMVS:	Kutch Mahila Vikas Sanghathan
KPMG:	Klynveld Peat Marwick Goerdeler
LDA:	Lake Development Authority
MANIT:	Maulana Azad National Institute of Technology
MII:	Modern Infrastructure Ideal
MoWR:	Ministry of Water Resources
NGO:	Non-Governmental Organisation
NWO:	Dutch Research Council (Nederlandse Organisatie voor Wetenschappelijk Onderzoek)
NWP:	National Water Policy
OECD:	Organisation for Economic Co-operation and Development
PHED:	Public Health Engineering Department
POPs:	Persistent Organic Pollutants
RBO:	River Basin Organisation

SDG:	Sustainable Development Goal
SPV:	Special Purpose Vehicles
SUWM:	Sustainable Urban Water Management
TM:	Transition Management
ULB:	Urban Local Body
UN:	United Nations
UNCED:	UN Conference on Environment and Development
UWM:	Urban Water Management
W4C:	Water4Change
WHO:	World Health Organization
WSC:	Water Sensitive City
WSUD:	Water Sensitive Urban Design
WUA:	Water User Association
WWC:	Water Wise City

## Photo narratives

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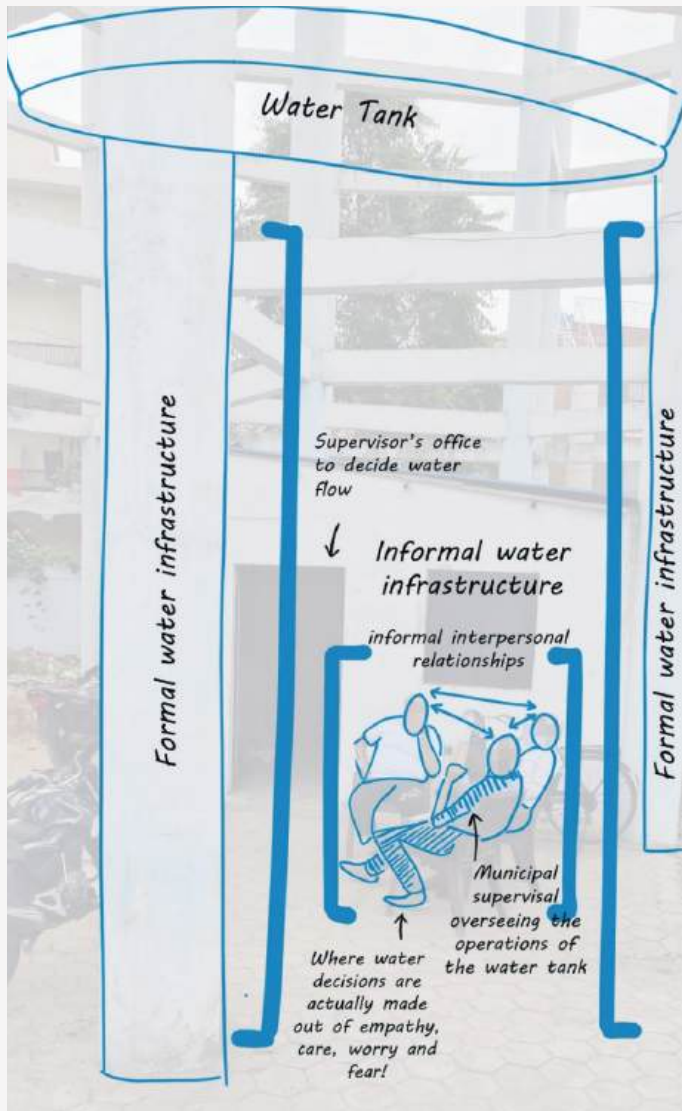
# 1

Informality as a lever  
for repairing water  
governance in Indian  
cities: The introduction



**Photo Narrative 1: The water ‘infrastructure’**

*I want to start the story of this thesis with a seemingly nonchalant photograph that, at first glance, portrays the solid and masculine legs of overhead water tanks and three men, one of whom is a water tank supervisor, having a relaxed discussion beneath the towering water storage apparatus. While it appears that the tanks operate autonomously through some grand technocratic mechanism and that the supervisor’s role is merely to keep a check on its nuts and bolts, the reality is far more intricate.*



*What is actually unfolding at this moment is the water tank supervisor and two residents strengthening their relationship. This familiarity is a two-way street, allowing the residents to benefit from their affinity with the supervisor during times of dire water scarcity. In turn, the supervisor gains a cushion of solidarity. When water distribution faces delays, the residents, understanding the supervisor's challenges, respond with more understanding and forgiveness. This thesis delves into the rituals and interactions beyond the formal rules and mandates that have the power to repair the system. It explores the complexities of informal water governance in India, advocating for a systemic approach to address these challenges.*

In this introductory chapter, I begin by outlining the persistent water challenges faced by Indian cities, alongside the various efforts aimed at addressing these issues. I then explore how the Water Sensitive City (WSC) approach—especially prominent in the Global North and henceforth referred to as ‘water sensitivity’—has been proposed as a holistic solution to water challenges. Achieving water sensitivity, however, necessitates a fundamental shift in governance approaches. Stemming from Northern debates, transformative urban governance is conceptualised as a normative approach to navigate radical change in cities towards sustainability.

I acknowledge the need to reshape existing urban governance structures in India. However, in contexts like India, where exploitative colonial systems persist and continue to perpetuate inequities, transformative governance that lacks alignment with post-colonial justice goals risks exacerbating harm. I therefore argue that a *reparative* approach—one more attuned to the post-colonial context—is better suited to addressing contemporary water challenges. Grounded in the principles of restorative justice, reparative governance seeks to facilitate genuine transformation by considering the historical and social intricacies that exacerbate governance challenges in post-colonial contexts such as India.

In this context, I examine whether informality— a key mode through which urban governance is exercised in India—can mobilise reparation. Informality, often exercised through hybrid formal-informal governance arrangements in deregulated settings, holds significant potential for reparation, which forms the core focus of my thesis.

The chapter concludes by underscoring the need to develop capacities for reparative governance to achieve water sensitivity in urban India, and how informality may support this.

### **1.1. The need to transform towards water sensitivity**

#### **1.1.1. Charting the Currents: Unpacking persistent urban water challenges**

Indian cities find themselves entangled in a web of daunting water-related challenges, including recurrent droughts, devastating floods, and widespread contamination, a scenario that paints a grim picture of the country’s urban water management struggles (OECD, 2012). The situation is further illuminated by alarming figures: 163 million individuals lack access to clean drinking water, and an additional 210 million are deprived of basic sanitation facilities (Briscoe & Malik, 2006). The situation is exacerbated by the intermittent nature of water supply, which often limits access to just a few hours a day, and by the contamination of nearly 70% of the country’s water sources (Murty & Kumar, 2011). Flooding, which affects approximately 7.5 million hectares of land annually, highlights the magnitude of India’s water-related challenges (IDFC, 2011). These conditions reveal the acute water challenges faced by residents in urban Indian, characterised by scarcity (too little), excess (too much), and pollution (too dirty).

Furthermore, it is crucial to examine these challenges through the lens of unequal access, benefits, and the distribution of risks, thus adding ‘too unequal’ to the list. This inequity was

formally acknowledged at the 2023 UN Water Conference, which called for a shift towards viewing water challenges through a justice-oriented framework, recognising the uneven distribution of water-related burdens across different segments of society.

In urban India, especially secondary<sup>1</sup> cities, significant water challenges arise due to rapid urbanisation and slower infrastructure growth (Biswas & Kris, 2013; Krishnamurthy et al., 2016). The unique position of secondary cities, coupled with limited resources and increased demand, makes them especially susceptible to water scarcity, pollution, and disasters like floods, highlighting the persistence of these challenges (Marais & Cloete, 2017; Pathirana et al., 2018).

These persistent challenges underscore the limitations of conventional, compartmentalised approaches to urban water management. To effectively tackle issues of scarcity, excess, pollution, and inequity, there is a need for a shift towards integrated, holistic frameworks that address the interconnected nature of these water crises.

In the following section, I will further explore how integrated water management approaches—and more specifically, water sensitivity—offer the potential to reshape urban water governance in India to address these persistent water challenges.

### **1.1.2. Promise of water sensitivity: Shifting urban water management approaches**

The socio-political complexities of water management in urban India have prompted a gradual shift towards Integrated Water Resources Management (IWRM). While India's policy documents have increasingly moved away from the Modern Infrastructure Ideal (MII) to endorse IWRM principles (Ministry of Water Resources, 2002, 2012), practices on the ground still largely reflect MII's influence. Today, cities across India continue to seek an effective approach to address their persistent water challenges

Globally, water management has undergone a progressive shift, beginning with the widespread recognition of MII by academia, international bodies, practitioners, and financial institutions (Bichai & Flamini, 2017). Emerging in the late 19th century, MII advocated for large-scale, centralised infrastructure systems optimised through technological advancements to drive economic growth and efficiency, with a strong emphasis on controlling natural processes for human benefit. This model dominated water service sectors, focusing on universal access to potable water through a single centralised system (Gnadt, 2017).

However, the inefficiencies of MII, including its sectoral focus, infrastructure-heavy approach, and lack of stakeholder participation (Bichai & Flamini, 2017; Kösters et al., 2020) prompted global organisations such as the Global Water Partnership (GWP, 2000), the United Nations at the 2002 World Summit on Sustainable Development (Johannesburg Summit, 2002), and the

---

1 The secondary cities are classified as per their function and relation to first-tier cities (provision of supportive services) than merely by population size (Roberts 2014).



European Union's Water Framework Directive (EU, 2000) to adopt IWRM. IWRM promotes a more holistic, decentralised, and integrated approach to water management, advocating for inclusive governance (Giordano & Shah, 2014). This approach gained traction with its inclusion in Agenda 21 at the 1992 UN Conference on Environment and Development (UNCED) and related discussions at the Dublin conference the same year (ICWE, 1992; UNCED, 1992). IWRM represents a suite of methods aimed at sustainable water management, including the development of comprehensive water policies, management at the river basin scale, defining water rights, implementing pricing mechanisms for water allocation, and fostering participatory governance (Giordano & Shah, 2014; Shah & Van Koppen, 2006).

As recognition of the complexity of urban water challenges grew, so did the thinking around water management and governance. Bichai & Flamini (2017) note a shift from IWRM to addressing the unreliability and safety concerns of urban water services, leading to the rise of Integrated Urban Water Management (IUWM) and Sustainable Urban Water Management (SUWM). Initially focused on engineering solutions, by the late 2000s, the scope had expanded to include urban planning and design through Water Sensitive Urban Design (WSUD), which aimed for a more holistic, cyclic approach to urban water management, including stormwater (Bichai & Flamini, 2017). WSC emerged from WSUD, incorporating principles of natural flow restoration and interdisciplinary collaboration, marking a significant shift by engaging fields like sociology and political science to enhance participatory water management (Wong & Brown, 2009). The approach of Waterwise City (WWC), introduced in 2016, further bridged the gap between the water sector and academia, addressing broader challenges (IWA, 2016). While these approaches originated in Global North<sup>2</sup> countries (Fletcher et al., 2015), they are now being explored in the Global South.

The evolution of urban water management approaches has transcended technical innovation to deeply engage with the institutional and socio-ecological dimensions of urban water systems. This progression has moved from fragmented water resource management (IWRM), unsustainable urban water services (IUWM/SUWM), and stormwater mismanagement (WSUD) to calls for inclusive, adaptable water management amidst prevailing uncertainties (WSC), culminating in efforts to bridge gaps between decision-makers, academia, and users (WWC) (Bichai & Flamini, 2017). Specifically, WSC advocates for integrated management across the water cycle, harmonising water supply, sanitation, and stormwater drainage into a holistic system to address emerging challenges (Fletcher et al., 2015; Mguni et al., 2022).

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2 In this thesis, 'Global North' and 'Global South' (also known as Northern and Southern countries) denote the relative socioeconomic progress of nations, not their physical placement on the globe. Countries classified under the Global North exhibit advanced socioeconomic development, including regions like Western Europe, the United States, Canada, Australia, and Japan. In contrast, the Global South encompasses nations with moderate to low socioeconomic advancement, covering vast areas of Latin America, Africa, the Middle East, and South-East Asia. It's important to note that the concept of the Global South is also aligned with what is often termed the 'majority world', highlighting the demographic significance of these regions in global context.

WSC also aligns with nature based solutions and the United Nations' Sustainable Development Goals (SDGs), promoting a resilient water future (Bichai & Flamini, 2017; Mguni et al., 2022; Zevenbergen et al., 2018). The water sensitivity goals intersect with critical areas such as food security, energy efficiency, and climate resilience (Barron et al., 2017), underpinning its influence on broader urban objectives, including prosperity, sustainability, resilience, and liveability (Brown et al., 2018; Wong & Brown, 2009).

At its heart, water sensitivity embodies a transformative view of water—as a fundamental element of life and a catalyst for positive change beyond its role as a mere utility. This approach integrates essential values like environmental stewardship, equitable access, ecological restoration, and sustainability, vital for addressing water security, flood management, and public health (Bichai & Flamini, 2017; Wong & Brown, 2009).

This thesis examines how Indian secondary cities can transition towards water sensitivity, a shift that will require substantial changes in urban governance. Scholars highlight that water sensitivity calls for different forms of governance that protect the intrinsic value of water in institutional frameworks, engage stakeholders and enable place-based water management (Mguni et al., 2022; Wong & Brown, 2009).

## **1.2. Challenges and barriers to transforming urban governance towards water sensitivity in India**

Peter Mollinga's provocative question, '*Why is the (India's) water sector a hard nut to crack?*' (Mollinga, 2008, p. 6), captures the deeply rooted challenges in reforming water governance. While there is a strong consensus on the critical role of water in sustaining livelihoods and promoting socio-economic prosperity, implementing meaningful reform remains elusive. As Mollinga suggests, this paradox is less about a lack of solutions and more about the unique defensiveness within India's governance system, where the water bureaucracy resists incorporating new social, economic, and environmental demands. This resistance is not merely procedural; it reflects an embedded socio-political context that prioritises control and continuity over adaptive reform. Inspired by this, I examine the specific challenges within India's urban water sector, where historical and social layers further complicate governance. Zwartveen et al. (2017) reinforce that water governance is not just about managing resources but also involves navigating the contested terrain of distribution, authority, and expertise among diverse actors. With this in mind, I explore the structural and institutional barriers in Indian cities that complicate the transition toward water-sensitive governance.

In the following section, I begin by explaining three characteristics of the Indian urban water governance (section 1.2.1). Then, I specifically explore the barriers within this governance context that hinder transformative change (section 1.2.2).

### **1.2.1. Water governance challenges in India**

During my research, I identified three prominent challenges in urban water governance in Indian cities: the power imbalance between states and cities, the gap between legal frameworks and their implementation, and the dominance of technocratic approaches in water management. I elaborate on these challenges below.

#### **A) *Powerless cities and a dominant state structure***

In India, cities lack the power to effectively govern water resources, as water governance remains primarily a state subject, granting substantial legislative and policy-making authority to state governments (Iyer, 1994; Narain, 2000). This structure positions state-led organisations, such as the irrigation department, at the top of decision-making hierarchies, resulting in a top-down governance model. Urban and local entities, despite their crucial operational roles, are often sidelined, navigating predetermined paths that reinforce a hierarchical and fragmented governance system—a legacy of colonial water management practices (Jacob, 2019; Kumar & Ballabh, 2000).

Although the 74th Constitutional Amendment Act (CAA) aimed to empower Urban Local Bodies (ULBs), the actual devolution of powers has been slow and largely symbolic. Without financial autonomy or sufficient human resources, local entities remain dependent on higher levels of government, undermining their ability to implement localised water governance (Bajpai & Kothari, 2020; Jacob, 2019; Narain, 2000; Water Aid, 2018). This scenario ignores the capacity of local governance structures, such as women's groups, neighbourhood organisations, and fishermen's groups, which historically played a significant role in water resource management. New governance approaches often marginalise or overlap these local institutions, reducing community control and engagement (Narain, 2000; Thatte, 2018). Additionally, weak local governance mechanisms hinder effective local data management, which is crucial for addressing contextual water management issues (Kumar & Ballabh, 2000). Gender norms further restrict meaningful participation, side-lining gender-specific concerns in water governance (Joshi, 2011; World Bank, 2017).

#### **B) *Challenges of formal governance***

Though designed with good intentions, the formal governance structures are often constrained by top-down, procedure-driven frameworks that fail to resonate with local contexts. Policies intended to bring about change frequently clash with local norms and realities, as Funder & Marani (2015) observe, resulting in implementation gaps and a lack of engagement from the very communities they aim to serve. Nikhil Anand (2017) further critiques this by highlighting the bureaucratic barriers that permeate Indian formal water governance, such as protracted administrative processes and inaccessible documentation, alienating the populations most needing effective water governance. These barriers foster distrust in formal institutions, undermining efforts to foster collaborative and inclusive approaches to reparative governance (Burt & Ray, 2014).

The limitation in implementing formal policies on the ground is also due to unclear reporting lines within water sector institutions, which weakens accountability (Thatte, 2018; Water Aid, 2018). This disconnect between formal regulations and practical implementation reveals a critical gap in effective water governance. The fragmented nature of regulatory tools and their piecemeal applications diminish their overall effectiveness (Kumar, 2018; Pandit & Biswas, 2019; Thatte, 2018). Moreover, the complacent language in policy documents, such as the National Water Policy (NWP) 2012's use of 'should be' rather than 'will be,' dilutes accountability and further widens the implementation gap (Pandit & Biswas, 2019).

### **C) *Over-reliance on technocratic solutions***

Despite the ratification of IWRM in India's National Water Policy, water governance continues to rely heavily on technocratic solutions, perpetuating the legacy of the MII (Mollinga, 2008). While these approaches may occasionally be supported by participatory methods, the dominant focus remains on engineering-centric solutions, which elevate the role of engineers above other actors in the decision-making process. This imbalance reflects how India frames and prioritises water challenges, often side-lining the involvement of local communities, social scientists, and other critical actors.

This technocratic bias reinforces top-down governance practices, continuing the legacy of colonial water management, where decisions about water resources were made without meaningful input from those most affected (D'Souza, 2002; Unnikrishnan et al., 2020). By favouring technical expertise and rigid frameworks, current water governance arrangements in India struggle to accommodate the complex, multi-dimensional nature of water issues. This approach limits the ability to adopt transdisciplinary, holistic, and inclusive methods that are essential for addressing persistent water challenges (Kumar, 2018; McKenzie & Ray, 2009; Pandit & Biswas, 2019; World Bank, 1999).

#### **1.2.2. Challenges in 'transforming' water governance**

A substantial body of academic research, including reports and policy documents, underscores the need for transformation in Indian urban water governance. A recurring theme within this literature is that transformative approaches, often promoted by global organisations from the Global North, fall short of addressing the complex and context-specific demands of Indian water management. This disconnect highlights an urgent need for more tailored and meaningful reforms (Mihir Shah Committee, 2016; Pandit & Biswas, 2019; Sankhe et al., 2010). These externally driven approaches frequently conflict with the specific governance challenges identified in the previous section. Although intended to promote integration and participatory practices, such models are often imposed with minimal adaptation to local needs and complexities. More often than not, they serve donor interests rather than genuinely addressing the specific demands of local water governance (Denby et al., 2016; Giordano & Shah, 2014; Mehta et al., 2016; Shah & van Koppen, 2016). Consequently, these approaches are often viewed as aspirational goals rather than practical tools for effecting meaningful improvements in water management and addressing critical governance challenges.

For instance, the National Water Policy's endorsement of IWRM was intended to promote a more unified approach to water governance by reimagining the roles of actors and institutions (Ministry of Water Resources, 2002, 2012). However, this aspiration for integration has largely yet to be fulfilled. Studies reveal that IWRM, despite its ratification in India's national water policy documents, has struggled to bring about the transformative changes in water governance it was designed to achieve (ref). Its implementation has been largely tokenistic, failing to reshape actor coalitions, foster participatory and collaborative cultures, or establish meaningful connections with other sectoral policies (Giordano & Shah, 2014; Pandit & Biswas, 2019; Shah & van Koppen, 2016). These shortcomings are rooted in the legacy of the MII, which continues to dominate water management practices.

Based on this research, I have identified four critical aspects that have hindered the effective application of IWRM in Southern contexts. These aspects, outlined below, offer specific areas for consideration in the ongoing research towards achieving water sensitivity:

### **A) *Challenges of accountability and transparency***

Establishing non-hierarchical governance structures, as promoted by IWRM, has often led to gaps in accountability and transparency, both of which are essential for building trust and confidence in water institutions (Frewer, 2003). Agrawal & Ribot (1999) highlight that decentralisation efforts frequently fail to empower local actors unless they are made downwardly accountable to their constituents. The creation of decentralised bodies, such as Catchment Management Agencies (CMAs) and Water User Associations (WUAs), often operating alongside existing government institutions, raises questions about who holds ultimate responsibility for water-related challenges (Denby et al., 2016). This parallel governance structure creates ambiguity and confusion regarding who is accountable for resolving issues, undermining trust in institutions and slowing the process of meaningful water governance reforms.

### **B) *Elusiveness of integration within stratified governance context***

The concept of integration, which is central to IWRM, often proves elusive when applied in the context of Indian cities. While the IWRM framework advocates for the holistic management of water resources, its practical implementation has introduced a new lexicon and mandates a radical shift in operational practices. However, this aspiration for integration frequently overlooks existing bureaucratic structures and fragmented governance frameworks, where different departments manage water, sanitation, and urban planning in isolation (Denby et al., 2016). In India, these silos are deeply entrenched, and the lack of coordination between municipal authorities, state governments, and other actors creates significant barriers to achieving true integration.

Moreover, as with the Smart Cities Mission, where the introduction of Special Purpose Vehicles (SPVs) to ease coordination has been criticised for adding layers of complexity to urban governance (Maurya & Biswas, 2019), IWRM's attempt to impose integrated approaches within a fragmented governance environment faces similar hurdles. Rapid urbanisation and local political

dynamics often exacerbate these challenges, leading to adverse outcomes in settings that lack a culture of collaboration (Mguni et al., 2015). While integration remains a key goal, it is crucial for these frameworks to align with the realities of local governance and foster contextually relevant strategies that enable true collaboration across sectors.

### **C) Dismissing local governance arrangements**

Urban Water Management (UWM) approaches often promote the creation of new governance bodies like WUAs and River Basin Organisations (RBOs). However, in post-colonial societies, there is a strong tradition of communities self-organising to address infrastructure and service gaps, following established social norms. It is imperative for these approaches to critically assess and recognise the scalability of such pragmatic, indigenous configurations rather than disqualifying them based on Northern benchmarks (Giordano & Shah, 2014; Mguni et al., 2015). The dominance of Northern approaches further risks centralising power with the state and influential actors, thereby replicating colonial exclusionary practices (Mehta et al., 2016).

### **D) Ignoring historical injustices**

A significant oversight of IWRM is its failure to address the deep-seated historical complexities and injustices that have shaped water governance in India. The colonial era left lasting legacies on the country's waterscapes, with the British prioritising large-scale irrigation systems and centralised control over water resources to serve colonial interests. This created a highly centralised, technocratic approach to water management, disregarding local knowledge systems and practices that had historically sustained India's diverse communities (D'Souza, 2006). In many cases, this has reinforced existing power dynamics, with marginalised communities continuing to be excluded from decision-making processes (Mehta et al., 2016). By failing to acknowledge and address these colonial scars, IWRM risks perpetuating the very disparities it seeks to resolve (Denby et al., 2016; Mehta et al., 2016).

These insights from the literature highlight the challenges that emerge when frameworks like IWRM are imposed without sufficient consideration of local contexts, historical legacies, and existing governance structures. The tokenistic application of IWRM and failure to adequately address accountability, transparency, and collaboration, has limited its effectiveness in Indian cities. Rather than forcing local realities into rigid, external models, there is a pressing need for a more grounded approach that respects and harnesses the transformative governance practices already present in these regions. Therefore, my study pivots towards exploring India's unique mode of transformation—*reparation*—which leverages informal governance structures and processes, henceforth referred to as *informality*. This inquiry aims to bridge the divide between imported approaches and the lived experiences of local communities, endeavouring to decipher a governance model that is truly inclusive and effective.

### **1.3. Reparation as mode for transformation towards water sensitivity**

The shift toward water sensitivity in India's resource-constrained and socio-politically complex context demands a transformative approach that goes beyond infrastructural overhauls. Reparation emerges as a critical mode of transformation—one that directly addresses entrenched inequities and power imbalances within the existing system. Without such an adaptation, there is a risk that introducing new value systems could inadvertently reinforce existing hierarchies and inequalities, exacerbating the very issues they seek to resolve (Giordano & Shah, 2014). Scholars have shown how reparative governance functions as a transformative approach across sectors, interrogating and decolonising conventional approaches to facilitate meaningful change (Broto et al., 2021; Cadieux et al., 2019; Perry, 2020; Wahby, 2021). This approach calls for a re-examination of institutional and epistemic boundaries, integrating diverse knowledge systems and centring the lived experiences of Global South communities (Escobar, 2015). Such a shift requires moving beyond Global North-centric narratives of urban transformation, which often rely on technocratic solutions, toward approaches that empower local communities, affirm their agency, and honour their unique relationships with water (Ghosh & Arora, 2021). My study examines reparation as an incremental, iterative, and contextually grounded approach, aiming to foster transformation in urban water governance.

In the following sections, I first describe reparation and explore how various scholarly perspectives understand repair, its intersections with restorative justice, and its roots in Indian transformative practices, drawing on Hindi lexicons (section 1.3.1). I then discuss the implications of reparation for water sensitivity and outline the characteristics of reparative governance (section 1.3.2).

#### **1.3.1. Towards understanding of repair**

*Reparation* focuses on repairing the historical and contemporary wounds within the social fabric to facilitate meaningful change (Broto et al., 2021; Cadieux et al., 2019; Perry, 2020; Wahby, 2021). This approach emerges as a crucial dimension of transformation in Global South contexts, particularly in the domains of climate finance, gender, and social innovation (Broto et al., 2021; Cadieux et al., 2019; Perry, 2020; Wahby, 2021). However, the literature presents two distinct interpretations of repair. The first, often viewed through a maintenance lens, focuses on restoring systems to their original state or capacity (Henke, 2017; Houston, 2017). This approach serves as a quick technical and infrastructural fix, addressing breakdowns or failures without altering the larger system and thereby preserving the status quo. The second interpretation frames repair as a transformative process. In this context, repair is not merely a technical intervention but a deeply political and social process that addresses the colonial extractive practices embedded within urban water systems. It seeks to foster long-term, intergenerational healing (Bhan, 2019; Broto et al., 2021; Cadieux et al., 2019; Durbach, 2016; Webber et al., 2022).

Empirical narratives often relegate repair to a reactionary or survivalist tactic, overshadowing its strategic potential for sustainable transformation (Anand, 2017; Ranganathan, 2014). However,

evidence also points to its capacity for fostering long-term reparation and addressing deep-seated injustices (Durbach, 2016; Wahby, 2021). Given its roots in unique socio-political, cultural, and historical landscapes, particularly in the Global South, repair manifests as an intuitive strategy for adaptation. This seemingly mundane view possesses the underlying power to engage with and navigate local socio-political norms resistant to change.

While reparation shares many key elements with a broader concept of transformation—such as fostering inclusive and flexible approaches, enhancing adaptive capacity, and building resilience to absorb shocks (Folke et al., 2005, 2010) - it goes further. While transformation often stresses multi-level governance and institutional reform (Chaffin et al., 2014, 2016), reparation requires a more nuanced approach that addresses past harms and works towards equitable outcomes, beyond mere structural shifts.

#### **A. *Intersecting with restorative Justice***

In the Global South, where historical wounds from colonial injustices and complex social stratifications (caste, class, religion, gender, age) persist, restorative justice becomes a key driver of transformation. This perspective acknowledges and confronts the long-standing inequities shaping our current realities. Restorative justice aims to address these injustices, deliver resolution, and facilitate healing (T. Forsyth & McDermott, 2022; Hill et al., 2019; McCauley & Heffron, 2018; Vasilescu, 2022). Scholars such as M. Forsyth et al. (2022) and McCauley & Heffron (2018) suggest that addressing these injustices is crucial for enabling collective healing. Pursuing transformation requires a keen awareness of historical inequities to avoid perpetuating or amplifying them. Moreover, as a post-colonial nation, India continues to exhibit internal colonialism through bureaucratic, caste, and class hierarchies and the persistence of colonial knowledge frameworks that marginalise indigenous practices (Dey, 2019; Sultana, 2023). It is, therefore, crucial to underpin transformation with restorative justice, demonstrating a conscious effort to confront colonial legacies and established hierarchies, while considering future long-term sustainability and resilience.

At the core of mobilising reparation is the examination of how principles of restorative justice have been, or are being, addressed. Environmental restorative justice extends beyond human stakeholders to include ecosystems and non-human entities (M. Forsyth et al., 2022). It involves mitigative and adaptive strategies to build stronger relationships, foster institutional trust, and enhance our capacity for engaging in difficult conversations (M. Forsyth et al., 2022; Vasilescu, 2022). Reparation entails addressing historical harms, restoring social equity, and healing relationships damaged by discriminatory policies, all in pursuit of inclusive and adaptive water-sensitive outcomes. Central to reparation is the collaborative development of measures that prevent or repair harm, with consent from all affected parties.

#### **B. *Mobilising reparation towards water sensitivity***

Reparation honours traditional practices while integrating new innovations, all within the context of local customs and histories. In the Indian context, scholars like Bhan (2019) highlight the



complexity and uncertainty of social landscapes, advocating for a flexible, iterative approach—what he describes as a ‘two steps forward, one step back’ process. This makes the pursuit of reparation evolutionary and deeply rooted in local realities. Complementing this, reparation also embraces nimble innovations, allowing for rapid learning and adjustments to social innovations, demonstrating sensitivity to both local and global dynamics (Broto et al., 2021; Ureta, 2014). This ensures that transformation remains adaptive, responsive, and aligned with the specific needs of diverse communities in India.

Reparation demonstrates how smaller acts of mending could enable a paradigm shift, rather than creating a theoretical construct of a paradigm shift and then forcibly implementing or adapting it on the ground. This dilemma resonates with Carstensen’s (2011) dichotomy of the ‘paradigm man’ versus the ‘bricoleur.’ Carstensen elucidates how bricoleurs, grounded in the pragmatism of existing ideas and resources, creatively repurpose, and reinterpret them to navigate and mend the gaps in governance, crafting iterative and incremental routes towards transformation. This bricolage becomes particularly salient in settings marked by fragmented governance, resource constraints, and entrenched social hierarchies.

The inherent uncertainties in water management require actors to embrace resilience, prioritising adaptation to disaster impacts over more predictable objectives like carbon emission reduction. This adaptability calls for frameworks flexible enough to manage the uncertainties inherent in this sector (Dewulf et al., 2020; Nastar et al., 2018). In this context, reparation emerges not merely as a practice but as an ideology—embracing the ebb and flow of progress and retreat amidst uncertainty. It embodies a philosophy of action that, while moving forward, occasionally pauses to regroup, reassess, and then advance with renewed vigour, thereby embodying a transformative trajectory that simultaneously fortifies resilience within these geographies (Bhan, 2019).

### **C. *Spectrum of repair guided by Hindi lexicons***

In exploring the concept of contextually grounding repair, I further delved into the Hindi language to understand the different typologies of repairs. Language offers a rich lexicon that captures the diverse dimensions of repair, blending epistemological diversity with practices deeply embedded in specific cultural contexts. In Hindi, repair is expressed through terms like *Marammat* (मरम्मत) for restoring to original, *Rafu karna* (रफू करना) for patching up (Bhan, 2022), *Dosh rahit* (दोष-रहित) for correcting flaws, and *Sudharna* (सुधारना) for improving or bettering. Each term signifies a slightly distinct approach to repair, ranging from restoration to its original state to co-creating a future that harmonises old and new elements.

These concepts highlight the varied temporalities and degrees of change inherent in repair, embedded within socio-ecological contexts and shaped by socio-material hybridity and agency. The diversity in repair practices emphasises that reparation is not merely about correction or overhaul; it represents a spectrum of nuances, guided by local constraints and opportunities. In this research, I advocate for a reparation approach that aligns with *Sudharna* or *Rafu karna*,

aiming for a water-sensitive future that addresses the legacy of old colonial extractive policies through an intergenerational lens.

### 1.3.2. Characteristics of reparative governance

In this section, I explore reparative governance through two key perspectives, grounded in the works of Gautam Bhan (2019) and Nikhil Anand (2017). These authors frame reparation not merely as a response to infrastructural challenges but as a holistic mode of transformative governance that acknowledges and addresses the socio-political dimensions of water systems in the Global South. Reparative governance involves actor groups, practices, and structures that centre on repurposing and revisiting dismissed functionalities, encouraging community-driven solutions, and fostering frugal social cultures within resource-constrained environments. Reparative governance also actively addresses technocratic hegemonies by including diverse voices and knowledge systems. This governance mode is characterised by iterative and adaptive processes, demonstrating flexibility, and is ultimately defined by acts of care and healing through inclusive decision-making.

#### A. Feasibility in reparative governance

Reparative governance, as a transformative approach, is rooted in feasibility, particularly relevant in resource-constrained settings like urban India's water governance. It focuses on what can realistically be achieved within existing structures, on practical methods to address the fragmentation of urban water governance, and on integrating these efforts into social and ecological contexts. This approach underscores that meaningful transformation in urban water governance must emerge from a deep understanding of local conditions rather than relying solely on infrastructure upgrades. Gautam Bhan (2019) illustrates the layered meaning of repair, differentiating it from building, constructing, or even upgrading:

*“Repair suggests a particular assemblage of practices. First, repair emphasises the need to restore immediate function over the need for substantive material improvement. Second, it is located in an immediate material lifeworld where what can be quickly accessed and easily used is more likely to be chosen as the ‘right’ material for the job. Third, it does not presuppose any actors. Everyone can, should, and generally does, repair in some form – there are no particular professionals whose ‘sector’, ‘domain’ or ‘practice’ is repair. Those practitioners with reputation or experience have knowledge that can be accessed – it is not seen as distant, formal, or external expertise. Fourth, repair can hence be seen as a mode of practice that draws upon forms of public and proximate knowledge. This does not mean that this knowledge is not complex, but that it is available in a variety of contexts and can be accessed from a variety of people. Put simply: One can quickly find out what needs to be done, and someone who knows how to do it. Fifth, repair suggests not just actions but a sensibility, one that sees materials in a constant cycle of use and reuse by the same actors and in the same setting over a long time period.”*

Bhan's concept of reparation underscores reparative governance as an accessible and practical form of transformation that optimises local materials, knowledge systems, and community capabilities. Governance here is understood as an adaptive, context-sensitive process that works within available resources to engage local stakeholders in the ongoing upkeep and improvement of water systems. By focusing on feasibility, reparative governance reveals characteristics that are responsive, frugal, local, and accessible, as elaborated below:

1. **Pragmatic reparation:** Reparative governance, as Bhan describes, prioritises the reparation of essential functions without exhaustive infrastructure overhauls, a crucial element in settings where resources are limited. This governance model embodies adaptability, focusing on real-world possibilities rather than idealised outcomes.
2. **Community-specific vocabulary and shared knowledge:** Rather than depending on specialised external expertise, reparative governance values local, publicly available knowledge and in their language. It empowers communities to participate directly in governance, transforming water governance into a collective responsibility accessible to all, rather than a domain for select professionals.
3. **Sustainable cycles of use and reuse:** Bhan's concept of repair incorporates a continuous cycle of reuse and resourcefulness, recognising materials as part of an enduring governance process. This model acknowledges that governance in resource-limited settings often demands iterative, sustainable practices that reflect the socio-economic realities of the Global South.

This focus on feasibility showcases reparative governance as an adaptive and grounded mode of governance transformation that operates through a deep understanding of local conditions rather than an over-reliance on new infrastructure.

#### **B. *Social-technological-ecological convergence in reparative governance***

Reparative governance is anchored in an understanding that water systems involve not only technical infrastructure but also social and ecological dimensions, aligning with the theoretical foundations of transformative governance as articulated by Chaffin et al. (2016), Folke et al. (2010) and Hölscher & Frantzeskaki (2020). The literature review uncovers an empirical narrative that centres on 'fixing,' 'mending,' and 'healing,' particularly in the Global South. Through an ethnographic lens, Nikhil Anand's *Hydraulic City* (2017) illustrates the complex nature of repair work, which involves much more than the technical task of patching up leaks:

*“Fixing leaks is hard, necessary, time-consuming work. With most of the city’s network underground, water leaking from a pipe presents both material and social challenges. Engineers use their management skills not so much as authoritarian rulers but as compromised experts, subjectified by the situations of the politics, labour, and materials of the city’s water infrastructure. To ensure that the system continues to function, they need to negotiate with not only the city’s pipes but also its water, residents, municipal employees, and range of social actors that are connected to the city’s pipes in a variety of ways. Thus, far from being a mechanical process, leakage repair makes visible the sociological and technical work that engineers are required to perform as they deploy their ingenuity and improvisational skill to manage the problem (Latour, 1996, p. 33)...*

*...This everyday work of fixing water connections drew my attention to the contingency, improvisation and social/material mediation Patankar and other engineers frequently employed to maintain the water network in working condition. To govern water pipes effectively required not only a (very contested) metis for repair and recovery (Latour 1996, Scott 1998) but also an understanding of how to handle the uncertainties and difficulties affiliated with the city’s water infrastructure. As Patankar and his and his workers struggled to locate the leak, they were required to deal with both restive political subjects and the challenges presented by the water network – the opacity of water and earth, as well as the pipe’s network’s corruptions, containments, and concealments.”*

Anand’s ethnographic work in *Hydraulic City* (2017) illustrates how reparation within water governance encompasses a complex interplay of social, technological, and ecological factors. In this example, reparative governance transcends physical repairs by integrating community relationships and socio-political dynamics, making governance itself a more inclusive and socially responsive system. Anand’s depiction highlights several key governance characteristics of mediation, healing, and iterative processes, especially in uncertain complex environments, as elaborated below:

1. **Social mediation of technical challenges:** In reparative governance, engineers and officials operate as mediators, engaging with both the material infrastructure and the social dynamics surrounding it. In Anand’s work, engineers are not merely technicians but facilitators of community relationships, working collaboratively within governance systems that involve both people and technology.

2. **Iterative Governance:** Reparative governance operates through iterative, real-time adaptations, recognising that governance must be flexible to manage the complexities and uncertainties of urban water systems. This mode of governance takes incremental, pragmatic steps that advance transformation in manageable increments, reflecting a governance system that is resilient and adaptable.
3. **Healing through inclusive governance:** Reparative governance goes beyond traditional governance structures by engaging those typically excluded from decision-making. This inclusion fosters cultures of healing and allyship, redefining governance as a means to restore not only infrastructure but also community trust, social cohesion, and equity.

In Anand's analysis, reparative governance in water systems is characterised by a flexible, adaptive, and inclusive governance process that transcends mere infrastructural repair. Engineers, like Patankar in *Hydraulic City*, take on roles as community mediators who balance the technical and social aspects of water governance, embodying a mode of governance that is integrated, sociological, and responsive to the lived realities of the communities it serves.

In considering governance arrangements that can facilitate repair, it is essential to recognise the role of informality in such contexts. In the following section, I explore how informality operates within these systems, offering innovative and context-sensitive pathways that foster reparative governance and help to mobilise repair towards water sensitivity.

#### **1.4. Can informality enable reparative governance towards water sensitivity in Indian cities?**

In exploring governance arrangements that can support reparative governance, I hypothesise that recognising the role of informality is crucial. I study informality as a flexible, hybrid practice that emerges within and alongside formal systems, where actors coproduce service arrangements to address gaps and navigate socio-political constraints. Rather than existing as a separate or residual sector, informality represents a dynamic continuum in which state and non-state actors engage with varying degrees of legitimacy, creating a meshwork of activities essential for inclusive urban service delivery (Ahlers et al., 2014; McFarlane, 2012; Roy, 2005; Schwartz et al., 2015; Wahby, 2021).

Building on this understanding, I first examine the utility of informality (section 1.4.1), particularly in the Global South, for addressing deficiencies within formal governance structures and the governance challenges noted in section 1.2.1. I then explore how informality can contribute to reparative governance, with a focus on its multifaceted characteristics that may be harnessed for the implementation of policies and programmes (section 1.4.2), while also acknowledging its limitations, further discussed in section (1.4.3). Although informality can facilitate reparative efforts, its fluid and ambiguous nature presents challenges in conceptualisation and operationalisation. To address this, I propose using the lens of governance capacity, which

facilitates a deeper examination of informality's role in advancing reparative governance (section 1.4.4).

#### **1.4.1. Role of informality in addressing limitations of formal governance**

Formal governance frameworks, particularly in Southern countries like India, often prove inadequate in mobilising reparation due to their rigid structures and overly technocratic orientations.

Scholars such as Zwarteveen (2017) and Hartley & Kuecker (2021) build on this critique by challenging the technocratic mindset that dominates formal water governance structures, particularly in India (Mollinga, 2008). By prioritising engineering and technical solutions, formal governance often reduces water management to a purely mechanical issue, overlooking the socio-political complexities that underlie water crises. This reductionist approach neglects the relational aspects of water governance, where questions of power, access, and justice are deeply embedded and thus prevents formal systems from effectively addressing the multifaceted challenges that reparation seeks to resolve.

Moreover, even when formal water governance frameworks advocate for transformative change, they often introduce new actors and institutions without sufficiently dismantling the existing power structures perpetuating exclusion. Giordano & Shah (2014) note that these changes frequently introduce new value systems that exacerbate, rather than alleviate, existing inequalities. The unintended consequences of such interventions reveal the limitations of formal governance in orchestrating meaningful transformation.

In contrast, reparative governance necessitates a more malleable and adaptable approach — one capable of navigating the intricacies of local contexts, histories, and community dynamics. Ananya Roy (2005) describes these intertwined issues as 'unplannable,' underscoring the inability of formal governance systems to anticipate or address persistent water-related challenges. Formal governance, with its procedural inflexibility, is ill-suited for reparation. Reparation requires governance that is not only responsive to immediate technical needs but also deeply attuned to the social and historical complexities of the context. Formal systems often lack this nuanced, adaptive capacity, rendering them inadequate for meaningfully mobilising reparation.

In this context, informal governance emerges not merely as an alternative but as a necessary complement to formal structures. The interplay between informality and formality in water management reveals a co-constitutive relationship essential for reparative governance. My research further explores whether and how informality can enable the kind of iterative, bottom-up processes that foster trust, inclusion, and, ultimately, reparation.

#### **1.4.2. Unpacking the role of informality for enabling reparation**

The study of informal governance has evolved beyond the simplistic binary of formal versus informal, where it was once confined to illegal spaces, labour, or organisational processes.

Scholars have reconceptualised informality as a distinct mode of governance, one that not only adapts but thrives in the face of the limitations of formal structures, particularly in complex socio-political contexts like urban water governance (Ahlers et al., 2014; Burt & Ray, 2014; Cawood et al., 2022; Kooy, 2014; Misra, 2014; Roy, 2005; Schwartz et al., 2015). Informality is no longer viewed merely as a set of practices filling gaps left by formal governance; rather, it is understood as an adaptive mode of governance that navigates the intricate socio-political landscapes of water management (Ahlers et al., 2014; Peloso & Morinville, 2014; Schwartz et al., 2015).

Within urban water governance, informality operates as a hybrid practice, blending the efforts of communities, private entities, and state actors within flexible governance models (Cawood et al., 2022; McFarlane, 2019; Misra, 2014; Wahby, 2021). These hybrid arrangements blur the rigid boundaries between formal and informal systems, allowing governance to adapt to socio-political and economic pressures. The literature extensively documents how informality, as an organising logic, facilitates the realisation and optimisation of service delivery (Ahlers et al., 2014; Roy, 2005; Schwartz et al., 2015). It enables flexibility and immediacy in policy implementation and addresses bureaucratic delays (Anand, 2011). Informality, in this sense, facilitates the governance of water by creating spaces where local actors can work together, navigating the constraints imposed by formal structures while addressing the lived realities of resource-constrained environments (Funder & Marani, 2015; Kooy, 2014; Wahby, 2021). This approach, represented by grassroots entrepreneurs, resembles the ‘tentacles’ of large-scale utilities, weaving through and exploiting the blurred boundaries of water governance and land politics (Ranganathan, 2014). This interplay allows actors to navigate regulatory gaps and build authority within complex, layered urban systems.

Roy’s (2005) framing of ‘calculated informality’ is particularly pertinent in this context. In contexts where formal governance frameworks are too rigid or disconnected from local needs, actors within these systems intentionally diverge from their prescribed roles. This strategic adaptation enables the co-production of governance solutions that better align with local contexts. Rather than being characterised by an absence of regulation, informality thrives in deregulated spaces. These spaces serve as ‘zones of exception’, where regulations are selectively enforced or suspended, allowing actors to recalibrate their roles and functions (Kooy, 2014; Ranganathan, 2014; Roy, 2009). These deregulated spaces facilitate the emergence of informal practices, as they provide the latitude for actors to innovate and adapt governance structures to suit local contingencies, thereby circumventing the inflexibilities of formal planning. By transcending rigid formal mandates, these actors create new, context-specific governance practices that are grounded in the everyday realities of water management (Burt & Ray, 2014).

The transformative potential of informality lies in its capacity to facilitate inclusive and adaptive governance arrangements. The blending of formal and informal practices—what Ahlers et al. (2014) describe as ‘co-production’—challenges the binary divide between legality and informality. This co-production not only allows marginalised communities to engage in governance processes

but also reconfigures power relations that traditionally exclude them. Informality, therefore, becomes a means of redistributing governance authority, enabling more context-sensitive approaches to water management that respond directly to the needs of those most affected by water scarcity and mismanagement.

Moreover, as discussed by Mayaux et al. (2022), by mobilising bricolage towards reparation, informality demonstrates its capacity to bring about deep societal change by creatively piecing together existing social norms, technologies, and institutional arrangements to address complex challenges. In urban water governance, bricolage is not simply a patchwork of solutions; it is an iterative, evolving process that redefines governance practices from the ground up. Informal actors, working within the constraints of their environments, weave together formal and informal elements to develop governance structures that are both resilient and adaptive to local conditions. It can potentially engage marginalised groups in governance processes by dismantling hierarchical structures and introducing flexible, context-sensitive approaches to water governance.

Additionally, the multi-scalar nature of informality underscores its relevance across different levels of governance (van Koppen & Schreiner, 2019; Ziervogel et al., 2019). Informality is not confined to localised practices; rather, it operates across multiple scales, from local to regional, and can influence broader governance frameworks. As informal practices gain traction and legitimacy, they have the potential to not just influence but reshape formal governance structures, creating new pathways for addressing systemic challenges in water management (van Koppen & Schreiner, 2019). This multi-scalar adaptability is essential in contexts where formal systems are too rigid to accommodate the complexities of local realities.

Finally, informality has significant implications for socio-ecological sustainability. Informal practices, deeply embedded in local knowledge and traditions, allow communities to develop governance models that are better suited to the socio-ecological realities of their environments (Kemerink-Seyoum et al., 2019; Yudiantmaja et al., 2020). This adaptability fosters sustainable approaches to water management that align with both the ecological and social needs of the community. Therefore, informality addresses immediate governance challenges and promotes long-term sustainability by integrating local values and practices into water management.

In summary, informality needs to be recognised as organising logic by which actors overcome the limitations of the rigid formal systems and as a potential opportunity to address the complexities of water-related challenges in Global South cities. By fostering adaptive, inclusive, and context-sensitive governance arrangements, informality enables the co-production of governance solutions grounded in local realities. The capacity of informality to reshape power relations, facilitate multi-scalar governance, and promote socio-ecological sustainability demonstrates its potential to serve as an enabling mechanism towards reparation.



### **1.4.3. Limitations of informality**

Despite these positive aspects, informality also brings inherent challenges such as limited accountability, the perpetuation of inequality, and rent-seeking behaviours (Funder & Marani, 2015; Ranganathan, 2014). These characteristics highlight the dual nature of informality, enabling service delivery and contributing to governance issues. This section shifts the focus towards understanding how informality is operationalised to effect reparative change while acknowledging its limitations. The limitations of informality in facilitating long-term reparative change include:

#### **A) *Reproduction of inequalities***

While informality can reconfigure power dynamics and foster inclusive governance, it can also reproduce or exacerbate existing inequalities. In such cases, local elites within the informal governance structure use these spaces to consolidate their control, prioritising their interests over those of the broader community. This selective engagement often leads to resources and decision-making remaining concentrated among those already privileged, entrenching social hierarchies and excluding marginalised communities (Ahlers et al., 2014; Funder & Marani, 2015; Ranganathan, 2014).

#### **B) *Limited environmental sustainability***

The reparative potential of informality is often constrained by its short-term, pragmatic focus. Informal practices may prioritise immediate, practical outcomes over long-term sustainability. This is particularly evident in cases where informal governance facilitates activities like resource extraction, which may deliver short-term socio-economic benefits but lead to environmental degradation in the long run (Kooy, 2014; Ranganathan, 2014).

#### **C) *Dependence on formal structures***

Despite its adaptability and flexibility, informality often depends on formal governance structures for legitimacy and sustainability. Without the backing of formal regulations and institutions, informal practices may struggle to scale up or achieve long-term change. The absence of formal support can limit the impact of informality, making it difficult to institutionalise successful informal practices and ensure their sustainability (Kösters et al., 2020).

#### **D) *Potential for co-option***

Informal governance processes can be co-opted by powerful actors, including state institutions or private interests, to advance their agendas. Such co-option risks diluting the transformative potential of informality, turning it into a mechanism that reinforces existing power dynamics and perpetuates the status quo rather than challenging or transforming governance systems (Ranganathan, 2014).

While informality has the potential to drive reparative governance—particularly by including marginalised groups and fostering innovative governance practices—it also presents inherent limitations. These challenges need to be carefully navigated to ensure that informality supports

long-lasting, equitable, and sustainable governance solutions rather than reinforcing existing issues. Furthermore, the study of informality highlights a significant gap in the conceptualisation and operationalisation of reparative efforts. This gap necessitates a lens that can aid in understanding the activities of urban governance actors as they work towards enabling reparative governance. To address this, the following section introduces the lens of ‘governance capacity,’ which focuses on the actions through which urban governance actors enact informality and establish the conditions necessary to advance reparative governance.

### **1.4.4. A governance capacity lens on informality’s contribution to reparative governance**

The fluid and plural nature of informality presents challenges in developing a structured framework to effectively capture its agency (Ahlers et al., 2014). Scholars have employed governance capacity as an emergent property of governance systems, in order to study how actors interact with, and thus change or reinforce the institutional contexts that shapes urban governance (Hölscher et al., 2019, 2023). Governance capacity thus allows me to focus on the activities by which urban governance actors enact informality and establish conditions that can enable reparative governance. Hölscher et al. (2019) define governance capacities as the collective abilities of actors to mobilise resources, innovate, and alter structural governance conditions, encompassing formal and informal institutions, social networks, financial resources, and knowledge. In urban water governance, these capacities reflect actors’ ability to mobilise resources, innovate within institutional frameworks, and adapt to emerging challenges.

By analysing governance through this capacity-focused perspective, I gain insight into the mechanisms that underpin informal practices, such as the ability to organise, innovate, and remain flexible. This capacity-based approach allows for an examination of how informal practices address the rigidities of formal structures while aligning with broader goals of social justice, equity, and environmental sustainability. Through their engagement in everyday governance practices, actors influence processes and outcomes that contribute to reparation by fostering collaboration and locally driven solutions in resource-constrained environments. This approach highlights how actors strategically navigate formal constraints to achieve reparative outcomes, reconfiguring urban water systems with conditions for collaborative, democratic, and locally-led solutions. By examining this perspective, I explore the micro-politics and everyday actions of actors, understanding how their plural social identities and relationships influence governance processes, either enabling or hindering reparation.

Moreover, the governance capacity lens facilitates the investigation of actors’ agency by uncovering both the conscious and subconscious motivations that drive their actions. Drawing on Latour’s (2007) theorisation of agency, I recognise that actions within these capacities are often non-linear, ranging from intentional to subconscious motivations. Understanding this complexity is essential in decolonising traditional governance approaches that impose rigid structures misaligned with local realities (Cleverly, 2002). This reinforces the importance of recognising varied worldviews within informality, as actors operate within hybrid governance models that blend formal and informal elements.

The governance capacity lens helps to unpack the potential and limitations of informality to move beyond merely filling gaps left by formal governance. It can reveal informality's role as a strategic mode of governance that reconfigures relationships between state and non-state actors, challenges rigid legal boundaries, and offers innovative solutions to water governance challenges. By focusing on governance capacities, I aim to explore how informality can be harnessed as catalysts for social justice and environmental sustainability. This approach provides a nuanced understanding of the formal-informal interplay and its potential to facilitate reparation and transformation within urban water governance.

Furthermore, acknowledging the socio-political power dynamics that shape urban governance, it is essential to consider the conditions under which informality is reparative. The governance capacity perspective allows investigation of these conditions, examining how actors leverage their capacities to disrupt entrenched power structures and foster inclusive, adaptive practices. When applied to water sensitivity, this perspective highlights how actors can introduce new practices that prioritise ecosystem services and community engagement, offering a pathway towards more resilient, sustainable urban water systems.

### **1.5. Research objective and the thesis**

#### **1.5.1. Research objectives**

To summarise, the central aim of this study is to explore whether and how informality can facilitate reparative governance to achieve water sensitivity in India's secondary cities. This aim is pursued against the backdrop of the critical urgency faced by these cities, which experience rapid urban growth yet contend with limited resources, as development efforts and resources are often directed towards primary cities. This disparity underscores the acute need for innovative governance solutions, highlighting the role of informality in addressing formal governance limitations. This study thus contributes to a nuanced understanding of how informality operates in these urban contexts, considering both the unique challenges and the opportunities for advancing water sensitivity goals.

This research addresses an important gap in both the conceptualisation and methodological examination of the nuanced role of informality in reparative urban water governance, particularly within the context of achieving water sensitivity. While informality is recognised as a pervasive element in urban governance, its potential to transform sustainable and resilient water management practices remains underexplored. First, it is essential to conceptualise the capacities required for reparative governance and understand how informality relates to these capacities.

Second, there is a lack of methodological approaches to examine, assess, and intentionally leverage informality to support reparative governance capacities. Methodological challenges include the transient nature of informal practices, difficulties in documenting sensitive or illicit activities, and the need for adaptive research methods. Furthermore, proactively mobilising

informality to foster transformative spaces and nurture governance capacities necessitates methods that are both flexible and sensitive.

By addressing these gaps, this research aims to illuminate both the potentials and pitfalls of informality and explore how it can be operationalised within urban governance capacities to enable reparative governance. The lens of governance capacities offers a heuristic for examining informality's role in reparative governance.

This research seeks to cultivate a comprehensive understanding of reparation. It leverages locally accessible knowledge and resources for change management, enhancing the feasibility and sustainability of interventions. Central to this endeavour are two supplementary objectives: firstly, devising a methodology to evaluate existing capacities for repair; and secondly, adapting transformative spaces to nurture governance capacities that enable repair.

To dissect this, the key objectives include:

- a) Crafting a conceptual framework to identify and operationalise capacities for reparative governance leveraged through informality;
- b) Conducting a comparative qualitative case study of informal water governance in two secondary cities—Bhuj and Bhopal—by employing ethnographic methods augmented by photographic techniques to illuminate capacities at work, and
- c) Designing and facilitating workshops in these cities aimed at nurturing reparative capacities.

In this study, I have deliberately avoided directly comparing or attempting to fit the governance capacities and transformative cultures of the Global North to India's distinct Southern context. Instead, I have engaged with Northern discourses to evaluate their feasibility and theorise how capacities might be operationalised through informality and mobilised for repair in India. This nuanced approach allows for a critical examination of capacities that enable reparation, enhancing our understanding of water-sensitive governance in the Indian context.

Through semi-structured interviews and ethnographic observations, this research documents the manifestation of informality. Identifying the underlying intent of these capacities, however, is challenging, often obscured by societal norms and unintentional actions (Latour, 2007). To address this, I have employed visual ethnography to reveal the normalised yet overlooked rationales behind these actions, enabling a comparative analysis across different cities.

Moreover, this research elucidates how the conceptualisation of informality and reparation aids in adapting transformative spaces, acting as procedural tools to facilitate reparation. The creation of these spaces offers a conducive environment where informality is not just acknowledged but celebrated, paving the way for a collective vision of what repair entails.

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### 1.5.2. Research Questions

Guided by the identified research gaps and the objectives of this thesis, my primary question is as follows:

***To what extent and in what ways can informality contribute to the development of governance capacities that can facilitate reparation to achieve water sensitivity in secondary Indian cities?***

#### Sub-Research Questions

1. How can capacities for reparative urban water governance, supported by informality, be conceptualised??
2. How are capacities for reparative urban water governance mobilised through informality in secondary Indian cities?
3. What methods facilitate the identification and nurturing of governance capacities to enable reparation?

### 1.5.3. Outline of the dissertation

The study is structured into five distinct sections: 1) Introductory Section, 2) Conceptual Section, 3) Analytical Section, 4) Action Research Section, and 5) Reflexive Section. This organisation allows for a detailed exploration of concepts, analysis, action research, and reflective insights, providing a coherent framework for understanding and addressing water governance issues.

#### Part 1: Introductory Section

**Chapter 1** explores the complexities of informality in India, advocating for a systemic approach to addressing these challenges. It introduces 'Repair' as an indigenous method for transformation. It presents the lens of 'governance capacity,' focusing on the actions through which urban governance actors enact informality to establish conditions necessary for advancing reparative governance.

**Chapter 2** presents a dual-focused research methodology, combining analytical and action research to examine 'reparation' and nurture capacities, leveraging informality toward water sensitivity.

**Chapter 3** introduces an innovative methodological approach by adopting visual ethnography to explore the informal practices that play a crucial role in water governance. This chapter navigates the ethical and methodological dilemmas inherent in this research by developing five photographic routines.

## **Part 2: Conceptual Section**

**Chapter 4** discusses the iterative development of a capacities framework for reparative urban water governance, refined through literature, fieldwork, and workshops. Field observations and workshop feedback were pivotal in evolving the framework to address the complexities and dynamics of reparative urban water governance better, emphasising flexibility and responsiveness. This chapter details the framework, highlighting the importance of emotional intelligence and collective vision in navigating the socio-political-ecological complexities in Indian secondary cities and addressing historical injustices through transformative governance.

## **Part 3: Analytical Section**

**Chapter 5** critically examines the role of governance capacities in enabling reparation, leveraged through informality, to achieve water sensitivity in the face of increasing challenges in the Global South, with a focus on Bhopal and Bhuj.

## **Part 4: Action Research Section**

**Chapter 6** introduces a novel approach to adapting transformative spaces through informality, challenging technocratic hegemony and nurturing capacities for water-sensitive governance in Indian cities.

**Intermezzo A** supports Chapter 6 by highlighting the outputs of the pathway-repairing workshop, emphasising the nurturing of reparative capacities to support these outcomes.

## **Part 5: Reflexive Section – Discussion and Conclusion**

**Chapter 7** revisits the conceptualisation of capacities for reparative urban water governance and discusses capacity gaps. It underscores the role of these capacities in facilitating reparation and contributing to water sensitivity, outlining the development of transformative spaces and their implications for sustainable urban water management. This chapter also suggests directions for further research and acknowledges the study's limitations.

### **1.5.4. How to engage with this thesis**

In this thesis, to enhance the textual analysis and vividly capture the essence of informality, I have employed photography as a crucial tool for expression and investigation. Through a selection of meticulously chosen images, layered with annotations to unravel the complexity of informality, this work embarks on a visual exploration into the depths of Bhopal and Bhuj. These images allow readers to visually navigate these cities, offering a direct glimpse into the lived realities of informality. Far from mere illustrations, these photographs are narratives in themselves, beckoning readers to connect with the material in a deeply intuitive and impactful manner.

Thus, the thesis aims to narrow the divide between theoretical academic discourse and the palpable intricacies of urban governance, enriching our understanding of the Bhopal and Bhuj case studies. It is my hope that this integration of imagery will open doors for readers

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from diverse backgrounds to join the conversation, encouraging a broader and more inclusive discussion about the role of informality in repairing urban water governance.

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## Chapter 1

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# 2

Methodology about  
performing the study

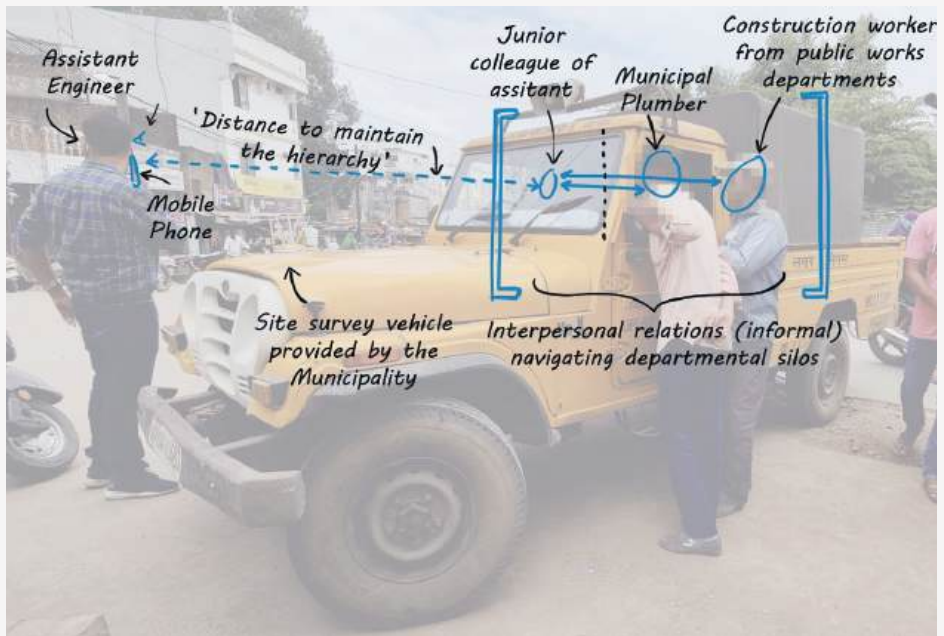




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**Photo Narrative 2: Mending silos through friendships**

*Although formal governance structures aim to streamline the organisation, they often create silos that impede cross-departmental coordination and complicate bureaucratic processes. Factors such as seniority, social norms, financial vulnerabilities, and rigid organisational hierarchies contribute to these silos, making the execution of bureaucratic functions particularly challenging. Despite various efforts to address these issues, they persist. However, during my observations, I saw how an assistant engineer leveraged the personal 'friendships' of his junior staff to navigate these obstacles.*



While accompanying a municipal engineer and his team on a leakage inspection visit with the state department, I noticed a stark contrast in the interactions between junior and senior staff. The juniors greeted each other warmly, while the seniors maintained a noticeable distance, reflecting the hierarchical divide between state and city departments. This formality often leads to rivalries, further delaying the process of securing permissions. When I asked how they manage to work around these delays, a junior staff member explained that tasks like 'file circulation' for permissions are typically assigned to junior staff, who then directly call their counterparts in the receiving department. Despite the clear hierarchical distance, the camaraderie among junior staff members helped bridge the gap and mitigate the delays caused by formalities. This ethnographic observation revealed the relational dynamics at play, demonstrating both the social distance created by formal structures and the informal networks that help mitigate it.

## 2.1. Introduction

In order to truly understand how a transformative approach can be decolonised—particularly through the lens of informality—it is essential to critically examine the methodological frameworks that underpin such studies. This chapter elaborates on the research methodology I have employed, which is grounded in decolonial theory and praxis. Rather than merely adapting existing methods, I have sought to develop an approach that actively interrogates colonial structures of knowledge production, offering a means to understand and reconfigure power dynamics in water governance.

As a decolonial scholar, I see science not as a neutral or universal pursuit but as one deeply embedded in historical, cultural, and political contexts. My methods, therefore, reflect this view, aiming to dismantle the hegemonic frameworks that often marginalise local knowledges and perspectives. Through this nuanced approach, I seek to uncover the layered interactions and power structures that sustain coloniality, while also foregrounding subaltern voices and knowledges that are crucial to a reparative understanding of water governance, comprehensively.

I begin by discussing the imperative of decolonising transformative studies and methodologies, arguing that this perspective enables a more profound understanding of how coloniality shapes water governance. This ontological shift offers insights into the exercising of reparative governance structures. In the subsequent section, I introduce the case studies and situate them within the context of the Water4Change (W4C) programme, providing a deeper understanding of the socio-political and cultural dynamics at play. In the following subchapter, I outline the specific methods employed to investigate and nurture capacities for plural, embedded forms of reparative water governance. Finally, I critically reflect on my own positionality throughout the research process, as decolonial methodologies necessitate self-awareness and reflexivity. I demonstrate how my positionality influenced the study, shaping both the inquiry and the interpretation of findings.

### 2.1.1. Need to decolonise transformative methodologies

Research, as Thambinathan & Kinsella (2021) argue, has long functioned as a mechanism of power, allowing those conducting it to control narratives while marginalising the voices of those being studied. This dynamic is rooted in colonial structures, which have led to exploitative practices that objectify indigenous communities (Sinclair, 2003). When I examined the literature on informality and transformation, I observed how this scholarship often reduces non-Western practices to deviations from the norm, rather than engaging with them as valid forms of knowledge. This reflects a broader problem: the dominance of Western governance frameworks, which are often treated as universal, leaving little room to question why informality is so prevalent in contexts like India.

This dominance of Western knowledge systems is a relic of colonialism and continues to shape transition research in the Global South. As Ghosh et al. (2021) highlight, many postcolonial

societies have adopted Western modernisation models, often at the expense of their own diverse epistemologies. This has led to social exclusion and ecological degradation, further entrenching the idea that Western science and governance models are superior. Thus, the need to decolonise research becomes critical - moving away from frameworks that suppress local worldviews and embracing the rich plurality of knowledge systems that exist in these regions. This insight ties into Escobar's (2015) critique of modern science, which privileges rational, materialist approaches while marginalising non-Western ontologies. Therefore, decolonising research methodologies is not simply an academic exercise but a necessary step toward shifting power away from hegemonic knowledge systems and towards more inclusive, plural ways of knowing.

In many cases, transitions in the Global South require rethinking the role of power and inequality, which are deeply embedded in both formal institutions and informal practices (Ghosh et al., 2021). The imposition of Western frameworks often conceals these dynamics, leading to incomplete or superficial understandings of what transformation truly requires. If left unchallenged, even transformative research risks reproducing these colonial dynamics. Scholars also argue that respecting Indigenous and non-Western perspectives involves fully integrating these worldviews into research rather than adding them as afterthoughts or exotic deviations from the norm (D'Souza, 2002, 2006). In sum, decolonial research approach support fostering more ethical, reflexive, and context-sensitive research practices that recognise the complexities of local knowledge and power dynamics in transformative studies.

## 2.2. Research paradigm

### 2.2.1. Looking at science around water governance through a decolonial lens

In my doctoral research, I have adopted a decolonial perspective that is essential for understanding water governance transformation. This approach has guided me to respect cultural contexts more deeply and avoiding the risk of perpetuating systemic inequities that Western scientific hegemonies have often imposed. I have learned that, as a researcher, it is crucial to step away from any tendency to claim a morally superior position and instead engage with local knowledge and practices on their terms, acknowledging my biases along the way.

For instance, Gandy (2006) discusses how colonial sanitation projects in urban spaces created harsh physical conditions that disrupted previously communal ways of life, pushing societies towards individualistic behaviours. These interventions were introduced as 'solutions,' assuming that the living conditions of underprivileged communities were inherently unsanitary, with Western infrastructure positioned as the necessary remedy. This perspective underscores how colonial approaches have traditionally separated the 'social' from the 'ecological,' treating them as distinct, interacting entities (Mesle, 2008; West et al., 2020). In contrast, I have been working to understand how a decolonial lens asks us to consider a more relational way of thinking—emphasising ongoing processes and connections between humans and the environment (Ghosh et al., 2021).

I have applied this relational approach in my own transformative research, where I now see humans and nature as interconnected, hybrid systems (Liu et al., 2007). For example, British colonial water management in India treated water as a resource to be controlled, often disregarding its spiritual and communal significance (D'Souza, 2002, 2006). This technocratic view remains in India's policies, framed as 'internationally compliant' programs. However, I have realised that this perspective does not align with the worldviews of many communities where water is seen as a sacred and integrated part of daily life as seen in photo narratives 3 and 4. Instead of idealising these traditional views, I have been tried to recognise how they offer important insights into the dynamic relationships between people and the environment, guiding us toward more sustainable transformations (Clark & Dickson, 2003).

Through this reflection, I have asked myself whose standards and values are being prioritised in water governance, and I have learned to question the assumptions behind dominant narratives. This process has helped me better understand how Indians perceive and govern water. I have been cautious about exploitative research practices (Sinclair, 2003), working to rethink what transformation truly means in this context. By bringing a decolonial lens into my work, I have tried to integrate both my lived experiences and those of others, creating space for a more critical examination of the values underpinning transformative processes.

In sum, I have explored how a decolonial perspective encourages me to view human-nature relationships as dynamic, holistic connections where we are all intertwined. This approach has also prompted me to be self-reflective, continuously questioning my evolving positionality throughout the research process as advocated by decolonial scholars Datta (2018) and Thambinathan & Kinsella (2021). Rather than seeking certainty, embracing ambiguity is a vital part of this journey, allowing me to navigate the complex social and political landscape of water governance with care. In Chapter 3, I delve into the performative role I have taken on as a researcher, using visual ethnography to decode the subconscious motivations and practices around water governance. I have often adjusted my framework as I learned more, trying to align it better with the informal, collaborative logic of India. Further, this positionality encourages me to be cognisant of the potential ripples created by my work and to humbly engage with the unknown complexities of ever-evolving natural arrangements rather than aggressively attempting to unravel every mystery, as suggested by Gillard et al. (2016) and Horlings et al. (2020). This learning guided me in designing and facilitating transformative spaces, as elaborated in Chapter 6, where I strive to develop a 'safe-enough' space where actors can speak about governance challenges openly without feeling threatened or needing to protect their image.

This process has informed my understanding of transformation, which I now conceptualise as perceive it as repair. I study it as an incremental, nonlinear progress stated through a two-step forward, one-step back approach described by Bhan (2019). This helps me recognise that improvisation and nuanced tinkering can constitute innovation without necessitating radical novelty. Additionally, I understand collective efforts as a delicate balance, where individuals maintain one foot in their established roles while cautiously venturing into new collaborative

spaces, attuned to the inherent risks and vulnerabilities. This viewpoint enables me to discern the pluralities and precariousness associated with these evolving roles.

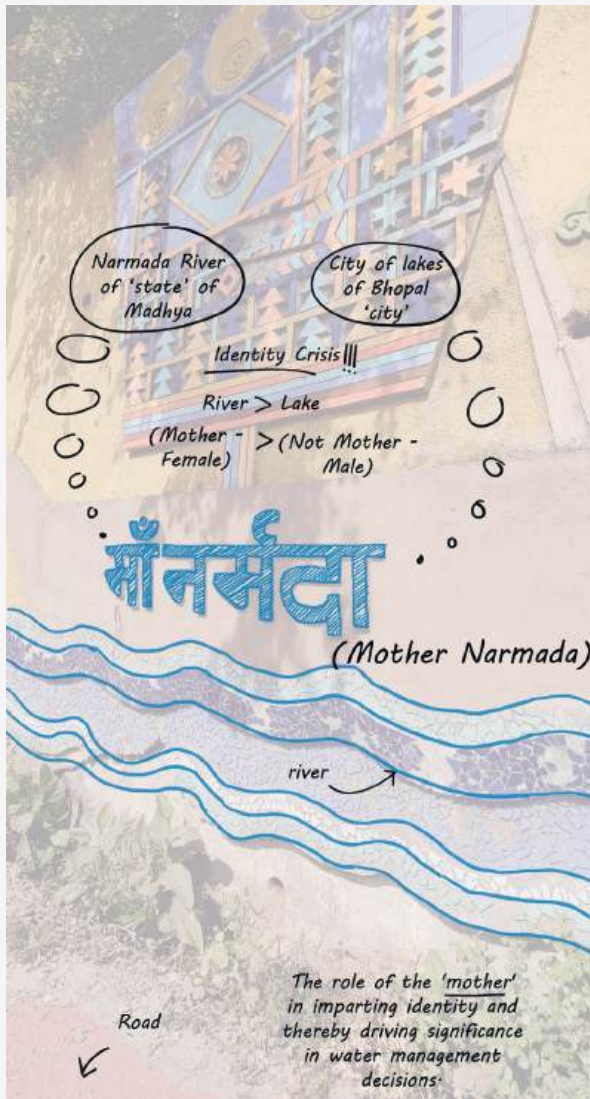
This viewpoint informs my strategy for interacting with diverse knowledge systems in the subsequent section.



**Photo Narrative 3: 'Mother': River Narmada**

*In Bhopal, I encountered a mural that celebrates 'Mother (River) Narmada,' paradoxically positioned to face Upper Lake. This mural deeply resonated with the sentiments expressed by residents during my interviews. Although Bhopal prides itself on its identity as the 'City of Lakes,' those residents who receive water from the Narmada River perceive themselves as incredibly privileged. The attribution of 'Mother' and the reverence for the Narmada, one of the country's most significant rivers, underscores its importance over the city's lakes.*

*The reverence for rivers like the Narmada is deeply rooted in Hindu mythology, where rivers are often personified as nurturing, life-giving maternal figures. This association, drawn from sacred texts such as the Skanda Purana, positions rivers as vital, flowing entities, symbolising fertility and spiritual cleansing*



*In contrast, lakes, which are more static, do not hold the same spiritual and cultural significance and are often symbolised as masculine. As a result, the cultural veneration of the Narmada transcends into water management decisions, revealing a preference for augmenting the city's connection to the maternal Narmada over the restoration and self-sufficiency of its masculine lakes. This dynamic illustrates the intricate interplay between cultural reverence and practical governance, where the symbolic maternal identity of the Narmada shapes both public sentiment and policy priorities, often at the expense of local water bodies.*

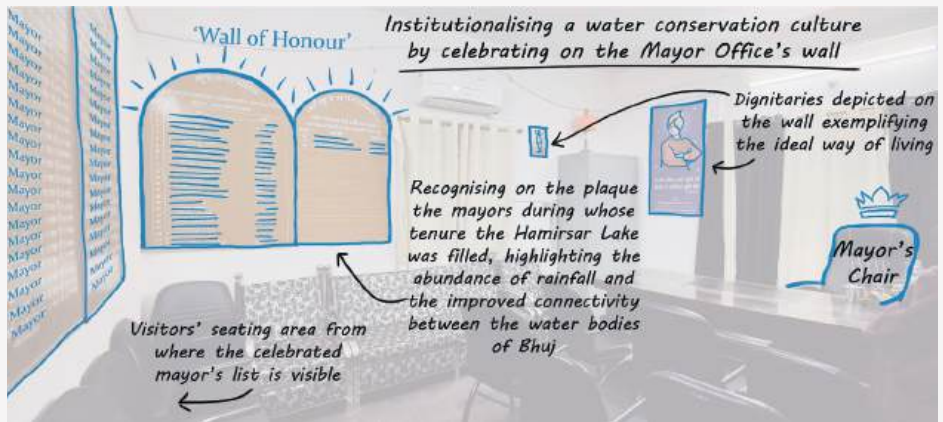




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**Photo Narrative 4: Celebrating the filling of the lake**

*Bhuj, an arid city that experiences scanty rainfall, holds a unique celebration on the day its main lake, Hamirsar, is filled. The citizens gather around the lake's periphery to witness this significant event. It is considered such an honour that the day is declared a public holiday. The name of the mayor during whose tenure the lake is filled is inscribed on the walls of the municipal office. This 'wall of honour' proudly displays the names of mayors and other dignitaries who have overseen this momentous occasion.*



*These rituals transcend the utilitarian view of the lake and rainfall as mere resources. Rather than being solely valued for its practical benefits, water in Bhuj holds a deep spiritual and symbolic significance. The filling of Hamirsar Lake is seen as a sacred event that represents the community's collective prosperity and well-being. In many Indian traditions, water bodies are revered as sources of life and spiritual nourishment, often personified and celebrated in ways that emphasise their connection to the divine. The act of a lake filling is not just about resource replenishment; it is a symbol of abundance, balance, and the community's alignment with nature's rhythms.*

*This spiritual connection to water reflects a belief in the sacredness of natural elements, where the environment is intertwined with cultural identity and spiritual practice. The event is more than a celebration of rainfall—it is a celebration of the community's harmony with the environment, reflecting a holistic understanding of life where water is revered for its utility and role in maintaining the cosmic and societal balance. As in many cultures where water is viewed as divine, these practices in Bhuj elevate the lake beyond its material function, embodying a spiritual reverence that shapes how urban water governance is perceived and enacted.*

### **2.2.2. Exploring knowledge systems through a decolonial lens**

In my research on reparative water governance, I engage with knowledge production through a decolonial perspective, which prompts me to re-examine whose voices are heard and whose experiences are marginalised. Working within this perspective, I seek to uncover the multiple, often overlooked, layers of knowledge that inform urban water governance in Indian cities. As Smith (2021) suggests, researchers seeking to challenge entrenched power structures must not only accurately document the relevant facts, but also effectively communicate their findings in a respectful and compelling manner. This resonates deeply with my research, as the aim is to document water governance practices and engage with the lived experiences and cultural contexts that shape them. In this instance, the researcher adopts a performative role, striving for emancipatory outcomes rather than merely observing phenomena from a distance (Barreiros & Moreira, 2019; Samuel & Ortiz, 2021).

Drawing on the insights of Ghosh et al. (2021), I adopt participatory approaches that acknowledge the complexities inherent in water governance. This perspective encourages me to move beyond rigid, top-down methodologies and embrace the nuanced, context-specific performative approaches that support providing space to dismissed knowledge frames. Rather than treating communities as passive research subjects, the decolonial approach encourages me to engage them as active partners in the co-production of knowledge, prioritising values such as justice, human rights, and equality (Smith, 2021).

In the context of water governance, knowledge cannot be understood in isolation from the social and ecological dynamics that shape it. I am particularly attentive to how socio-ecological linkages are reflected in local water practices. I focus to uncover the social constructs, personal narratives, and contextual factors that colour urban water governance in both cities. This perspective reveals the multiplicity of perspectives and understanding of shared meanings, values, and vested interests of actors inherent in these practices. By interrogating rational choice assumptions, the lens helps to see behavioural complexities and boundary fuzziness resulting from social identities, power relationships, and broader political and geographical factors (Samuel & Ortiz, 2021; Smith, 2021).

My approach to understanding these dynamics is also shaped by a critical evaluation of power relations. Decolonial frameworks urge us to challenge the dominant narratives that portray water governance as a neutral, technical domain. Instead, I explore how knowledge systems reflect and reproduce historical power structures, particularly those rooted in colonialism. Specific forms of knowledge—often legitimised by Western scientific paradigms—are privileged over local, experiential, and indigenous ways of knowing (Thambinathan & Kinsella, 2021). This critical stance allows me to question the assumptions underpinning dominant governance models and highlight alternative forms of knowledge more aligned with the lived realities of those most affected by water scarcity and mismanagement.

I also investigate how hegemonic knowledge is reproduced in examining these power structures and knowledge systems. My methods are attuned to materiality, recognising various forms of coloniality and resistance mechanisms relevant to this study (Kaika, 2004a; Tinsley, 2021). This approach allows me to understand the structure and subjectivity of human experiences, addressing the effects of power and the relationship between knowledge systems and the material world. By exploring how subconscious traits, past experiences, and vulnerabilities influence decision-making, I can better understand the nuances of urban water governance in Southern contexts.

Reflexivity plays a crucial role in my research process. I constantly question my positionality and how my background, assumptions, and methodological choices influence the research (Datta, 2018; Thambinathan & Kinsella, 2021). This reflexive approach ensures that I remain mindful of the power dynamics at play, not just in water governance but in the research process itself. It prompts me to stay open to the insights and critiques of those with whom I collaborate, recognising that knowledge production is a shared and iterative process.

Practically, this approach has led me to employ a range of qualitative methods, including visual ethnography, which will be further detailed later. These methods allow for a layered understanding of water governance and its relationship with local knowledge systems, capturing informal and often invisible practices at the community level. Ghosh et al. (2021) encourage a focus on everyday struggles and local dynamics, which can reveal the symbolic and cultural meanings associated with water that are typically absent from formal governance discourses. By integrating these perspectives, I aim to offer a more comprehensive understanding of water governance that elevates voices and practices often marginalised in mainstream policy discussions.

By participating in knowledge creation, rather than remaining a distant observer, I am better equipped to differentiate between reality and representation. This capability is crucial for understanding the lived experiences of subaltern groups, where crises form an integral part of their everyday lives. This perspective is evident in its refusal to trivialise or universalise crises solely through the lens of scientific objectivity. For example, the physical impact is indiscriminate when floods occur, but the lived experience varies widely. Some farmers may welcome floodwaters for their fertility, while others face devastating losses. Decolonial methods allow us to acknowledge these varied experiences and the complex interplay of factors such as socio-economic status, historical marginalisation, and access to resources that shape how individuals and communities cope with such crises. This perspective resists the reduction of these experiences to mere anomalies, seeking instead to expose the underlying structures and discourses that shape them. It reveals not only binary forms of oppression and resistance but also the varied expressions of power and their meanings (Boehmer, 1995).

This approach is particularly relevant for understanding what ‘repair’ looks like in this context, offering a nuanced view of vulnerability and resilience. It helps to assess the multiple interpretations of repair, which may differ significantly from the more rigid frameworks.

## **2.3. The case studies: Bhuj and Bhopal**

In this section, I introduce the case studies—Bhuj and Bhopal—and situate them within the context of the Water4Change (W4C) research programme, offering a deeper understanding of the socio-political and cultural dynamics at play.

### **2.3.1. About W4C**

Before delving into the two cities, it is essential to introduce the W4C programme, which provided the funding for this PhD research. The W4C programme is a collaborative research initiative launched by the Government of India and co-funded by India’s Department of Science and Technology (DST) and the Dutch Research Council (NWO) from Nov 2019 to March 2025. This programme addresses the intricate challenges urban water systems pose in rapidly expanding secondary cities in India. Specifically, W4C aims to develop an integrative water-sensitive design framework and toolbox through collaborative efforts with Bhopal, Bhuj, and Kozhikode stakeholders. While the W4C programme partnered with three cities—Bhopal, Bhuj, and Kozhikode—I chose Bhuj and Bhopal for detailed examination. The decision to concentrate on these two cities, rather than including all three, was based on practical considerations. Conducting an in-depth ethnographic study within the six-month research period was more feasible with two case studies. Additionally, language played a critical role in this selection. The primary spoken language in Kozhikode is Malayalam, which I do not speak, whereas in Bhopal and Bhuj, Hindi and Gujarati are the predominant languages, both of which I am proficient in. This linguistic familiarity enabled me to conduct ethnographic research without reliance on a translator, thereby ensuring a deeper engagement with the local context and preserving the nuances of communication.

Though Bhuj and Bhopal are secondary cities, they present distinct physiographical features and face differing water-related challenges. Bhuj contends with issues like water scarcity and salinity ingress, while Bhopal faces water contamination despite a perceived sufficiency of supply. These distinct challenges create varying degrees of urgency and lead to different operational approaches in addressing them. Despite these differences, the governance limitations and challenges present in both cities provide a common ground for comparison. The contrasting issues and the role of capacities, supported by informality, offer valuable insights for developing a comparative methodology. The strategic selection of Bhopal and Bhuj as case studies allows for a deeper exploration of how informality can repair water governance challenges in India’s secondary cities, and to what extent. Their unique positions within the urban landscape make them especially relevant for this research.

### 2.3.2. About Bhuj and Bhopal

Bhopal and Bhuj are categorised as secondary cities, a concept initially defined by UN-Habitat based on population size (UN-Habitat, 1996). In South Asia, the definition has evolved to emphasise socio-economic impacts and relational significance (Kalwar et al., 2020; Marais & Cloete, 2017). Secondary cities are crucial in reducing urban pressure on primary cities, lessening regional disparities, and stimulating rural economies (Cities Alliance, 2019; Rondinelli, 1983). Their strategic locations and proximity to regional markets enable them to facilitate the flow of goods, services, and resources, fostering deconcentration and improved living standards (Biswas & Kris, 2013; Kalwar et al., 2019). While this has resulted in rapid expansion of populations, it has outpaced infrastructure growth, exacerbating water management challenges. These cities face severe risks of water resource depletion, contamination, and susceptibility to natural disasters like floods.



*Figure 1: Location of Bhuj and Bhopal cities in India. Map Courtesy: www.alamy.com*

In India, secondary cities like Bhopal and Bhuj are important regional players but need help in infrastructure development and water management (Biswas & Kris, 2013). Challenges in these areas are exacerbated by a governance model that often incapacitates local governments, effectively hindering their ability to address such issues (Jacob, 2019). Although the 74th CAA aimed to empower cities with more autonomy and institutional support, its implementation has been inadequate. The envisaged powers and institutions remain underdeveloped, limiting their impact on urban management (Jha & Vaidya, 2011). Ward Committees, intended to enhance citizen engagement and decentralise governance, have primarily become symbolic, offering little beyond advisory opinions and needing more financial autonomy (Bajpai & Kothari, 2020; Jha & Vaidya, 2011). This systemic issue complicates the management and governance of resources, particularly water.

Moving to their specific characteristics, Bhopal, the capital of Madhya Pradesh and a significantly larger city than Bhuj, is home to over 2.4 million people and boasts 18 significant water reservoirs. The Upper Lake provides about 25% of the city's water supply, but rapid urban expansion has led to water scarcity.

Bhopal, the capital of Madhya Pradesh, is a significantly larger city than Bhuj, home to over 2.4 million people (CAG India, 2021; DTCP Madhya Pradesh, 2020). The city boasts 18 major water reservoirs, with the Upper Lake providing approximately 25% of its water supply (Burvey et al., 2017). However, rapid urban expansion has led to water scarcity, prompting authorities to source water from distant locations (Everard et al., 2020). Despite these efforts, Bhopal continues to face challenges related to flooding risks and severe water quality issues. Bhopal struggles with water quality issues, including turbidity, faecal coliform, and flooding risks (CAG India, 2021; Kamat, 2019; Pani et al., 2014). Additionally, the Union Carbide pesticide plant leak has contaminated the water supply with hazardous chemicals, exceeding WHO guidelines (Häberli & Toogood, 2009; Johnson et al., 2009; Wadwekar & Pandey, 2021). Notably, the perception of water sufficiency persists in Bhopal, reflecting a lack of academic attention and public awareness, ultimately impacting the city's water policy and governance (Everard et al., 2020).

In contrast, Bhuj, a semi-arid secondary city near India's border, has experienced rapid population growth, nearly doubling to 188,236 by 2011, straining existing infrastructure (van der Meulen et al., 2023). Traditionally, Bhuj managed its water needs through local practices suited to its unique hydrogeology. However, population growth necessitated the expansion of piped networks connected to the Narmada Canal, leading to over-extraction and aquifer salinity ingress (Sheth & Iyer, 2021; van der Meulen et al., 2023). Despite facing frequent natural disasters and limited national support, Bhuj's residents have demonstrated resilience by independently organising resources, including efforts to revive aquifers (Sheth & Iyer, 2021). However, government approaches focusing on increasing external water supplies underscore governance complexities.

In Bhuj, the *Bhuj Nagar Palika* (Municipal Council) oversees water supply operations but lacks autonomy, adhering to directives from the state capital, Gandhinagar, perpetuating a centralised governance model (Bajpai & Kothari, 2020). Similarly, in Bhopal, the transition of water supply management to the Bhopal Nagar Nigam (Municipal Corporation) is complicated by influence from the state's Public Health Engineering Department (PHED), highlighting centralisation issues (CAG India, 2021).

Amid escalating water challenges and rigid top-down governance structures, hybrid informal water governance arrangements have emerged, providing innovative solutions. In Bhuj, Civil Society Organisations (CSOs) like Homes in the City (HIC) collaborate with municipal authorities on water management initiatives (Bajpai & Kothari, 2020). Although informal, citizen-led efforts in rainwater harvesting, groundwater recharge, and lake rejuvenation receive tacit municipal support. In Bhopal, CSOs improve water access and address water contamination issues, albeit with limited recognition from municipal authorities. The efforts of CSOs in Bhuj are often

thwarted by state directives and partisan agendas, undermining community-led governance (Bajpai & Kothari, 2020).

Despite efforts to empower municipalities through decentralisation, the intended governance model often falls short in practice. Ward Committees, established to enhance citizen engagement, have yet to achieve significant results, underscoring the need for greater financial autonomy and institutional support for effective governance (Bajpai & Kothari, 2020). I, therefore, look into how informality supports formal governance arrangements, making Bhuj and Bhopal compelling case studies for exploring the dynamics of informality within the governance framework of secondary cities.

### ***Why compare case studies?***

Comparative case study research offers a nuanced approach to understanding how informality operates within specific contexts. In my research, the extended case-study method does not seek to generalise but to reveal distinct vantage points, showing how informality is practiced similarly or differently across cases. By comparing Bhopal and Bhuj, I engage with a bounded context where informal governance processes and structures become the primary units of analysis. These cases served not merely as examples but as instrumental tools that validate and refine the conceptual framework, helping to sharpen the theoretical lenses.

Conducting fieldwork across two geographically distinct sites—Bhopal and Bhuj—not only provided contrasting knowledge points but also facilitated a critical reframing of each case in light of the other (Marcus & Fischer, 2014). What may have appeared subtle or mundane in one context became a crucial theme when viewed through the lens of the other, revealing the underlying politics of everyday life (Pierides, 2010).

The contrast between Bhopal and Bhuj presented a rich terrain for analysis. Bhuj emerged as a site of more effective practices, showcasing resilience and adaptability in water governance, while Bhopal highlighted systemic shortcomings, exposing the tensions between repair and reparation. These contrasting narratives did not weaken the framework but instead clarified and redefined theoretical understandings. In particular, the identification of negative cases—such as Bhopal’s struggles—enabled a rethinking of theory. Rather than being side-lined, these negative experiences enriched the analysis, lending greater theoretical precision and insight (Brecht, 1974; Marion, 2002; Timmermans & Tavory, 2012).

Through comparison, differential patterns began to emerge. These variations offered diverse heuristics and theoretical frames, allowing me to revisit the cases with fresh eyes and, in doing so, to challenge initial assumptions. This process of ‘defamiliarisation’ (Marion, 2002) or ‘alienation’ (Brecht, 1974) became a key tool in ethnographic inquiry, helping to decode the meaning-making processes embedded in the everyday politics of informal governance. To guard against biased interpretation, I employed the strategy of ‘saturation,’ (Marion, 2002; Schmid et al., 2017) postponing analysis and distancing myself from immediate conclusions. This allowed



for a more critical observation of seemingly mundane or insignificant patterns, which, upon further reflection, revealed deeper causal relationships.

Although some ethnographers critique the reductive nature of comparison (Hage, 2005; Marcus, 1995), I argue that this method was particularly effective when investigating grey practices, unspoken meanings, and subconscious motivations. The comparative approach allowed for a layered understanding of informality—one that revealed its complexity, rather than simplifying it.

## **2.4. Research process: Desk, analytical and action research**

My research process was inherently flexible and adaptive, influenced by external factors such as the pandemic, elections, funding delays, and internal challenges like communication and coordination within the research team. Although I delineated three stages—framework development, analytical inquiry, and action research—the process was not linear. Each stage informed the others, resulting in a dynamic, iterative approach that adapted to changing conditions and emerging insights.

### **2.4.1. Iteratively developing the reparative governance capacities framework**

The initial phase of my research centred on developing a conceptual framework to examine and nurture capacities to enable reparation. This process commenced during the COVID-19 lockdown in the Netherlands, when I conducted extensive desk research, drawing upon literature from both the Global North (Bettini et al., 2016; Frick-Trzebitzky, 2017; Hölscher et al., 2019; Koop et al., 2017; Wolfram, 2016) and Global South (Bhan, 2019; Chattaraj, 2019; Funder & Marani, 2015; Haapala et al., 2016; Koshy et al., 2022; Mayaux et al., 2022; Mguni et al., 2022; Nastar et al., 2018; Yasmin et al., 2019). My goal was to develop a framework capable of acknowledging the complexities of informality, particularly in the context of reparative water governance in India. While the initial framework heavily relied on theoretical constructs originating in the Global North, I remained cognisant of the need to adapt—or '*Indianise*'—these concepts to better reflect the socio-political realities of the field.

The initial framework was theoretical and developed in isolation during lockdown. However, following the easing of travel restrictions in August 2021, I began fieldwork in India. This period marked a significant shift in the research process. Exposure to Indian scholarship, mainly through local academic conferences and in-person interviews, introduced me to new terminologies and conceptual frameworks grounded in local understandings of transformation. This research phase underscored the importance of acknowledging historical injustices—particularly those related to colonialism and social stratification. The framework thus evolved to integrate these insights, positioning ethical and respectful transformation as contingent upon addressing these past injustices. Chapter 4 provides a detailed discussion of how this iterative process shaped the final framework.

#### **2.4.2. Analytical exploration with ethnographic techniques: Investigating capacities for repair**

The second stage of my research focused on exploring the concept of 'repair' within informal water governance structures in Bhuj and Bhopal. Through an analytical lens, I examined how historical contexts, forms of knowledge, and socio-ecological interactions contributed to mobilising capacities for reparation. My inquiry centred on understanding how the process of repair was enacted, how the capacities required for this process were mobilised through informal governance, and how the socio-historical context shaped these processes.

The decolonial approach I adopted proved crucial in this phase, providing a methodological lens to observe visible actions and underlying motivations. This approach allowed me to recognise that repair cannot be generalised and must be responsive to local histories and contexts. It further highlighted the importance of language and local terminologies, offering nuanced insights into how transformation was understood and operationalised by different communities. These observations informed a critical understanding of the role of capacities in enabling reparation.

#### **2.4.3. Action research: Nurturing transformative capacities**

The third and final stage of the research involved action research, which sought to create spaces for nurturing reparative governance capacities. Drawing on (Bradbury et al., 2019), I approached action research as a participatory and collaborative process that integrates reflection and action to address social and environmental challenges. My role as an action researcher was to facilitate the development of 'transformative spaces,' designed to support nurturing governance capacities for water sensitivity.

These transformative spaces were rooted in the Indian logic of engagement, fostering dialogue and mutual learning among stakeholders. Rather than imposing predefined solutions, the aim was to create environments where participants could co-create pathways for change. The decolonial perspective guided the distribution of power within these spaces, ensuring that all voices were heard, and that power was shared equitably. As Thambinathan & Kinsella (2021) argue, decolonial approaches encourage the creation of safe spaces for honest dialogue and critical inquiry, where power dynamics can be re-examined and transformed.

The action research process focused on fostering incremental change, recognising that meaningful transformation requires not only the development of capacities but also shifts in the underlying power structures perpetuating inequities. In these transformative spaces, diverse perspectives could converge to co-create solutions, focusing on nurturing the capacities necessary for sustained improvements in governance arrangements. Section 2.5.2 provides a more detailed explanation of how these spaces were facilitated and the outcomes they produced.

<i>Steps</i>	<i>What activities did I do?</i>	<i>Corresponding Chapter</i>
<b>Conceptual Framework (2020-2024)</b>	Review of relevant literature both pertaining to Global North and South scholarships	Chapter 1 – Introduction, Chapter 4 – On Conceptual Framework
	Development of draft framework before leaving for fieldwork	
	Revision of the Framework after returning from the fieldwork	
	Revision of the Framework after conducting the workshops	
<b>Fieldwork in Bhopal and Bhuj (2021-2022)</b>	Knowledge gathering by speaking and observing actors and their practices in governing water, Interviews conducted between 09/2021- 6/2022	Chapter 2, 3 – On Methodology
	Analysis	Chapter 5 – Comparative analysis of Capacities mobilised for reparation
<b>Workshops (2022-2023)</b>	Problem framing, Visioning, Pathways repairing, Pathways detailing workshops conducted between February 2022 – March 2023.	Chapter 6 – Adapting Transformative Spaces
	Analysis	Chapter 6 and Intermezzo on Analysis of the workshop results

*Table 1: Overview of research process*

## 2.5. Data collection and analysis

In this section, I outline the data collection and analysis methods across two distinct research stages: analytical research conducted in the field and action research in a workshop setting.

### 2.5.1. Analytical research - Qualitative comparative visual ethnography

#### A. Method

I perceive water governance as a complex interplay of *factual* tenants such as hydrogeological, ecological, and engineered systems, each governed by technical, calculative logic. However, these systems are also supported by socially constructed, *value-laden* knowledge that reflects diverse perspectives and interpreted truths (Easton, 2010). Decision-making processes in water governance often reveal internal colonialism, manifesting in hierarchies and technological hegemonies. This highlights the importance of understanding the deeper structures that drive decisions.

To explore these dynamics, I employed a comparative ethnographic approach, to observe and document water governance practices in action across two case study cities: Bhopal and Bhuj. This causal analysis enabled me to decipher how water governance is performed, under what conditions it succeeds or fails, and the extent to which these practices facilitate reparative transitions.

## B. Ethnography

Given the hybrid nature of water governance practices—encompassing both formal and informal elements—I chose ethnography as my method. Ethnography allows for the detailed study of social processes, enabling me to examine individual and collective behaviour in everyday settings (Burawoy, 1998). I conducted 64 semi-structured interviews (32 in Bhopal, 32 in Bhuj) with thick descriptions (Ponterotto, 2006), both visually and textually, and recorded 10 observation notes (7 in Bhopal, 3 in Bhuj). In my ethnographic study, I comprehensively documented the profiles of research participants—both individuals and spaces—using textual descriptions, photographs, and sketches. I triangulated the information by cross-referencing interview data, observations, and photographic narratives, drawing from secondary literature, field notes, and visual documentation to inform my analysis. I also referred to the grey literature I received from the interviewees, which further helped ground my research.

The interviews covered a wide array of stakeholders, including national and state government officials, municipal officers, representatives of NGOs and CSOs, private sector actors, and academicians and residents. This range provided a comprehensive view of each city’s water governance ecosystem. The objectives of the interviews were to:

1. Identify the real and formally stated issues actors were addressing.
2. Understand the measures taken and capacities manifested.
3. Assess whether the efforts were reparative or merely reactive.
4. Explore how the actors were situated within the broader water governance system.



**Photograph 1:** Interviewing alone and in group.

The complete interview and observation guide is available in Appendix.

## Chapter 2

The interview locations were carefully selected to reflect participants' work environments and comfort levels, ranging from formal office settings to more informal spaces, such as areas adjacent to their workplaces, relevant to their professional roles. In response to the pandemic, some interviews were conducted online. This flexible approach encouraged open and reflective dialogue. Participants often began with politically correct, objective responses about their roles and challenges. Still, over time, the conversations delved into more detailed discussions about how they navigated these challenges and redefined their roles and capacities.

Ethnographic narratives provided insight into what actors did and the social milieu in which they operated, constructed, and negotiated. However, I acknowledge that these narratives are subjective and potentially biased, presenting a limited picture that may validate their roles while justifying any wrongdoings. This process revealed their vulnerabilities and guilt. The professional and personal agency of the same actor often presented competing and contradicting profiles. To demystify prevailing phenomena and conditions, I cross-referenced primary ethnographic observations with information from other participants and follow-up observations.

This ethnographic approach also situated water governance practices within their social-ecological spatial dynamics, which serve as a foundation for informal practices (Fairbanks, 2012). Overall, this method elucidated the translations and appropriations of formal mandates and accepted practices at specific places and times, identifying loopholes, fine lines, areas of competition, conflicts, and decline (Peck, 2001).

	<i>Interviewees</i>	<i>Details</i>	<i>Nos.</i>	<i>Interview period</i>
<b>Bhopal Interviews – 32</b>  <b>Observation Notes - 7</b>	Local City Government	Bhopal Municipal Corporation (BMC) - Engineers from different seniority, Water tank supervisor Smart City	8	09 – 12/ 2021 02-2022 06 - 2022
	National And State Government	Town and Country Planning Dept. MPUDC	3	
	NGOs and CSOs	World Resources Institute (WRI India), WWF, All India Institute of Local Self-Government (AIILSG), Sambhavna Trust, Bhopal Citizen Forum, Water Aid, Aarambh	7	
	Residents	Local representatives, General male water consumer, General female water consumer, Victims of water contamination	5	
	Educational Institute	School of Planning and Architecture Bhopal	1	
	Private Organisations	Hotel owner, Urban Planning Consultants (KPMG), Private water service providers	5	
	Politicians	MLA, Councillors	3	
<b>Bhuj Interviews – 32</b>  <b>Observation Notes - 3</b>	Local City Government –	Bhuj Municipal Council (BNP) - (Engineers from different seniority – Water supply, storm water), Water tank supervisor	6	12-2021 to 1-2022
	National And State Government	Gujarat Water Supply & Sewerage Board (GWSSB), Bhuj Area Development Authority (BHADA)	3	
	NGOs and CSOs	Arid Communities and Technologies (ACT) - Directors and Associates, Homes in the City (HIC), Jalsrot Sneh Samvardhan Samiti (JSSS), Kutch Mahila Vikas Sanghathan (KMVS), Bhujal Jankar, Urban Setu, Principals Association	9	
	Residents	Local champions, Female water consumer,	5	
	Educational Institute	Gujarat Institute of Desert Ecology (GUIDE)	1	
	Private Organisations	Developers + Private water service providers	4	
	Politicians	Mayor, Chairman, Councillors,	4	

**Table 2:** Detailed list of interviewees (Fieldwork)

### Visual Ethnography

While ethnography provided clarity and a rich record, it sometimes introduced delays in capturing observations. To overcome this, I incorporated photographic methods, which provided an immediate visual record, allowing for live analysis alongside textual notes. Beyond documenting what was visible, photographic methods helped uncover unconscious behaviours

and conditions shaping governance practices. Verbal justifications for actions were supplemented with photographs, offering insight into non-verbal cues and underlying causalities. Digital photo ethnography enabled me to investigate these dynamics, illustrating emotions and providing visual support for the interviews (Harper, 1987).

Rather than merely collecting graphic data, visual ethnography co-produced narratives with informants based on their positions, claims, and conditions (Collier & Collier, 1986; Harper, 1987; Pink, 2013). This approach focused on seeing, knowing, and representing (Pink, 2013), unmasking distinctive forms of repair in different geographies through informal governance processes and structures.

However, I encountered three dilemmas while mapping informal governance within urban water governance: 1) the difficulty of documenting transient oral narratives, 2) the discrepancies between verbal accounts and observed practices and 3) ethical concerns associated with documenting illicit activities. To address these dilemmas, I coupled ethnographic approaches with photographic methods. I outlined five routines of conducting visual ethnography, applied in the cities of Bhuj and Bhopal, to shed light on how various actors enact informality in addressing the gaps and transforming urban water governance. These routines served as a photographic praxis to critically engage with human and non-human actors in these locales. Through these routines, in Chapter 3, I illustrated how informality results in two types of repairs: reactive and reparative. Reactive repair serves as a temporary measure to restore the status quo. In contrast, reparative repair aims at fostering long-term change, illustrating the dynamic ways in which informality contributes to repairing the intricacies of water governance in India.

This methodology helped to address the three dilemmas. To address the first dilemma of documenting transient oral narratives, visual ethnography became a powerful tool to capture unspoken markers often lost in verbal accounts. Second, I cross-referenced observations with other participants to resolve discrepancies between oral accounts and actions, and the photographic process helped identify overlooked elements. Third, I managed ethical concerns regarding illicit activities by maintaining a level of 'distance' (Rose, 1997). Determining the extent of immersion, mainly when covering sensitive topics like illicit water pumps and knowing when to withdraw, was essential. I opted to respect the users' oral accounts, documenting their approaches through the less conspicuous medium – the smartphone. This approach was validated when local authorities acknowledged their awareness of these illicit measures, resolving my moral dilemma.

Building on these strategies, I employed immersive ethnography, practising 'being there' (Roncoli et al., 2009) for three months in each city to situate myself as an insider and gain the trust necessary to reflect on and understand the vulnerabilities and conditions of the actors involved. This method allowed me to delve into the mundane, often overlooked aspects that drive motivations for repair. In tandem with this immersive approach, I used the rear mirror technique (Wamsiedel, 2017), which provided a safe distance from moral dilemmas related

to observing illegal activities. This technique enabled a degree of autonomy and a time lag, allowing me to process the present phenomenon while simultaneously interpreting its broader implications. It also heightened my awareness of unspoken social markers—such as subservience, obedience, fear, pride, and respect—which helped me capture critical moments and their meanings through photographs. These methodological strategies added layers of complexity, but they were essential in navigating the ethical and practical tensions inherent in the research, ultimately enabling a comprehensive understanding of the dynamics at play.

Photographic methods, when incorporated with ethnography, provided a nuanced understanding of these dynamics. Integrating photographs and interview notes enriched the textual analysis, serving as meaningful ‘codes’ within qualitative coding software like ATLAS.ti. Additionally, as a trained documentary photographer and former photojournalist, I was acutely aware of the ethical implications of my work. Photographs were taken with full consent, using a One Plus 9 mobile camera with a wide-angle lens to minimise participant discomfort. Care was taken to avoid ‘photo voyeurism’ and ‘poverty porn,’ and I prioritised consent, halting recordings when necessary and ensuring participants were comfortable with the photographs captured.

This methodological trajectory built trust and peeled back layers of political correctness, revealing the nuanced operations of informality in governance. Through this comparative ethnographic lens, my analysis of Bhuj and Bhopal went beyond cataloguing divergent practices to critically examine each city’s governance strategies, contrasting them against one another.

### ***Data analysis***

Data analysis occurred in two phases: during fieldwork and afterwards. Ethnography’s reflective process guided the analysis, grounded in a conceptual framework initially drawn from Global North secondary literature. This framework provided a loose guide, allowing flexibility for the fieldwork to inform and fine-tune it in line with abductive analysis (Timmermans & Tavory, 2012).

Abductive analysis balances creating new theories and recalibrating old hypotheses, avoiding the rigid fitting of results into predetermined boxes. Despite its iterative nature, abductive analysis narrows theoretical leads, refining the framework to build future resilience by acknowledging past and present phenomena. ATLAS.Ti software was used to code thick textual descriptions and photographs simultaneously.

Using ATLAS.Ti, I analysed patterns and themes in the data, correlating them with different capacity dimensions discussed in Chapter 4, Table 4 and 5. These patterns transcended both cities, demonstrating how reparative efforts took shape in Bhopal and Bhuj. For instance, while Bhuj’s efforts were rooted in its water heritage and local pride, Bhopal emphasised report-based and policy-driven knowledge. This contrast highlighted how cultural landscapes influenced reparative efforts.



In summary, the comparative ethnographic approach and digital photo ethnography provided a comprehensive understanding of water governance in Bhuj and Bhopal. This method illuminated the complexities of informal governance processes and structures, offering a rich, nuanced perspective on how these practices operate and evolve within different social and ecological contexts.

In addition, this dissertation includes photo narratives in which I annotate my analysis to convey what I observed at the moment each photo was taken and how these observations deepened my understanding of informality. The choice to display both the original photographs and their annotated versions side by side is intentional, encouraging critical reflection from the reader. This dual presentation invites an exploration of the layering within each image, prompting readers to contemplate the informality at play and assess its potential role in enabling reparative processes.

The research adhered to the Netherlands Code of Conduct for Research Integrity and received approval from the Research Ethics Review Committee of Erasmus University, Rotterdam. All data listing and storage followed guidelines to ensure integrity and accessibility without sharing personal information publicly

### 2.5.2. Action research – Designing and facilitating workshops



*Photograph 2: Facilitating in a W4C workshop*

#### **Method**

W4C program aimed to conduct a series of four workshops, from February 2022 to March 2023, based on Transition Management (TM) steps – system analysis and problem structuring, envisioning, pathways development, experimentation, and monitoring (Nevens et al., 2013). The

initial workshops began shortly after I had completed my fieldwork. In the first two workshops—focused on problem framing and visioning—I participated as a core team member, facilitating and adapting the workshops to align with the program’s objectives. During these initial sessions, I observed limitations within transformative spaces that were modelled on Dutch values of collaboration. Over the course of the year, drawing on insights from my fieldwork, relevant literature, and the experience of these initial workshops, I was able to reconceptualise the approach to better reflect themes of informality and reparative transformation. This enabled me to design the subsequent.

This phase required me to trust my research while remaining humble and open to changes shaped by the action research process. My role extended beyond merely developing transformative spaces to actively facilitating them (Photograph 2). I recognised the significance of relational and emotional aspects of learning, essential for genuine transformation (Bradbury et al., 2019). My commitment to critical reflection as an action researcher led me to adapt the transition arena within the TM framework, expanding its scope as a transformative space (Pereira et al., 2020), as explained in Chapter 6. TM aims to shift societal behaviour and structures toward sustainability by fostering collaborative exploration and enabling transformative change (Loorbach, 2010a; Wittmayer & Loorbach, 2016). This approach bridges the gaps between knowledge, action, and policy (Frantzeskaki et al., 2018), adopting a transdisciplinary approach involving researchers, policymakers, citizens, NGOs, and other stakeholders.

We adapted the TM transition arena tool (Loorbach, 2010a), a structured process to create a transformative space for deliberating, envisioning, and strategising systemic change. To broaden the transition arena, we infused it with less structured, experimental techniques in line with a transformative space (Pereira et al., 2020), where participants engage in reflexive and collaborative processes that challenge existing power structures and worldviews. The aim was to foster participants’ capacities for social change, encouraging participants to question, rethink, and transform existing practices, norms, and institutions.

Most existing designs for transformative spaces are rooted in sustainability and resilience frameworks developed in Northern Europe (McCrory et al., 2020; Pereira et al., 2020). As a result, facilitation within these spaces often reflects Northern European decision-making cultures, which do not always consider the hierarchical governance structures and the reluctance of Indian actors to openly acknowledge incompetence or the limitations of current practices. This realisation inspired me to adapt the transformative spaces to align with Indian cultural ethics, resulting in the ‘Repair’ model. This model respects local dynamics and addresses the specific challenges and needs of Indian governance contexts.

I drew upon informal governance structures, particularly deliberative processes within deregulated states, where actors can freely discuss and innovate within feasible means. This approach helped shape transformative spaces that included historically excluded actors, thus fostering repair. These spaces aimed to serve as platforms for mending, improvising, navigating,

dismantling, and providing stability. Transformative spaces informed by the 'repair' logic balance innovation with traditional wisdom, fostering solutions that respect local heritage while addressing inequalities stemming from gender, social hierarchy, religion, and caste politics.

As discussed in Chapter 6, the scholarship on informality enabling repair provided three key parameters for situating transformative spaces within the complex socio-political contexts of the Global South: 1) cultivating confidence to challenge regressive structures, 2) nurturing frugality and creativity, and 3) instilling faith in transition processes. The deregulated context of informality also inspired me to design these spaces as food fairs and classrooms, fostering honest discussions and reflections. These parameters were central to designing transformative spaces and nurturing the capacities detailed in Chapter 6 and the *Intermezzo*.

As previously discussed, I spearheaded the design of the repair workshops based on Indian collaborative values. The initial workshops on problem framing and envisioning, held in the respective cities, laid the groundwork for the pathway development workshops, which integrated the previously identified visions and challenges to formulate actionable strategies. Reflecting on these two workshops, my focus was on fostering a collaborative working environment. However, public collaboration can exacerbate problems if democratic decision-making cultures are either absent or interpreted differently in these regions. This was particularly relevant given the mixed success of such engagements in the past (Prasad et al., 2023a).

I designed the workshops with an aim to promote accountability, challenge regressive structures, encourage adaptability and creativity, and instil confidence in the transition pathways. The design also addressed implementation barriers related to governance and procedural complexities, which are often overlooked due to habituation. The workshops facilitated open discussions that recognised stakeholders' complex behaviours and the lingering influence of colonial mentalities on decision-making. By modifying the structure and design of the sessions, I aimed to create an environment conducive to meaningful participation. By cycling through discussion-proposal-reflection-discussion, incorporating expert and peer-to-peer exchanges, I sought to normalise reflexivity.

However, facilitating workshops to nurture capacities that enable reparation presented significant dilemmas, particularly in balancing epistemic justice with practical constraints. While it was crucial to include marginalised voices in the workshop, local partners resisted inviting certain individuals, fearing that such associations could jeopardise their relationships with authoritative governmental actors. Concerned about their institutional image and future collaborations, they instead pushed for the inclusion of authoritative actors who were more interested in preserving their status than genuinely engaging in transformative discussions. To navigate this, I negotiated a compromise that allowed each PhD researcher to invite stakeholders of their choice, ensuring a broader representation across domains. This approach not only preserved the inclusion of marginalised voices but also mirrored the socio-political tensions in the field, offering insights into existing governance dynamics. Furthermore, by involving authoritative figures, the workshop

had the potential to influence powerful actors who, if convinced, could become change agents themselves. Despite attempts by some stakeholders to dilute the need for reform, the diverse voices empowered through this process contributed meaningfully to the discourse.

Moreover, not all consortium members were equally committed to transformative processes, and many had divergent goals. Some prioritised institutional sustainability and remained sceptical of co-creation, often pushing for technical solutions perpetuating existing hegemonies. My role, therefore, was to navigate these competing priorities, finding ways to advance technical goals while ensuring they did not obstruct the development of non-technical solutions.

Following the workshops, I conducted follow-up interviews with three experts and four participants who attended the Repairing Pathways workshop. My questions to the experts focused on the nature of the discussions that took place and how the questions were initially framed. I also noted how the questions evolved over time and whether the informal workshop formats—such as the food fair and classroom setting—played a role in shaping these discussions.

With participants, I inquired about what they gained from the workshop, the specific questions they posed, and how the responses they received were beneficial. I explored whether the interactive exchanges helped refine their questions and if they felt they achieved their objectives. Additionally, I asked how they intended to carry forward the insights gained from the workshop.

At no point did I inquire about who spoke to whom, ensuring confidentiality was maintained. My goal was to understand if participants identified governance challenges, felt safe enough to voice these concerns, found the suggestions helpful, and whether they believed the proposed solutions were feasible and actionable thereby nurturing the capacities for reparation.

<i>Interviewees</i>	<i>Details</i>	<i>Nos.</i>	<i>Interview period</i>
<b>Local City Government</b>	Bhopal Municipal Corporation (BMC), Smart city	2	04– 06/ 2023
<b>NGOs and CSOs</b>	<b>Bhopal</b> - All India Institute of Local Self-Government (AIIILSG)	3	
	<b>Bhuj</b> - Arid Communities and Technologies (ACT) , Homes in the City (HIC)		
<b>Experts</b>	Participatory planning, partnerships and governance, modelling and technology	3	

*Table 3: Detailed list of interviewees (Workshop)*

### **Data Analysis**

For data analysis, in addition to workshop outputs like vision statements, Mentimeter surveys, and pathways, I included follow-up interviews, conducted post-workshop. I also considered ‘table chatter’—informal conversations during workshops. Using ATLAS.ti, I coded and analysed

the conditions that nurtured capacities, as detailed in the Intermezzo. Similar to the earlier research stages, I identified common themes and patterns, correlating them with the dimensions of capacities (Table 4 and 5 in Chapter 4) to assess which capacities were being nurtured and to what extent. Comparing follow-up interviews with initial fieldwork interviews helped me identify gaps and gauge the development of these capacities.

The data revealed the conditions under which reparative governance capacities could be nurtured and showcased how the presence of authoritative actors or those working on live projects could catalyse further capacity acknowledgement and strengthening. Further, I assessed how capacities were nurtured by comparing workshop outputs and observing how the results were upscaled. I examined actions that led to improvements in reparative capacities, identified hindrances, and explored potential opportunities.

The insights gained from these processes contributed to creating a 'Repair Manual' for situating transformative spaces in Indian contexts. (While the Repair Manual itself is not a part of this thesis, this research has contributed to one of the W4C products, specifically the Repair Manual). This experience also provided valuable insights into improving facilitation, understanding how internal politics within Water4Change influenced stakeholder invitations, and strengthening ties with new and existing stakeholders.

### **2.5.3. Limitations**

In my research on reparative water governance, I engage with knowledge production through a decolonial perspective, which not only shapes the methods of inquiry but also informs the design of fieldwork and action research. This approach prompts a re-examination of whose voices are amplified, whose experiences are marginalised, and challenges hegemonic narratives by prioritising diverse, culturally grounded perspectives in water management practices across Indian cities. However, despite these strengths, the decolonial and participatory approach presents inherent limitations that require continuous reflection and adaptation.

One critical challenge is that this methodology must rigorously interrogate its assumptions, as there is a risk of inadvertently reinforcing the hegemonies it seeks to dismantle. Without such scrutiny, the framework may become powerless or produce limited knowledge under a new guise. This approach is limited by its susceptibility to co-optation, where decolonial language is superficially adopted to reinforce existing power structures rather than dismantle them, leading to tokenistic practices that fail to enact meaningful change (Rai & Campion, 2022).

Participatory methods, though valuable, also introduce complexities. Building trust, fostering inclusivity, and addressing resource constraints can shape the scope and pace of research, often introducing limitations. Despite best efforts, certain marginalised voices—particularly those affected by intersecting oppressions of caste, class, and gender—may remain underrepresented. Wittmayer et al. (2024) highlight that collaborative research often struggles with diverse power

dynamics, complicating the ability to reach consensus on notions of justice and equity. This raises difficult questions: whose vision of justice ultimately prevails?

Another challenge lies in balancing local knowledge with formal governance structures often entrenched in technocratic paradigms. Even when local voices are included, integrating them into these formal systems can be difficult, particularly when they challenge existing norms.

Also, my role within the Indo-Dutch (W4C) research consortium introduces its own set of complexities. Power dynamics within international collaborations can influence how knowledge is co-constructed and whose perspectives are prioritised. Ongoing reflexivity and adaptation are essential to prevent the decolonial framework from becoming complicit in reproducing power imbalances. This constant reassessment ensures that the research does not inadvertently perpetuate the very structures it seeks to challenge.

Navigating the power dynamics between myself as a researcher and the participants, as well as among empowered and less empowered actors, required ongoing reflexivity. Upholding integrity within an action-oriented research framework meant fostering equitable, transformative spaces while consistently reflecting on my positionality and biases. The balance between theoretical insights and participatory practices remained a persistent challenge. In the following section, I discuss my positionality and the institutional context of my Dutch organisation and the Indo-Dutch consortium that facilitated this research.

## 2.6. Navigating through multiple and dynamic positionalities

As a researcher studying decolonialisation, I recognise the importance of being self-aware and accountable regarding my perspective and the factors that influence my work. Acknowledging my struggles, reactions, and their influence on my research has been a vital reflective exercise, embedding them into the process of scientific inquiry. In the following sections, I aim to critically examine the methodological and positionality-related aspects of my research within the Water4Change programme and my embeddedness in DRIFT. Reflecting on the negotiation between myself and the knowledge that continues to evolve, I analyse and acknowledge the 'self' within the performative research paradigm.

### 2.6.1. Embeddedness in the Water4Change (W4C) programme

#### A. *Political landscape and situatedness of the partners*

The implementation of the W4C programme in Bhuj and Bhopal was facilitated through partnerships with local institutions such as the Maulana Azad National Institute of Technology (MANIT) in Bhopal and the Centre for Environmental Planning and Technology (CEPT) and the Indian Institute of Technology Gandhinagar (IITGn) in Bhuj. These well-established and historically significant institutions engage extensively with central government initiatives and other research programmes. The success of programmes like W4C hinges on these institutions'

ability to collaborate with diverse local stakeholders, including city and state governments, Non-Governmental Organisations (NGOs), private consultants, academics, and residents. Such partnerships are mutually beneficial, providing the institutions with practical project experience and opportunities to apply and test theoretical constructs while practitioners benefit from academic data sets and frameworks.

However, the assumption that these institutions can maintain a strictly non-partisan stance is idealistic. In the Indian context, the survival and continued relevance of educational institutions often depend heavily on their relational ties with authoritative bodies, such as municipal governments and funding organisations. These connections are vital for access to local data and project opportunities as well as for securing funding, extending project timelines, and maintaining institutional support. Any strain in these relationships can threaten the sustainability of both ongoing projects and future collaborations. This added layer of political entanglement necessitates a more formal ethical approach to academic practice. The challenge lies in how to critically assess and engage with feedback from local stakeholders through these institutional collaborations.

### ***B. Navigating political sensitivities in fieldwork and workshops***

Throughout my fieldwork and the facilitation of workshops, I remained acutely aware of the political situatedness of the universities involved and the influence of the Indian funders. This awareness impacted how I represented the programme. While I aimed to present authentic narratives from my research sites, I had to carefully navigate the political pressures exerted by both Dutch and Indian institutions. Often, institutions and organisations dismiss certain knowledge due to its perceived triviality within the domains of urban planning and technology and also because it touches upon politically sensitive areas that could jeopardise the institution's standing. My affiliation with a Dutch institution provided me with a level of autonomy that allowed me to navigate these barriers and strive for a more accurate representation of ground realities, relatively free from Indian institutional influence.

My embeddedness in the W4C programme required a nuanced understanding of the political landscape and the dynamics between various stakeholders. This understanding was crucial for conducting ethnographic research that remained sensitive to the intricacies of institutional and political contexts while striving to present an unvarnished depiction of the issues at hand.

#### **2.6.2. Situatedness in a Dutch organisation**

As an Indian researcher recruited by the Dutch Research Institute for Transitions (DRIFT), my academic journey has been shaped by the institution's ethos and the diverse supervision I received from a Dutch promoter and two supervisors—one Dutch and one German. DRIFT is recognised for its expertise in transition management, combining research, consultancy, and training while maintaining a strong organisational identity. At the same time, its activist stance and critical self-awareness foster a genuine openness to diverse worldviews. This transparent

articulation of its positionality allowed me to align with DRIFT's mission while also broadening Dutch discourses on transformation by introducing perspectives from the Global South.

My affiliation with DRIFT and Erasmus University Rotterdam granted me invaluable exposure to Dutch academic politics and the opportunity to apply theoretical insights in practical settings. Coming from a practitioner background, this experience was particularly enriching. In the Dutch context, I observed a marked willingness to address internal discrepancies and engage in critique—a stark contrast to the Indian context, where criticism can often threaten professional relationships or careers, thus discouraging transformative change. The Dutch's direct communication style and egalitarian culture trained me to embrace constructive criticism, an approach I had to adapt to after working within the hierarchical structures of India. This shift expanded my capacity for critique and enhanced my ability to navigate the complexities of decision-making structures in both Dutch and Indian contexts, helping me to convey difficult learnings with tact and diplomacy.

Through the cross-cultural supervision of my Dutch and German supervisors, I was encouraged to identify blind spots in my understanding of transformation while critically engaging with Indian perspectives. This reflective process led me to interrogate normative discourses surrounding transformation, especially in Western contexts, and to examine how such ideas are often misapplied or misunderstood in the Global South. For example, 'transformation' in India is frequently conflated with optimisation or mere implementation, revealing the need for a more nuanced and engaged approach to transformative concepts. This insight illuminated the broader challenges of transferring knowledge from Dutch frameworks to Indian contexts, where local conditions necessitate adaptation rather than the uncritical adoption of foreign models.

As my research progressed, I became increasingly aware of the replication of colonial practices and their manifestation in Bhuj and Bhopal. The commitment of my Dutch and German supervisors to recognise historical injustices inspired me to develop a framework centred on restorative justice. However, maintaining my focus on informality and repair required perseverance, particularly in the face of European scholars who often regarded my work as an exotic anomaly. Informality was frequently dismissed as a phenomenon confined to countries like India, with suggestions that I should simply adopt Northern frameworks. Convincing my supervisory committee and the broader academic community that informality is a global phenomenon, and that my work aimed to decolonise transformative processes rather than merely appropriate Northern models, demanded sustained effort. This journey required a critical and systematic examination of how coloniality is embedded in transformative governance frameworks, which are often rooted in climate mitigation paradigms that inadequately account for the demands of climate adaptation. Extensive literature reviews and carefully curated citations became essential in demonstrating that informality is neither a simplistic, binary construct nor a transitional governance arrangement with solely biased outcomes. Instead, I argued for recognising informality as a dynamic, adaptive mechanism with significant potential



to foster resilience and equity, necessitating a reframing within transformative governance to acknowledge its pluralistic capacities and global relevance.

### **2.6.3. My position in the field**

Engaging in ethnography required strategies to manage power dynamics enacted by the actors. It became imperative to disclose my critical positioning within these power structures, as they influenced my positionality and situatedness (McDowell, 1992). I acknowledge the production of subjectivity in gathering knowledge. My Indian nationality contributed to my acceptance and familiarity with the Indian case study sites. My background as an urban practitioner, knowledge of Indian governance processes, and association with a partnering Indian research institute enabled me to ground the knowledge generated and establish my position (Rose, 1997). The knowledge gathered is therefore not universal, nor does it endorse generalisability. My positionality helped to situate the value-laden, embedded, historically specific knowledge demonstrated by actors in the field (Haraway, 1988). The textual and visual ethnographic notes are conceived from the perspective of the on-field researcher—me.

The decolonial lens allowed me to recognise the multiple truths and realities within different cultural contexts. It also provided a foundation for acknowledging the historical and cultural specificities that influence knowledge production. Additionally, it aided me to recognise that our understanding of these truths is mediated through social and cultural lenses. This dual approach enabled me to navigate the complexities of the field with a nuanced understanding of both the subjective experiences of the actors and the underlying structures that shape these experiences.

Although I am Indian, coming from the metropolitan city of Mumbai presented a different cosmos compared to the two secondary cities. By adopting a naïve outsider persona, speaking Hindi with a Mumbai accent peppered with English words, and occasionally mispronouncing local phrases, I was perceived as relatable enough to bridge some distance between myself and the community. Yet, I remained sufficiently 'outsider'—not entirely of the locale—which created a subtle distance that allowed people to feel comfortable sharing stories without concern for divulging guarded secrets. I documented open secrets (Wamsiedel, 2017), highlighting discrepancies between what was said and what was practised. Conversely, my Dutch privilege, reflected by staying in a hotel and carrying a water bottle with purified water, added to the power differences (Moss, 1995). These distances were negotiated through shared experiences, making it an exchange rather than simply asking questions. The interviews focused on respondents' motivations, vulnerabilities, points of view, and agency rather than technology and planning. This inquiry was rare for many respondents, as the questions prompted personal reflections. The interviews became a space for respondents to open up about personal dilemmas.

As a researcher, I did not shy away from showcasing anxieties about being in an unfamiliar place. Humble body language and respect for the subject's authority in the room played a key role in establishing power dynamics early on. Interviewing government officials involved frequent pauses and interruptions, which reflected the power hierarchies in play. These moments were

valuable opportunities to observe how the interviewee interacted with subordinates or how they themselves were treated by others. I paid close attention to what was discussed during these moments and the tasks that were undertaken. Power asymmetries were also evident when interviewing more than one respondent at a time. Furthermore, the ‘waiting game’ allowed me to build trust with respondents. As a lone woman waiting in an uncomfortable waiting room, I sometimes evoked pity from male respondents. Being an Indian woman in India was, for some, seen as a position of powerlessness, which encouraged people to believe that my presence would not significantly disrupt their everyday negotiations.

The nature of these conversations was not one-sided; I shared my experiences of facilitation in India and abroad. This exchange created a comfortable space for the respondents to discuss their vulnerabilities, particularly female respondents, who often found it easier to relate to me. However, I want to clarify that while this research was conducted ethically, it does not necessarily guarantee an objective truth. The work presents situated narratives from multiple vantage points. As a critical realist, I value these varied perspectives and seek to follow up on and verify different stances and pieces of information. I am fully aware of my non-objective position and its influence on the research process. My association with a live project led some subjects to view me with hope, entrusting me with personal confessions. As a field researcher, while uncovering the subjectivities of those on-site, the interaction between the researcher and the researched shaped the case study. Rather than dismissing this as a non-objective study, I consider it an opportunity to highlight the specificities and complexities of the research site.

#### **2.6.4. My position in the workshop**

Once again, my unique position as an Indian national working within a Dutch context offered a valuable perspective on the challenges inherent in implementing an ontological shift in India. My previous work experiences facilitating workshops in both India and the Netherlands gave me first-hand insight into how people engage in these platforms—how vocal they are, what encourages or discourages participation, the procedures for inviting participants, and their overall level of enthusiasm. I observed how these engagement styles were either similar or different across the two contexts.

Instead of criticising the differences in engagement styles—such as being less vocal in public spaces—I viewed the Indian ways of engagement (which were often male-dominated, hierarchical, and centred around professional seniority) as characteristics to navigate rather than hierarchies to challenge. This perspective aligns with decolonial methodologies, which recognise the value of local knowledge systems and practices without imposing external standards or judgments. This approach was essential in designing contextually appropriate workshops.

In addition to my role in workshop design, I actively worked to bridge the gap between Indian and Dutch sensibilities regarding engagement platforms, embodying the core principles of knowledge brokering within action research. My primary responsibility was to delve into the

intricate dynamics of transformative spaces, closely aligning with participatory Action Research (AR) principles.

As demonstrated in my work, a key feature of action research was a steadfast commitment to reflexivity and adaptability. Discrepancies between what participants shared in the field and what was openly discussed in the initial workshop highlighted a discomfort with addressing governance challenges in this formal setting, suggesting a misalignment with the transformative space's intended goals. This prompted a critical reevaluation of the workshop's design to better suit Indian perspectives. Inspired by this reflection, I considered more informal and accessible settings, such as 'bazaar-like' (market-like) or food fair / '*chai-tapri*' (tea stall) environments, or even school classroom-like spaces where people could feel comfortable and unjudged while engaging, rather than the formal, Western-inspired, international-feeling luxurious environments that had previously been employed.

Another area requiring caution was the political situatedness of Indian institutions and its impact on whom to invite—and whom to exclude. Local institutions, aiming to maintain their standing, would often invite authoritative figures who were resistant to endorsing transformative change, frequently downplaying the urgency or scale of the challenges to protect their authority and preserve the status quo. Given that the Government of India funded our initiative, our starting point was inherently non-neutral, making the inclusion of change-resistant figures a potential obstacle to our transformative objectives. However, a decolonial sensitivity helped me empathise with local partners' need to involve these authoritative figures to strengthen their relationships within the intricate political landscape. My positionality allowed me to negotiate these ethics while respecting local politics and cultures.

Furthermore, my multifaceted role extended beyond engagements at the city level to collaboration and meaningful knowledge brokering between both technological and social science components within the consortium. My interdisciplinary background — as an architect, urban designer, photojournalist, water management expert, and transition manager — enabled me to draw on insights from a wide range of disciplines and perspectives, enriching the team's understanding. This interdisciplinary lens, however, also introduced a potential bias: my approach was not heavily engineering-focused, reflecting a degree of scepticism toward purely technical solutions. Yet, in a context where there was a consistent preference for technological solutions that frequently overlooked governance challenges, this bias served as a counterbalance, encouraging a broader dialogue on social and governance dimensions. This tendency to prioritise technology over governance considerations echoed India's post-independence phase, where technological advancement was often elevated above governance reform. Here, the design of informal engagement platforms, rooted in my experiences with workshops that had previously fallen short, enabled me to create 'bazaar'- and classroom-like spaces which were 'safe enough' (Pereira et al., 2015a) while engaging (as discussed in Chapter 6 and Intermezzo).

One of the most significant challenges was reconciling the terminology of ‘repair’ with Indian institutions, as opposed to the Dutch ‘transition management’. While the Indian side was eager to apply ‘international’ methodologies to their local problems, they often trivialised their local approaches. Additionally, there was concern that the term “repair” implied something was broken or malfunctioning, which some perceived as a threat to the status of their established local methods. To navigate this tension, I leveraged Dutch networks to support an ‘Indian’ idea, effectively transforming it into a ‘buzzword’ rather than advocating directly for Dutch methodologies. This situation underscored a pattern of internal colonisation within Indian methodologies, wherein external validation became essential for the acceptance of local ideas. It highlighted the value of a hybrid identity to manage complex interactions and bridge the gaps between competing perspectives.

In conclusion, navigating this role through my hybrid identity—as an Indian and Dutch researcher, water user, citizen, photographer, and urban planner—enabled me to recalibrate situated knowledge and agency across the diverse fields encountered in this research. This process was inherently performative, involving ongoing cycles of reflection, adaptation, and knowledge creation. The knowledge produced was not static; it was continuously questioned, reshaped, and enriched, blending scientific insights with experiential understanding. This dynamic synthesis of both conscious and subconscious insights, gathered during and even prior to the program, underscores the power of lived experience in complementing scholarly knowledge and adapting methodologies to complex, culturally varied contexts.

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## Chapter 2

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# 3

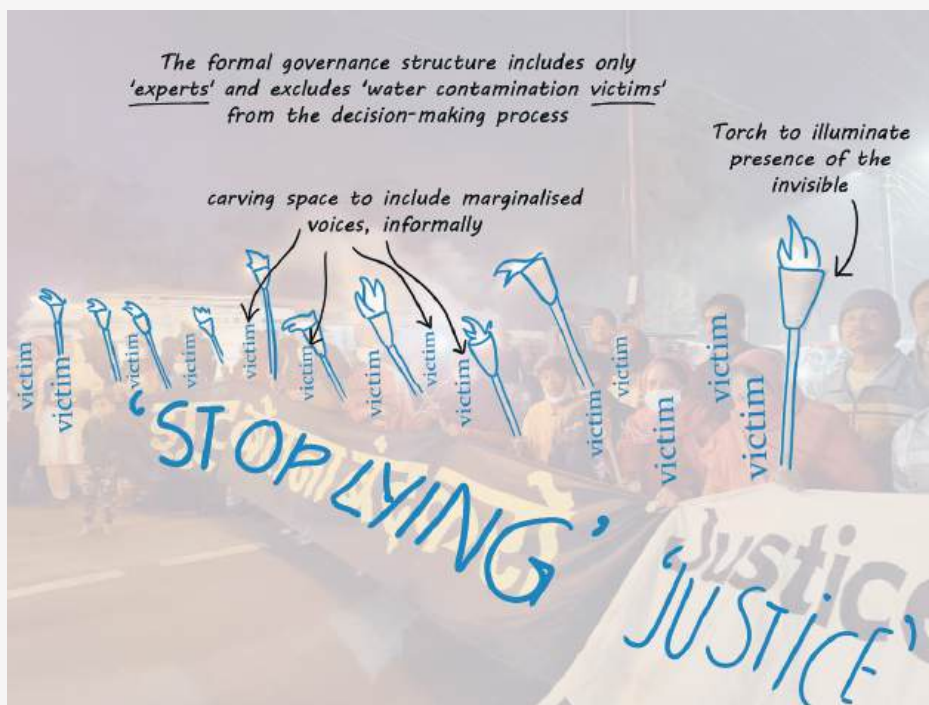
Visualising informal repair:  
Exploring photographic  
'routines' in ethnographic  
methodology



**Photo Narrative 5: Silent flames: A protest against the poisoning of bodies**

*Formal participatory platforms, though meant to be inclusive, often become performative, with water management experts dominating while sidelining the lived experiences of users. Their stories are shared not to inform decisions but to meet participation quotas, pushing people to carve out their own, informal spaces for justice.*

*During my stay in Bhopal, the silence surrounding water contamination became impossible to overlook. Despite the severe health impacts of contaminated water, formal discussions in the city rarely touched on the subject. Only when I stepped outside official spaces and visited an NGO working with victims of water contamination did the gravity of the situation become apparent. The aquifer was poisoned by Persistent Organic Pollutants (PoPs) leaked from the Union Carbide pesticide plant, a legacy of the Bhopal Gas Tragedy. The contamination was quietly spreading, its effects irreversible—especially on the bodies of women. Nevertheless, this catastrophic reality had been rendered invisible by those in power, who trivialised the issue, dismissing it as a problem affecting only a small area. The reluctance to address the contamination stemmed from a fear of accountability.*



*Investigating further would compel the state to recognise the disaster for what it truly was, bringing the weight of responsibility crashing down on those who had failed to act. As a result, the affected communities were left to bear the burden alone. Every year, leading up to December 3rd—the anniversary of the Bhopal Gas Tragedy—these women take to the streets in a solemn march, carrying torches through the cold night, a quiet demand for justice from a system that has long abandoned them.*

*I captured one such march in a photograph—a line of women, torches held high, their faces impassive as they move through the streets. The glow of the torches reflected off their worn expressions, as though the fire they carried was not only a symbol of their pain but also of their enduring hope. These women, many of whom had been poisoned by their water, were walking not just for themselves but for their children and the generations to come—walking with the knowledge that their bodies had become the battleground for a war waged in silence.*

*This moment captured in my photograph is more than a scene of protest; it reflects the hidden, unspoken ways informality operates to repair the damage left by formal governance. In this chapter, I outline five routines of conducting visual ethnography to shed light on how various actors enact informality in addressing the gaps within urban water governance. Combining ethnographic reflection with photography allowed me to document these hidden processes, offering a deeper understanding of how communities navigate the complex landscape of water governance, not just repairing systems but rebuilding lives.*

## Abstract

In this chapter, I illustrate the use of visual ethnography to uncover the nuanced role of informal processes and structures, henceforth referred to as informality, in navigating the complex challenges of water governance in India through enabling repair. By repair, I refer to the ability of informality to act as a transformative approach, adept at navigating and addressing the multifaceted governance challenges faced by Indian cities. The mapping of informality in repair within urban water governance uncovered three dilemmas: 1) the difficulty of documenting transient oral narratives, 2) the discrepancies between verbal accounts and observed practices and 3) ethical concerns associated with documenting illicit activities. To address these dilemmas, I coupled ethnographic approaches with photographic methods. Ethnography provided reflection, clarity and a documented record, although it introduced a delay in capturing observations. Photographic methods compensated for this by offering an immediate visual record and facilitating live analysis alongside textual notes. I outline five routines of conducting visual ethnography, applied in the cities of Bhopal and Bhuj, to shed light on how various actors enact informality in addressing the gaps within urban water governance. These routines served as a photographic praxis to critically engage with both human and non-human actors in these locales. Through these routines, I illustrate how informality results in two types of repairs: reactive and reparative. Reactive repair serves as a temporary measure to restore the status quo. In contrast, reparative repair aims at fostering long-term change, illustrating the dynamic ways in which informality contributes to repairing the intricacies of water governance in India.

## Keywords

visual ethnography, methodology, informality, water governance, India, repair

## Status

This chapter has been published in the book, *Threads of Informality in Policymaking*. The citation for the chapter is: Mungekar, N. (2024). Visualising informal repair: Exploring photographic 'routines' in ethnographic methodology. In L. Garner-Knapp, J. Mason, T. Mulherin, & L. Visser (Eds.), *Threads of informality in policymaking* (pp. 97–112). Emerald Group Publishing Limited. <https://doi.org/10.1108/978-1-83797-280-720241007>

## Fit with overall thesis

In the preceding chapter, I elucidated the research methodology, providing a foundation for the investigative approach employed in this study. This chapter elaborates the specific processes involved in conducting visual ethnography. Within this framework, I have devised 5 routines aimed at uncovering implicit notions and subconscious motivations, thereby facilitating a deeper understanding of the unintentional aspects of repair. Consequently, while Chapter 2 articulated the 'why' and 'what' underpinning our methodological orientation, this chapter delves into the 'how', establishing a direct link with both Sub-Research Question 1 and Sub-Research Question 2. This progression ensures a coherent and comprehensive exploration of the thematic concerns central to this thesis.

### 3.1. Introduction

In the context of navigating India's complex water governance challenges (Narain, 2000), this chapter presents a methodology that aims to shed light on the underexplored role of informal processes and structures, henceforth referred to as *informality*, in *repairing* the gaps and hindrances in urban water governance in the cities of Bhopal and Bhuj. In this context, repair goes beyond mere technical fixes; it is studied as a transformative approach adept at tackling governance challenges. Despite its associated drawbacks, informality emerges as a critical element in bridging governance gaps, offering nuanced perspectives on the interconnectedness and relationships among actors within this sector (Ahlers et al., 2014; Roy, 2005). Current research methodologies often need to encapsulate these nuanced perspectives (Goodman & Marshall, 2018), indicating the need for an innovative, cross-disciplinary approach.

To fill this research gap, the heart of this chapter lies in a novel methodological proposition: the use of visual ethnography to illuminate the informal practices of water governance. This method navigates moral and methodological challenges through five photographic *routines*. The routines served as photographic praxis to critically engage with the human and non-human actors in Bhopal and Bhuj between September 2021 and January 2022.

I begin with a vignette from Bhopal, focusing on the informal practices of Overhead Water Tank (OHT) supervisor Ram Singh\*. This case illustrates visual ethnography's role in uncovering obscured informal practices within complex governance structures. Subsequent sections delve into the concept of informality, exploring its potential as a means for repairing governance structures and processes. Insights gleaned through photographic routines in Bhopal and Bhuj follow this discussion. The chapter concludes with an examination of how visual methods can complement textual analysis and reflections on how my positionality influenced the research trajectory.

#### 3.1.1. Why did Ram Singh shush Farhan?

*In September 2021, during my fieldwork in Bhopal, India, I stepped into the world of Ram Singh, a Municipal field supervisor responsible for overseeing the water supply of his assigned zone. His multifaceted duties encompassed monitoring the Overhead Water Tank (OHT), maintaining the pipe network, and ensuring smooth water delivery to the local citizens.*

*As part of my study, I conducted interviews with local residents, gathering oral testimonials about their water supply experiences. Repeated narratives of dissatisfaction with the supply emerged due to various factors like inadequate provision, substandard water quality, and erratic pressure. Interestingly, I observed their illicit measures to these predicaments, which mostly involved tinkering with the physical water infrastructure themselves. This resourcefulness sparked my interest in Singh's critical role at the OHT, a pivotal node in the water supply network. I was intrigued: how was he dealing with these challenges? What strategies did he employ to ensure a consistent water supply amidst scarcity?*



*As we talked, Singh projected an image of a diligent bureaucrat, committed to the rule book, seemingly untouched by the torrent of obstacles that accompanied water shortages. His responses danced around the challenges, skirting away from acknowledging the issues that his peers openly accepted, e.g., pressure from citizens, biased prioritisation, and lack of human and financial competencies. Farhan\*, a member of a local political party, present during our conversation, possibly influenced Singh's responses. Yet, Singh's steadfast denial of these challenges left me baffled. Despite my persistent questioning, Singh maintained his silence, amplifying my curiosity about the untold strategies he might have in place.*

*Unexpectedly, Farhan stepped in, recounting episodes of Singh's benevolence when water was dispensed free of charge to citizens. This revelation, standing in stark contradiction to Singh's narrative, took us both by surprise. Caught off guard, Singh swiftly shushed Farhan, conveying a subtle message that certain information should remain concealed from prying ears. The incident further propelled my curiosity about his underlying strategies, making me linger longer.*

*Post-interview, I observed Singh, who was perched under the looming water tank, engrossed in his newspaper while a few locals gradually joined him for their evening chat. It struck me how effortlessly Singh blended into the local landscape, sharing laughs and conversations with the passers-by (see Photograph 3). This realisation became apparent when observing through the camera of my smartphone, focusing on the exchange between Singh and the residents. As an observer, the smartphone's screen served as a visual frame which excluded distractions and allowed me to focus on the exchanges between Singh and the residents. I began to comprehend the significance of these personal relationships in Singh's public service.*

*I came to the realisation that Singh was trying to suppress any mention of these personal relationships, aiming to project an impartial image of himself. While not necessarily illegal, the subtle revelation of these relationships and Farhan's unintentional disclosure, indicated that admitting to the governance challenges would force him to reveal his informal strategies. This could jeopardise his position and potentially lead to his relocation to a different zone, uprooting the network he had painstakingly built over the years.*

*As I continued to observe and document, it emerged that Singh's team, primarily comprising migrant plumbers, worked in a hostile environment riddled with casteism, threats, and intimidation. Singh's personal alliances within the community acted as a protective shield, facilitating a smoother service delivery. He cleverly leveraged relationships to enable provision (albeit unequally) while ensuring a safety net for his subordinates against local prejudice. Yet, these strategies were deliberately kept under wraps, protecting the integrity of his job and his network. However, these strategies remained hidden, safeguarding Singh's position and his informal ways of water management.*



*Photograph 3: Left - The physical infrastructure - overhead water tank; Right - Social infrastructure that enabled access to the resource - in-person relationships.*

Thus, the incorporation of photographic methods in studying people's cases became an integral part of my ethnographic journey, providing me with a deeper understanding of the interplay between formality, informality, and the resilience of urban life. Unearthing the intricacies of urban Indian water management necessitates understanding these clandestine practices. Traditional research methods alone, like semi-structured interviews and desk study, often miss the nuances. Consequently, I propose a combined approach, integrating traditional methods with visual ethnography to unmask the instrumental role of repair in informal water governance.

### **3.2. On performing different forms of repair through informal practices**

Actors like Ram Singh often face the challenge of circumnavigating formal procedures to amend service shortfalls. By building networks with key citizens, Singh reduced potential hostility towards his subordinates, thus ensuring smoother maintenance operations. His manoeuvres within the formal water supply system, coupled with informal water distribution, effectively bridged the inherent gaps in these formal protocols. This was evident when residents grew frustrated with slow services or the use of non-local labour. In response, these personal networks became crucial, fostering understanding, patience and allowing for unhindered work.

Moreover, formal arrangements often involve lengthy bureaucratic processes. However, through nurturing informal networks, individuals like Singh can distribute risks and gather benefits, enhancing service provision through reparative practices. Here, the concept of repair goes beyond technical fixes: it signifies a governing approach to managing transitions. I delve into the concept of 'repair', recognised in the literature as a transformative mode adept at addressing complex governance challenges faced by Indian cities through informal mechanisms. This exploration underscores the need to view the informal as an integral component of urban governance rather than an anomaly.

The literature on repair circumscribes two perspectives. The first conceptualises repair as a reactionary process, striving to maintain the existing state and restore its original properties (Henke, 2017). Singh's use of social capital to address challenges in water supply exemplifies this. The alternate perspective positions repair as a sensibility that guides reparation as a mode of transition (Bhan, 2019). This viewpoint advocates long-term, community-focused approaches to rectify past colonial policies, ensuring equitable service provision. It emphasises collective memory, incremental change, and iterative processes (Bhan, 2019; Broto et al., 2021; Perry, 2020). These two facets of repair—reactive and reparative—are not opposed but exist on a spectrum, functioning in hybrid forms based on context.

Reactive repair and reparation require mobilising personal networks, collective memory, and local knowledge. Regional languages like Hindi proffer nuanced understandings to expand the meaning of repair with terms such as *Marammat* (returning to the original), *Rafu karna* (bolstering the old with the new), *Dosh rahit* (emphasising faultless repair), and *Sudharna* (seeking betterment for the future). These vocabularies provide a heuristic map for multi-faceted repair approaches within given constraints and opportunities through informal means.

Informality, therefore, is pivotal in steering transformative repair processes and structures, especially in managing contested resources. Drawing from the works of Roy (2005), McFarlane (2012) and Ahlers et al. (2014), I align with Roy's (2005) of urban informality as an organising logic – a system of codes governing repair processes. This logic is pertinent in a deregulated state where formal rules exist but are negotiated based on contextual conditions (Roy, 2005). Here, informal governance processes and structures do not operate in isolation or in the absence of the state but are mutually co-constitutive with formality, helping bridge gaps in service delivery (Ahlers et al., 2014; McFarlane, 2012).

The structure of informal governance resembles an ephemeral web that mobilises services as needed (Jaglin, 2014), coalescing when necessary and allocating tasks into manageable units based on availability, capacity, and resources, often circumventing formal regulations (Ahlers et al., 2014). With the formation of new coalitions, shared understanding and vocabulary materialise to enable service delivery. These relationships, characterised by their temporary and flexible nature, demonstrate resilience to shocks and adaptability to changing circumstances (Ahlers et al., 2014).

I analyse how informality's organising logic plays a role in addressing governance challenges such as mitigating departmentalisation, extending capacities in resource-deficient situations, or nudging behavioural change. Ram Singh's actions demonstrate this adaptation as he negotiates with users to ease access to infrastructure. He confronts challenges, employing emotional intelligence by empathising with his subordinate staff's needs, bridging resource provision gaps, and risking his job to meet citizen demands, thus identifying repair pathways within a deregulated context. These diverse repair pathways, laden with obscure narratives and nebulous interpretations, make their understanding a complex task, thus necessitating the development of a non-intrusive methodology to unravel how the informal processes and structures enable repair.

Hence, my research aimed to reveal the intricate ways in which actors perform informality to facilitate repair. I describe the actions as performances due to their embodied meaning and vulnerability to situational contingencies, which prompt individuals to address governance barriers hindering water service provision. This chapter emphasises the centrality of ethnographic methodology in discerning these equivocal and ambivalent practices, enabling an understanding of repair in its various forms in Bhopal and Bhuj.

### **3.3. On capturing and making visual narratives about the role of informality in repair**

Based on ethnographic scholarship, I outline a methodological framework to capture the varied and informal manifestations of repair. An ethnographic sensibility provides an epistemological framework for "*experiencing, interpreting, and representing*" (Pink, 2013, p. 34) the multifarious performances of informal practices reflexively shaped through social norms and beliefs (Gobo, 2008). I employed textual and photographic methods to explore how repair manifests through informal means. I examine repair through personal networks, local knowledge, and grey practices—a realm between legality and illegality, where certain practices are accepted but not necessarily supported by formal codes.

In my investigation of informal water governance in Bhopal and Bhuj, I conducted 64 interviews along with 10 separate observations with users, government authorities, practitioners, NGO actors, and academics. Complementing the interviews, I made *thick* descriptions (Kharel, 2015) to cross-reference participant accounts and unravel the intricate web of informal relations. The ethnographic notes captured the practical execution of formal mandates, highlighting the actual roles of actors and identifying gaps between their actions and prescribed responsibilities. By examining the decision chain of actors at different hierarchical levels, I obtained insights regarding their vulnerabilities and intentions in adopting informal practices. This holistic approach deepened my understanding of the informal management of water resources.

However, investigating repair practices posed three dilemmas:

- i. Capturing and accurately representing transient oral accounts are often abstract and challenging to document.
- ii. Addressing discrepancies between respondents' oral accounts and observed actions on the ground, resulting from overlooked mundane actions or intentional concealment of facts related to illicit activities.
- iii. The moral dilemma of documenting illicit activities, questioning the researcher's responsibility in reporting and the potential implications of being involved in unethical practices.

To navigate these dilemmas, I coupled ethnography with photographic methods. While the former allowed for reflection, clarity, and a record of the information, it did have limitations (Adhikari, 2018). Primarily, recording observations introduced a delay, potentially leading to missed real-time details. Photographic methods helped mitigate this issue by providing a visual record that supplemented the textual notes. The immediacy and accuracy afforded by this visual analysis helped bridge the gaps left by textual methods.

In my research, I used a Fujifilm XT3 Digital Camera and OnePlus 9 mobile phone for photography. Predominantly, I utilised my smartphone due to its less intrusive nature. The compact size and perceived casualness of the mobile phone, as opposed to the more conspicuous digital camera, made individuals more comfortable, thereby easing the consent process for photographs. The immediate on-screen viewing facilitated quick assessment and reflection, while the viewfinder or screen frame provided focused perspectives. The photography process often occurred after or alongside verbal interviews, influencing the framing of photographs. Employing an iterative approach, starting with an 'establishing shot' (Thirunarayanan, 2006), I zoomed in and out, juxtaposing fragments with the whole to decode ambiguous oral utterances and address the first dilemma of capturing oral accounts accurately.

To address the second dilemma, which involves resolving discrepancies between narratives and actions, I practised visual ethnography by actively engaging in shared activities with the respondents, such as walking, eating, and even waiting in cramped spaces outside offices. I moved with the camera, following the subjects' movements, continuously observing, analysing, and photographing while immersing myself in the experience. Using the camera or mobile phone screen, I repeated this cycle of observation and reflection. This sensory approach acknowledges that human experiences are not solely verbal or cognitive but also shaped by sensory perceptions, emotions, and bodily sensations (Pink, 2015).

Resolving the third moral dilemma of documenting illicit activities involved adopting two ethnographic approaches: immersive presence (Roncoli et al., 2009) and maintaining distance

using the *rear-mirror technique* (Wamsiedel, 2017). Immersion fostered trust and understanding of interviewees' vulnerabilities, capturing implicit cues and adding meaning to photographs. Conversely, the rear-mirror technique helped me maintain a critical distance from illicit scenes and activities. This allowed me to reflect on my biases and influence, ensuring I did not become too immersed in or influenced by the illicit activities being documented. By maintaining a critical distance, I ensured ethical integrity and respect for participants' confidentiality. Striking a balance between these approaches enabled ethical considerations to guide documentation and analysis while respecting participants' rights and confidentiality.

My background as a photojournalist and documentary photographer significantly influenced my approach. Documentary photography (Hodson, 2021; Kratochvil, 2001) allowed me to delve into the intricacies of subjects over three months. Budgetary constraints necessitated a smaller sample of interviewees focused on a well-connected group to explore repair practices across various levels, which was facilitated by snowball sampling. Conversely, photojournalism (H. S. Becker, 1995; Kratochvil, 2001) honed my ability to capture and represent stories within limited timeframes, negotiate morally ambiguous situations, and foster agility.

Drawing on these insights, I developed five routines to navigate the dilemmas encountered in my fieldwork. I term them as routines as they were informed by theoretical insights on repair and implemented during fieldwork. These routines serve as a photographic praxis that facilitates reflexive visual analysis. In the subsequent section, I will explain how these photographic routines, applied singularly or combined, helped interpret various forms of repair in Bhopal and Bhuj.

### **3.4. Visual tales of repair in Bhopal and Bhuj**

Examining the informal water governance in Indian cities Bhopal and Bhuj reveal varied impacts on repair processes due to contrasting geographical and socio-political contexts. Bhopal, a state capital in central India, abundant with lakes, leans heavily on the distant Narmada River for water supply. Meanwhile, Bhuj, in an arid region on the north-western national border, rebuilt its water system following a 2001 earthquake, sourcing this from a canal linked to the Narmada River, located 700 km away (Sheth & Iyer, 2021).

Bhopal's water governance is fragmented and dominated by governmental bodies that often overshadow environmental NGOs and civil society's efforts, creating sporadic measures. Despite relying on an external source, the Narmada River, water security concerns appear less emphasised, reflecting a lack of urgency and unified vision for water management. This disconnect is noticeable in a report from the Comptroller and Auditor General (CAG) of India (2021) and is reinforced by my fieldwork observations.

Conversely, Bhuj, a city hardened by repeated natural disasters, exhibits community resilience and self-organisation (Sheth & Iyer, 2017). Such conditions spur the growth of civil society

groups addressing water security issues. However, my study reveals discordant approaches between these civil society organisations and local authorities, side-lining the former's efforts and downplaying the conditions which produced water issues.

Both cities showcased distinctive repair practices in response to their unique circumstances. In Bhopal, local governmental actors grappled with citizens' threatening behaviour (exemplified by Ram Singh) and departmental fragmentation (illustrated by Miheer Soni below). Water users in Bhopal also adopted informal strategies to sustain water provision by tinkering with the infrastructure. Meanwhile, Bhuj residents demonstrated remarkable resilience, blending their professional duties with personal resolve to address water security issues, embodying the city's strong inclination towards community-led repair initiatives.

### 3.4.1. Scale shifting photography: Unveiling interpersonal infrastructure as a means to repair



*Photograph 4: Scale shifting photography at OHT*

Intrigued by Ram Singh's informal approach to water management, revealed during his interaction with Farhan, I found it challenging to fully comprehend the influence of personal alliances on water access. With the aid of scale-shifting photography, I ventured deeper to try and make sense of the role of these alliances. Following the interview, I stepped away from the spot to capture an establishing shot and found myself instinctively drawn to photographing the larger infrastructure elements. The camera's zoom feature allowed a telescopic focus on subtler elements near and beneath the water tank, eliminating visual distractions within the frame. This oscillation between zooming in and zooming out allowed me to observe the relationship between part and whole, prompting a critical examination of what the infrastructure entailed. The collage of zoomed-in and zoomed-out photographs is seen in Photograph 4. Initially drawn by the colossal scale of the overhead tank, the scale shifting led me to realise that the real essence of infrastructure lay in the personal alliances that choreograph the flow of water to the desired recipient.

### 3.4.2. Walking with a Camera: Uncovering repair tactics to navigate inter-departmental relations



*Photograph 5: (Left) Soni (in blue checked shirt) waiting for the PWD officers. Meanwhile, his team exchanged greetings with PWD's team. (Right) Soni flanked by his men, displaying support and strength*

Miheer Soni\*, an Assistant Engineer at Bhopal Municipal Corporation (BMC), deals daily with the intricate balance of maintaining water supply, managing public dissatisfaction, and obtaining repair permissions. To comprehend these challenges, I joined Soni on an inspection walk with the State Public Works Department (PWD).

This first-hand experience unveiled the tensions Soni faces and his innovative approaches to alleviating bureaucratic constraints. The assertive demeanour of the higher-ranking PWD officers was evident in their tone and gestures. In contrast, Soni displayed calmness as he methodically noted down the requirements, communicating them to his subordinates, illustrating his hierarchical position (see Photograph 5 right).

However, at the junior level, the hierarchy blurred. I observed camaraderie between Soni's subordinates and the PWD junior reporting team, which offset the stern exchanges among their superiors. Their informal interactions (see Photograph 5-left) bridged bureaucratic gaps and expedited operations, contributing to the mending or *marammat* (returning to the original) of siloed operations.

Using a camera to document this walk offered a deeper understanding of Soni's professional environment, revealing nuances missed in our initial interview. While the walk could have been purely observational, the camera provided a focused lens, facilitating real-time analysis without peripheral visual distractions. Through this lens, the intellectual curiosities from our previous conversation – power dynamics, loyalty, subservience, obedience, fear, pride, and respect – were visually depicted in their daily context. This inspection walk highlighted Soni's adeptness at navigating within the intricate relational dynamics to ensure operational smoothness.



### 3.4.3. Sensorial Knowledge Production: Decoding intention and situated expertise



**Photograph 6:** (Left) Patel presenting piles of paperwork required for lake notification requirements; (Right) Jadeja engaging in soil-covered Q&A session while kneeling on the ground

During my interactions with Ramanbhai Patel\* and Jyotsnaben Jadeja\* in Bhuj, I was absorbed in multi-sensory experiences. Patel, a dedicated citizen, showcased his decade-long quest to get a lake notified, which is a long formal process of declaring a body of water as a lake in an urban area. Despite his unwavering effort, evidenced by stacks of diligently arranged documents, success remained elusive. Similarly, Jadeja, who worked in an action research organisation, conducted informative Sunday walks about the city's water sources and distribution. Her patience was evident as she took time to answer tangential questions, broadening the group's understanding beyond the immediate walk.

While their methods might not yield instant results, they were instrumental in fostering awareness of these issues among citizens. Patel and Jadeja's resilient efforts, showcasing their understanding of the challenges faced, embody the essence of *sudharna* (seeking betterment for the future). Their perseverance was tangible: I felt the weight and aged scent of Patel's paperwork, symbolising the endurance required for such advocacy (see Photograph 6 left).

Likewise, while photographing Jadeja, my own dust-covered state mirrored her disregard for the soiling of her clothes as she addressed inquiries (see Photograph 6 right). Participating in shared activities with a camera made me aware of the peripheral influences on repair, such as dedication and thorough knowledge, shedding light on their ambitions and challenges.

#### 3.4.4. Improvising photographic composition: Strengthening the representation of repair



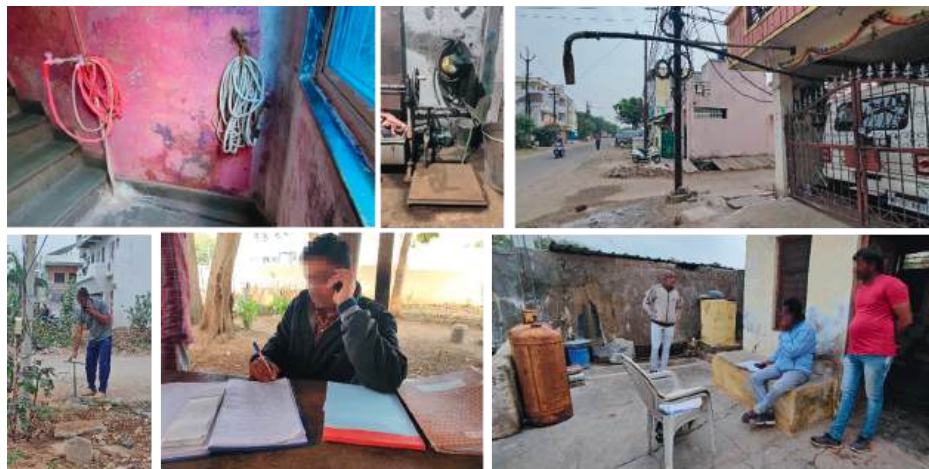
*Photograph 7: (Left) The School principal in Bhuj explaining the importance of rainwater harvesting and conservation to his students centred in the photograph); (Right) A supervisor effortlessly showing WhatsApp-enabled phone to display water kiosk update*

Visual ethnography, an ongoing dialogue between camera and photographer, allowed my photographs to engage with the conceptual understanding of repair. These photographs embrace both content and composition.

Pareshbhai Patel\*, a Bhuj school principal, initiated a systemic change by co-teaching water conservation and pollution to school children. Given the slow pace of educational curricular changes at the state or country level, without further ado, Patel collaborated with advocacy organisations and co-taught lessons as extensions of regular classes. His central position in the photograph 7 (left) captures his dynamic energy and optimism, essential for the reparative process of *sudharna* (seeking betterment).

In another instance in Bhopal, an interviewee highlighted how modern digital platforms like government websites can overwhelm citizens, leading many to use tools like WhatsApp for public participation. Citizens, municipal operators, and party workers rely on these groups to share events and complaints, often supported with photographic evidence. This free social media platform effortlessly coexists with modern digital platforms. The image of a phone showing WhatsApp platform held by a supervisor (see Photograph 7 right) illustrates the accessibility and integration of such tools alongside modern digital platforms, embodying *rafu karna* (bolstering the old with the new).

### 3.4.5. Long-form Documentation Approach: Discovering tools for repair



**Photograph 8:** First series showcasing ordinary objects to tinker the original physical water supply infrastructure. Second series - Mobile phone becoming a norm to access easily.

Observing patterns requires distance and demarcation. Patterns often hide in the mundane details of everyday life, subtly emerging through focused observation. My photographic journey, initially centred on the ordinary, unfolded over months and revealed a coherent pattern.

In Bhopal, citizens expressed concerns over groundwater quality, inadequate water pressure, and irregular supply. To address this, they innovatively tinkered the existing infrastructure with everyday objects. The photo series (see Photograph 8) spotlights these adaptations, e.g., in the first series: (1) specialised pipes connecting to a water pump for propelling water to upper floors, (2) an unauthorised pressure pump, and (3) a pipe for transferring groundwater from private bores into water tankers; subtly hiding their unofficial status. Local authorities were typically aware of these adaptations; some even tacitly approved them as they filled gaps in the water system. In Bhuj, despite available redressal platforms for water issues, grassroots government employees used mobile phones to improve accessibility to water services and respond to emergencies, becoming tools for socio-technical repair.

Upon revisiting the photographs, a recurring theme emerged. Over time, images initially captured for various reasons revealed a consistent theme of inventive adaptations and technology's role in social repair, embodying *dosh-rahit* (faultless repair).

## 3.5. Discussion & conclusion

Through my field experiences and engagement with literature, I have appreciated the importance of informal governance processes and structures facilitating repair across legal, geographical, and social contexts. Often undervalued due to their clandestine nature, I employed an

ethnographic approach, complemented by digital photography, to capture these expressions of repair. Navigating the dynamics of informal governance arrangements presented me with three dilemmas, wherein the five routines proved invaluable for their resolution.

The first dilemma, ensuring the accuracy of oral accounts, was addressed by employing visual ethnography sensorially. This approach proved a powerful tool for understanding dedication, especially in cases like Jyotsnaben Jadeja's. Oral accounts, while providing hints at her intentions, often left much to interpretation. However, visual cues enabled a comprehensive interpretation of her unspoken markers when decoded using the routines.

The second dilemma was the resolution of discrepancies between oral accounts and actions. For vulnerable individuals like Ram Singh, who was worried about his job, verbal disclosures led him to alter or conceal facts. I cross-referenced with others, such as plumbers and supervisors, to verify Singh's account. This triangulation process highlighted inconsistencies, revealing the complexities of his situation. Additionally, looking through the screen or viewfinder highlighted overlooked elements, like everyday interactions, emphasising the significance of personal relationships within these informal systems.

The third dilemma was the ethical aspect of documenting illicit activities. The notion of 'distance' (Rose, 1997) was crucial in managing ethical challenges during research. Determining the extent of immersion, mainly when covering sensitive topics like illicit water pumps and knowing when to withdraw, was essential. I opted to respect the users' oral accounts, documenting their approaches through the less conspicuous medium – the smartphone. This approach was validated when local authorities acknowledged their awareness of these illicit measures, resolving my moral dilemma.

These routines revealed two types of repair—reactive and reparative. The former is a temporary measure to restore the status quo, while the latter focuses on localised efforts to facilitate reparation. Photographic methods, when incorporated with ethnography, provided a nuanced understanding of these dynamics. Integrating photographs and interview notes enriched the textual analysis, serving as meaningful 'codes' within qualitative coding software like ATLAS.ti.

Being an Indian ethnographer in unfamiliar Indian cities, I encountered 'situated dilemmas' (Ferdinand et al., 2007), influenced by my identity. Consent posed a challenge for some, as formal documentation was required for capturing informal actions in line with my institution's best practices. Affiliation with a Dutch organisation compelled me to have written consent, which a few participants perceived as a liability. To address this, I utilised verbal consent, maintaining ethical engagement while respecting Dutch transparency norms. Balancing these contrasting ethical considerations proved challenging throughout the research process.

Recognising my inherent subjectivity as a researcher was crucial to this study. My Indian nationality offered familiarity with the study sites. This cultural proximity facilitated trust with

research subjects, allowing them to share 'open secrets' (Wamsiedel, 2017). Despite sharing an Indian identity, my metropolitan roots in Mumbai differed from the realities in Bhopal and Bhuj. Meanwhile, my Dutch association amplified perceived power differentials. The balance between these experiences guided my approach to power differentials and the concept of distance. The interviews became a platform for mutual exchange and personal reflection, prioritising respondents' motivations and perspectives over purely technological and planning aspects. This approach acknowledged the value-laden, historically contingent nature of oral accounts.

### **3.5.1. Returning to Ram Singh**

Ram Singh's shushing gestures highlighted his balancing act between the covert aspects of interpersonal arrangements and formal mandates. Officially, he managed the OHT and water distribution, but pressure from residents led to unequal resource allocation. This deviation built essential personal networks with residents, facilitating operations. His informal management rectified governance processes which were ill-equipped for citizen-based threats.

The camera's lens and employment of the routines served as a gateway, illuminating the latent dynamics inhabiting the space beneath the Overhead Tank (OHT). Through this visual exploration, it became evident that this seemingly mundane location bore significant weight in dictating the decisions of water distribution.

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## Chapter 3

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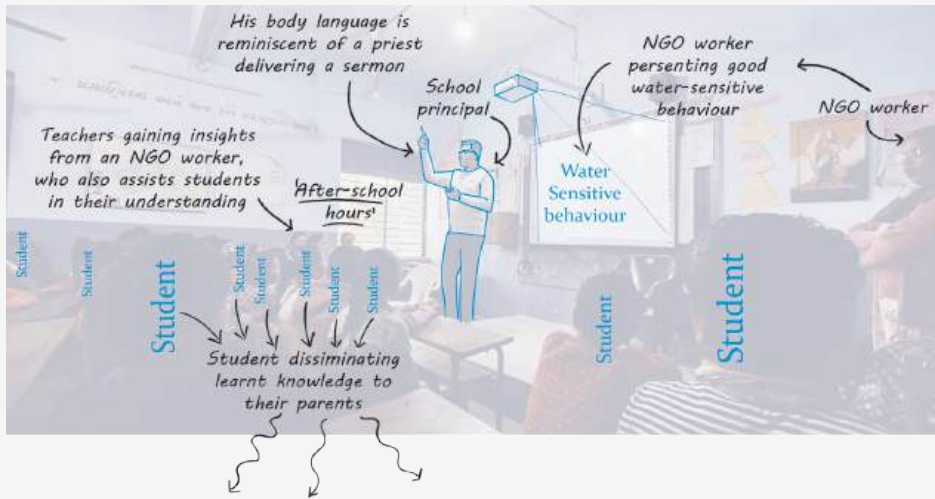
# 4

Framing governance  
capacities to mobilise  
reparation through  
informality in Indian cities



**Photo Narrative 6: Teacher as water managers**

*As I stood to photograph this image, I was immediately drawn to the resourcefulness within the classroom—a space creatively adapted to accommodate two batches of students despite limited resources. The makeshift arrangements, from the seating to the teaching aids, reflected a community’s determination to overcome constraints. The principal, leading the lesson, delivered it with the intensity of a sermon, instilling in the students a sense of responsibility toward water conservation. This moment highlighted the powerful agency at work—an agency that not only educates but also empowers, contributing to broader processes of social and environmental repair. One of the long-term strategies for achieving water sensitivity lies in instilling water-sensitive behaviours in the younger generation. Typically, this is done by integrating topics such as rainwater harvesting, recycling wastewater, and other water-saving practices into the school curriculum. Educating children on these topics begins to dismantle the taboos associated with water recycling and creates a new generation of informed citizens. These students, in turn, become young change agents, capable of navigating social stratifications such as religion, gender, and caste to influence their families and communities.*



However, in regions like Bhuj, where water-related challenges are urgent, the formal process of modifying school curricula is often slow and mired in bureaucratic delays. Recognising the pressing need for action, a group of school principals took proactive steps outside these formal structures. They formed alliances with environmental NGOs to co-create a tailored curriculum focused on water sensitivity for students in classes 5th to 7th. These lessons were delivered in extra classes after school hours, allowing them to bypass the lengthy governmental approval process and address the community's immediate needs directly.

In this chapter, I explore how this collective agency emerged to enable reparation. I trace the socio-cultural and institutional dynamics that brought these principals together with environmental NGOs, examining how they employed 'jugaad'—a frugal innovation approach deeply embedded in the local context—to creatively reimagine the school curriculum. To understand this, I develop a conceptual framework in this chapter that captures the capacities enabling these reparative efforts, particularly those leveraging informality to achieve water sensitivity. This framework serves not only as an analytical tool to assess the extent to which these efforts contribute to repair but also as a practical guide for governance actors to further nurture and enhance these capacities.

In this chapter, I present my conceptual framework of reparative governance capacities, which allows me to study how informality supports reparative governance to support water sensitivity. At its heart, this approach aims to reshape our understanding and practice of urban water governance, ensuring it is attuned not only to the complexities of urban environments but also to the enduring legacies of colonialism and the societal stratifications that continue to shape these spaces. While reparative urban water governance does entail a normative orientation—rooted in ideals of equity and justice—it is also a pragmatic necessity. This approach compels stakeholders to engage with water governance through a problem-oriented and systemic lens, addressing specific challenges tied to historical injustices and the practical need for sensitive management. This involves creating conditions that both mobilise and respond to the diverse dynamics of reparation.

To achieve this, I have identified two key functions of reparative urban water governance: consolidation and *jugaadu* (improvising within constraints). The capacities lens serves as a pivotal structuring tool, offering a way to further conceptualise and operationalise an agency-based perspective on how these functions are enacted by urban governance actors. The capacities lens is recursive: by enacting these functions, urban governance actors interact with, and change their institutional governance contexts, and thus create conditions for reparative governance.

This perspective is crucial for understanding how specific governance activities manifest in the capacities needed for reparative water governance. I conceptualise reparation as a transformative approach from a decolonial standpoint. Simply adopting transformation literature may not be sufficient for resource-constrained and culturally complex contexts like India. Reparation focuses on historical injustices while also tackling persistent water challenges in a systemic manner, particularly across intergenerational timelines.

The capacities framework presented here functions as a systemic heuristic—a tool that helps to explain and assess the development and enactment of these capacities through informality, and to identify the conditions that emerge as a result. It poses essential questions: Who is involved in developing and enacting these capacities through informal networks and practices? Which actors, including those beyond the water sector, are necessary, and what roles do they play in exercising these capacities to enable repair? How do informal mechanisms facilitate their inclusion? In what ways are shifts toward reparative urban water governance emerging, particularly through informal engagements? What capacity gaps hinder this progress, and how can these capacities be nurtured and supported informally, especially in contexts that have historically marginalised certain voices?

As discussed in Chapters 5 and 6, as well as in the current chapter, the capacities framework offers a wide range of applications. Beyond serving as a descriptive analytical tool to assess capacity gaps and evaluate the extent of reparation underway, it also holds the potential to support reparative research approaches. These approaches aim to co-create tangible and actionable

pathways, fostering transdisciplinary collaborations that cultivate capacities in contexts where the wounds of colonialism are most deeply felt—particularly in the Global South.

The capacities framework is applied in subsequent chapters to explore how informality supports reparation, offering insights into the collective capacity to organise, address challenges, and the structural conditions that arise from these efforts. This approach also contests the traditional rationalist perspective of agency by incorporating Latour's (2007b) theorisation, which acknowledges the unintentional and non-linear dimensions of human action.

#### **4.1. Necessity for reparative governance capacities**

Cities across India are currently grappling with what can only be described as 'persistent' (Loorbach, 2010) water challenges. This term, 'persistent', underscores the urgent and complex interplay between physical issues like scarcity, pollution, flooding, and unequal access, deeply intertwined with societal and governance-related factors (Kumar, 2018; McKenzie & Ray, 2009; Pandit & Biswas, 2019a; World Bank, 1999). These persistent challenges are not just a matter of concern but a call to action, demonstrating entanglement with entrenched social hierarchies, such as caste, gender, seniority, governance issues like siloed operations, a predilection for technological fixes, and engineering-centric solutions that often exacerbate unequal access. This is especially pronounced in India's secondary cities, where rapid urbanisation, population growth, and constrained resources intensify the struggle to meet escalating demands (Cities Alliance, 2019; Pathirana et al., 2018; Sankhe et al., 2010). The inadequacy of conventional approaches is increasingly evident, underscoring the pressing need for a paradigm shift in urban water management (Mihir Shah Committee, 2016).

The WSC paradigm, or 'water sensitivity,' is a compelling response to these multifaceted challenges. The WSC paradigm proposes an integrated approach that harmonises water supply, sanitation, and stormwater management with the goals of equity, sustainability, and social cohesion (Bettini et al., 2012; Bichai & Flamini, 2017; Fletcher et al., 2015; Mguni et al., 2022; Wong & Brown, 2009). However, adopting the WSC paradigm within India's resource-constrained, culturally diverse, and post-colonial context requires governance capacities attuned to deep-rooted socio-political inequities. In the absence of such transformative governance, introducing new values risks reinforcing existing hierarchies and inequalities, ultimately exacerbating the very issues it aims to address (Giordano & Shah, 2014).

As India navigates this post-colonial landscape, it continues to grapple with legacies of internal colonialism. The uncritical adoption of Global North approaches introduces considerable risks, as bureaucratic hierarchies, entrenched caste and class structures, and a persistent reliance on colonial knowledge frameworks perpetuate the marginalisation and exclusion of indigenous and local practices (Dey, 2019; Sultana, 2023). A critical engagement with these dynamics is essential, as the wholesale application of external models risks deepening existing inequalities and obstructing the potential for genuine and equitable change.

Within this context, the concept of reparative governance emerges as a helpful approach to conceive of and embed transformative governance in the global South context. Reparative governance aims to directly address socio-political inequities and historical injustices that conventional approaches often overlook (Broto et al., 2021; Cadieux et al., 2019). Grounded in the principles of justice and equity, as articulated by Broto et al. (2021), reparative governance seeks to intertwine the process of transformation with restorative justice, ensuring that the benefits of transformation are not only equitable but also sustainable across generations (Forsyth et al., 2022). In absence of such approach, the risk looms large that efforts to implement water-sensitive management will succumb to superficial changes—often dismissed as greenwashing—wherein the underlying socio-political issues remain unaddressed or are exacerbated by the reinforcement of exclusionary value systems.

This research conceptualises the capacities for reparative governance to interrogate informality as a crucial governance modality in Indian cities. The forthcoming section provides a critical review of the literature that underpins the development of this framework.

## **4.2. Decolonising transformation: Pathways to reparation**

### **4.2.1. Coloniality and the need to decolonise governance**

Although India achieved formal independence from British colonial rule in 1947, the vestiges of colonialism persist in the form of internal coloniality, where power remains concentrated in the hands of a privileged elite who exert control over marginalised groups (Dey, 2019). This enduring influence, often described as a ‘colonial hangover,’ continues to shape socio-environmental policies favouring rapid development and extractive practices at the expense of ecological sustainability (Calvert, 2001; Chavez, 2011; D’Souza, 2002; Sultana, 2023). Far from being mere remnants of the past, these colonial structures represent a deliberate continuation of what Arora & Stirling (2023) term ‘colonial modernity.’ This modernity perpetuates itself through mechanisms like the ‘extension of controlling imaginations’ and the ‘expansion of toxic extraction,’ which sustain the dominance of colonial logic in contemporary governance.

In the realm of urban water governance, these colonial logics are particularly glaring. As Sultana (2023) highlights, colonial modernity within water governance entrenches power structures within organisations, institutions, and political frameworks, echoing the hierarchies established during British rule. This is evident in prioritising large-scale, technocratic projects—such as dams and centralised water systems—often heralded as symbols of modernity. However, these projects are, in reality, a continuation of colonial ambitions to control and exploit natural resources for economic gain (Kaika, 2004). While ostensibly modern, such initiatives frequently disregard local knowledge systems and the needs of marginalised communities, leading to the displacement of populations and disruption of natural water cycles (Kaika, 2004).

Moreover, D’Souza (2006) provides a historical perspective on how British colonial administrators reconfigured local flood management systems, shifting from practices that harmonised with

natural flood cycles to a more controlling, domestication-oriented approach. This colonial rationality has left India grappling with significant water-related crises, which can be directly traced to these entrenched logics. Arora & Stirling (2023) describe this as the ‘expansion of toxic extraction,’ a practice that persists in contemporary policies favouring resource-intensive approaches, such as deep groundwater extraction and extensive river diversions. While framed as essential for development, these policies systematically undermine environmental sustainability and social justice. The continued exploitation of natural resources under the guise of modernisation underscores the urgent need to dismantle these entrenched colonial logics that persistently exploit and marginalise vulnerable communities.

The influence of coloniality extends beyond physical infrastructure and practices, as it deeply permeates the very frameworks of knowledge and the construction of meaning within water governance. At the core of this ongoing influence is what Arora & Stirling (2023) term the ‘extension of controlling imaginations.’ This aspect encapsulates a colonial mindset that persistently views local ecosystems and communities as assets to be controlled and exploited for economic gain. This mindset, rooted in colonial legacies, continues to shape contemporary governance, where top-down, technocratic approaches are often imposed, side-lining the wisdom embedded in local knowledge systems and disregarding the lived experiences of marginalised communities. These modern practices, cloaked in the rhetoric of progress, are, in actuality, a continuation of the same exploitative logic that has long marginalised these communities and degraded their environments.

To genuinely decolonise water governance, there is an urgent need to undergo a process of unlearning, undoing, and relearning (Asadullah, 2021). This involves not only dismantling existing frameworks of control and extraction but also actively rejecting the ongoing influence of colonial modernity in environmental management. Recognising this necessity compelled me to explore alternative, localised approaches to transformative governance.

As I will elaborate in the following sections, this study situates and advances transformative governance in India through the approach of *reparation*, a process aimed at addressing and rectifying the enduring impacts of coloniality on water management practices.

#### **4.2.2. Decolonialising transformation through reparation**

In rethinking urban water governance in India, it becomes increasingly apparent that the conventional models of transformative governance—predominantly shaped by perspectives from the Global North—are not fully equipped to address the intricate socio-historical and ecological contexts of this region. These models often presuppose a pathway to transformation that can be resource-intensive and, if not carefully managed, risks eroding accountability and deepening existing social divides (Giordano & Shah, 2014).

In the literature on sustainability and resilience, there is a growing recognition that pursuing transformative goals, while necessary, is not sufficient in itself. It is urgent that these goals



intersect with justice-oriented objectives to ensure that transformative actions remain transparent and accountable (Lele et al., 2018b). In this light, the management of water must be envisioned in ways that are both ecologically sustainable and socially just (Bichai & Flamini, 2017). Examples of this can be seen in initiatives such as the restoration of urban lakes, which, while seemingly positive, can inadvertently lead to processes like gentrification, disproportionately affecting indigenous populations and marginalised communities (H. Kim & Jung, 2019). This underscores the critical need to intertwine sustainability efforts with justice goals, ensuring that our actions do not result in exclusionary or inequitable outcomes (Lele et al., 2018).

To navigate these complexities, I find it useful to engage with the concept of ‘reparation’ or ‘repair’ as a mode of transformation. In reviewing the literature, two distinct understandings of repair emerge. The first, often viewed through the lens of maintenance, is concerned with restoring systems to their original state or capacity (Henke, 2017; Houston, 2017). This approach is typically reactive, addressing breakdowns or failures within existing systems. While it may be necessary in certain circumstances, this form of repair can inadvertently reinforce the status quo. However, repair has the potential to be a deliberate and strategic mode of transformation, offering hope for a more equitable future.

The second understanding of repair, which resonates more deeply with me, frames it as a transformative action. In this context, repair is not merely a technical intervention but a deeply political and social process to address the colonial extractive practices embedded within our urban water systems. It seeks to foster long-term, intergenerational healing (Bhan, 2019; Broto et al., 2021; Cadieux et al., 2019; Durbach, 2016; Webber et al., 2022). Responding to Lele et al.’s (2018) call for the integration with justice goals, this notion of reparative governance is grounded in the principles of restorative justice, emphasising healing, reconciliation, and the mending of relationships as central to the pursuit of sustainability (M. Forsyth et al., 2022; Gibbs, 2009; M. Kim, 2021; Vasilescu, 2022). Scholars such as Frick-Trzebitzky (2017) and Ureta (2014) also argue that repair can be reimagined as a proactive, iterative process that integrates new practices with existing traditions to mend towards contextually appropriate solutions.

Therefore, I conceptualise repair as an incremental, iterative process that actively seeks to heal the divisions wrought by historical injustices. It is a process that draws on cultural knowledge and local practices, ensuring relevance and avoiding the perpetuation of harm. Crucially, this form of repair cannot be imposed from above; it must emerge organically, in alignment with the emancipatory processes described by Ghosh et al. (2021). Through this reparative lens, we can reimagine water governance in India—not as a series of superficial fixes but as a deeper transformation that genuinely serves the diverse needs of all communities. In particular, for the secondary cities in India, where financial limitations, social stratification, and colonial legacies intersect in complex ways, the idea of reparation becomes crucial. It is through this lens that we might begin to address the social inequities that undermine our water sensitivity goals.

To mobilise this transformative approach, the role of informality is crucial. Informality provides the flexibility needed to effectively implement reparative practices, particularly in India's secondary cities' dynamic and often urgent conditions. By leveraging the capacities of informal networks, repair can transcend its traditional boundaries and become a powerful tool for systemic transformation. This approach not only addresses immediate crises but also lays the groundwork for long-term, sustainable change in urban water governance.

### **4.3. Understanding how informality contributes to capacities towards reparation**

While the study could have moved directly to framing capacities from this point, doing so would have inadvertently assumed a formal governance context— one typically characterised by structured, procedure-driven decision-making processes, where actors come together within an established governance hierarchy, government-centred, with relevant regulatory tools and mechanisms to enable coordinated implementation of solutions (Innes et al., 2007; Meijer & Ernste, 2019; Weber et al., 2009). However, this assumption does not hold true, in most countries, but especially in a post-colonial context like India. Here, governance arrangements are complex, characterised by a rich social and cultural fabric intertwined with a constant state of crisis. Such a setting often renders formal governance structures inadequate for providing the necessary adaptability and responsiveness.

Informal governance prevails in India but is often overlooked or dismissed as unsuitable (Anand, 2017; Burt & Ray, 2014; Ranganathan, 2014; Roy, 2009). While informality is often utilised to categorise housing, locality, and labour in most literature, contemporary scholars review it as a mode of operation (Ahlers et al., 2014; Cleaver, 2002; Kooy, 2014; McFarlane, 2019; Roy, 2005; Wahby, 2021). However, while informal governance offers adaptability, it also carries risks, such as the potential to perpetuate inequalities or be co-opted by powerful actors if not carefully managed (Funder & Marani, 2015). Furthermore, recognising that informal governance can occasionally yield outcomes lacking in accountability and transparency, I nevertheless seek to explore how this form of governance might be leveraged to enable reparative practices. I aim to build upon the potential of informality while devising approaches that address its pitfalls.

In this study, I explore the potential role of informality in facilitating reparative governance. While scholars have extensively described, illustrated, and analysed informal governance, they have not yet demonstrated how its attributes can be mobilised to proactively achieve reparative urban water governance. With its inherent plurality and obscurity, the interpretation of informality presents a challenge in developing a structured framework that effectively captures its agency and potential (Ahlers et al., 2014) Below, I delve into the literature on informal governance to elucidate its reparative acumen, which could be harnessed to develop a capacity framework.

Informality governance represents a complex and dynamic 'organising logic' (Roy, 2009) that emerges within deregulated environments. This organising logic is crucial in contexts where

formal governance structures are insufficient or disconnected from local realities. Informality mobilises authority, personnel, and knowledge within existing constraints, facilitating the co-production of services and blending formal and informal practices to create hybrid governance systems (Ahlers et al., 2014; McFarlane, 2019; K. Schwartz et al., 2015; Wahby, 2021). These blending challenges the formal-informal divide and allows for greater flexibility and innovation, particularly in contexts where rigid formal mechanisms fall short (Cawood et al., 2022; McFarlane, 2019; Misra, 2014; K. Schwartz et al., 2015; Wahby, 2021).

Moreover, informality plays a critical role in reconfiguring power dynamics by breaking down the centralised control typical of formal institutions. This enables more inclusive and adaptive governance arrangements necessary for reparation. Southern cities often operate through a complex, ephemeral web where entities coordinate differentially, showcasing their ability to adapt to various situations and contexts (Jaglin, 2014). This adaptability highlights the mutually constitutive relationship between formal and informal practices, fostering new collective meanings and goals through negotiation and collaboration (McFarlane, 2012, 2019).

By challenging entrenched power hierarchies, informality empowers marginalised groups to participate in governance processes, fostering a more equitable distribution of resources and opportunities. As both state and non-state actors adapt and innovate within deregulated environments, they create governance models that are more responsive to local needs and realities (Funder & Marani, 2015). Informality is not merely a reaction to the absence of formal regulation but a strategic mode of governance that reconfigures power dynamics and offers innovative solutions to complex socio-political challenges (Ahlers et al., 2014; K. Schwartz et al., 2015).

Also, the multi-scalar nature of informal governance operates simultaneously at various levels—from local communities to regional and national scales (Clever, 2002; Funder & Marani, 2015; Mayaux et al., 2022). As informal practices gain traction and are widely adopted, they can influence broader governance frameworks, leading to systemic change. This potential for upscaling is critical where formal governance structures are either too rigid or too disconnected from on-the-ground realities. By enabling the diffusion of innovative practices across different scales, informality can contribute to transforming entire governance regimes, making them more adaptable to changing social and environmental conditions.

Informality in governance, particularly in water management, possesses significant reparative potential. Its process of creatively adapting and blending different elements to address complex challenges fosters socio-ecological sustainability. Informal practices, rooted in local knowledge and values, often arise out of necessity in resource-constrained environments. While they can lead to sustainable, context-specific solutions, the extent to which informality drives sustainable transformations depends on its capacity to challenge and reshape dominant paradigms of resource use (Mayaux et al., 2022).

At its core, informality in governance is characterised by its humane aspect, relying on intrinsic motivations and emotional intelligence. This supports the agency in collectively building and sustaining a speculative vision (Badami, 2018; Córdoba et al., 2021; Funder & Marani, 2015). This capacity encourages the design and implementation of frugal innovation driven by individual interest, though it also acknowledges that intrinsic drives can be self-serving or altruistic.

Thus far, the interpretation of informality, with its attributes of plurality and obscurity, has posed significant challenges in creating a structured framework that effectively captures and mobilises its agency (Ahlers et al., 2014; K. Schwartz et al., 2015). The lens of governance capacities offers a valuable means to bridge this gap by harnessing the action-oriented potential of informality to facilitate reparative governance.

To operationalise informality within this context, I focus on two key capacities: *consolidative* and *jugaadu*. These capacities offer a way to engage with the nuances of informal practices in a manner that honours their potential for reparation. *Consolidative* capacity refers to the ability to bring together diverse groups, fostering the conditions necessary for self-organisation and sustained, inclusive collaboration. This capacity is crucial in contexts where formal structures may fail to accommodate the complexities of local governance. *Jugaadu* capacity, meanwhile, embodies the resourcefulness and adaptability that are often necessary in post-colonial settings, allowing actors to navigate and challenge the lingering effects of colonial legacies. Through frugal innovation and contextually appropriate strategies, *jugaadu* capacity helps address water challenges in ways that are both feasible and locally resonant.

These capacities provide a lens through which to understand how informality can be more than a stopgap measure or a response to the absence of formal regulation. Instead, when viewed through the governance capacity framework, informality emerges as a strategic mode of governance that reconfigures relationships between state and non-state actors blurs the boundaries between legality and illegality and offers innovative solutions to complex socio-political challenges. By focusing on these capacities, I aim to explore how informal practices, despite their inherent complexities, can be harnessed as a catalyst for social justice and environmental sustainability.

The governance capacity framework also enables us to delve deeper into the agency of actors within informal governance. It reveals both conscious and subconscious motivations behind their actions, as Cleaver (2002) highlighted. Drawing on Latour's (2007) theorisation of agency, I acknowledge that actions within these capacities are often non-linear and unintentional, challenging the reduction of informality's complexities into overly simplistic models. Recognising the varied worldviews, motivations, and intentions that actors bring to the table allows us to appreciate the diversity of practices that informality fosters. This understanding is critical in decolonising traditional governance approaches, which often impose rigid frameworks that do not align with local realities.

Furthermore, it is essential to recognise that both agency and institutions, as products of colonialism, can perpetuate colonial structures. The socio-political power arrangements embedded in everyday practices frequently reinforce these entrenched structures, often maintained by elite groups with authoritative power. The conditions that support the capacities of informality are thus crucial in determining whether informality is truly reparative and, if so, to what extent.

Drawing inspiration from the transformative urban climate governance model developed by Hölscher, Frantzeskaki, et al. (2019), this framework offers a pathway to address the specific challenges of reparative informal water governance. By focusing on consolidative and *jugaadu* capacities, this approach connects the activities of informal actors with emerging governance arrangements, providing insights into how informality can be mobilised to achieve reparative outcomes and enhance water sensitivity in resource-constrained contexts.

#### **4.4. Iterative methodology for developing the capacities framework**

The framework I present here identifies two interdependent capacities of informality—**consolidative** and ***jugaadu***—that are crucial in driving reparation by highlighting the conditions supporting its underlying organising logic. While this dissertation focuses on the final framework, it is also imperative to discuss the iterative process through which this framework evolved, particularly as a decolonial researcher committed to ensuring that it reflects the complexities and realities on the ground.

In previous sections, I underscored the complexities of informality, shaped by subconscious motivations, and influenced by intricate cultural and resource constraints. It became evident that the framework could not be constructed from existing literature, especially given that much of this literature is rooted in the Global North, with only a few contributions from the Global South. At the outset, the scarce availability of transformative research on informality—particularly in the context of reparation—posed a significant challenge. The available literature included works by Indian and Southern scholars supported by Southern institutions (Bhan, 2019) and Southern scholars affiliated with Northern universities (Anand, 2017; Badami, 2018; Chattaraj, 2019; Ghosh et al., 2021). Additionally, there were contributions from Northern scholars funded by Northern organisations but working in Southern contexts (Ahlers et al., 2014; Cleaver, 2002; McFarlane, 2012). This body of work provided the initial foundation for the framework, offering insights into how informality could manifest as a mode of operation and a potential mode of transformation.

These writings furnished me with the vocabulary and initial conceptual tools, introducing nuances such as the term '*jugaad*'—a concept far more contextually appropriate than 'frugal innovation'. However, a notable realisation emerged during fieldwork: the normative foundation of repair became apparent only after observing the varied manifestations of transformative informality. This realisation underscored the necessity of integrating a justice-oriented perspective into the

framework; without this intersection, a framework solely focused on transformative informality would remain incomplete.

To illustrate the iterative process that led to the final framework, I outline three key iterations:

### **Framework 1: Pre-fieldwork, literature-informed conceptualisation**

The initial framework emerged from a comprehensive review of existing literature. I consulted works on governance capacities akin to, or supportive of, consolidation, such as integration (Freeman et al., 2013), cooperation (Dang et al., 2016), flexibility (Termeer et al., 2015), collaboration (Ansell & Gash, 2008), integration and orchestration (Hölscher, Frantzeskaki, et al., 2019). Although I drew upon Bhan's (2019), conceptualisation of consolidation, the broader literature—primarily from Global North perspectives on governance, transition, and transformation studies—guided me in delineating consolidative capacity as fostering directionality and alignment through self-organisation. This resulted in a somewhat regimented framework, reflecting a 'saviour complex' embedded in much of the literature. Three key dimensions were identified: 1) establishing directionality by fostering diverse ownership over strategic goals (Benford & Snow, 2000; Hölscher, Frantzeskaki, et al., 2019; Wolfram, 2016) in addition to empowering actors to shape their environment in a targeted direction (Avelino et al., 2020); 2) mediating cross-boundary collaboration through roles like knowledge brokers (Pahl-Wostl, 2009), bureaucratic and policy entrepreneurs (Teske & Schneider, 2016), and 3) trust-building (Leahy & Anderson, 2008; Ubels et al., 2010). These dimensions emphasised the need for alignment towards larger goals, mediation to resolve discrepancies, and trust-building within actor coalitions.

In examining *jugaadu* capacity, I analysed governance capacities, including transformative (González & Healey, 2005; Hölscher, Frantzeskaki, et al., 2019), unlocking (Hölscher, Frantzeskaki, et al., 2019), connective (Bettini et al., 2016) and innovative (Furman et al., 2002) capacities. I specifically built on the transformative and unlocking capacities outlined by Hölscher, Frantzeskaki, et al. (2019), with a focus on embedding novelty creation and exposing unsustainable path dependencies, which were particularly pertinent to my research. These studies, however, often overlook Southern attributes such as frugality, constraint, improvisation, and resilience. Therefore, I further nuanced *jugaadu* capacity by integrating principles of frugality and local logic, encapsulated in the Indian notion of *jugaad*—an 'innovative fix' in Hindi (Badami, 2018).

*Jugaad* captures a range of practices, including makeshift solutions, frugal innovation, and temporary measures, which reflect resilience amidst material, monetary, political, and legal constraints (Badami, 2018). Due to the specificity of *jugaad*, I drew on literature from India and similar post-colonial contexts. For *jugaadu* capacity, I identified three dimensions: 1) collective ways of knowing (Wolfram, 2016b) to foster awareness of system dynamics, path dependencies, and obduracies (Burch & Robinson, 2007); 2) discrete crafting and improvisation (Chattaraj, 2019; Elmqvist et al., 2018; Kemerink-Seyoum et al., 2019), and 3) establishing credibility and

anchoring (Chattaraj, 2019; Ubels et al., 2010). This iteration of the framework emphasised innovation and action yet required more sensitivity to the existing cultures of repair and the subtleties of informal governance.

### Framework 2: Fieldwork-informed revisions and on-site analysis

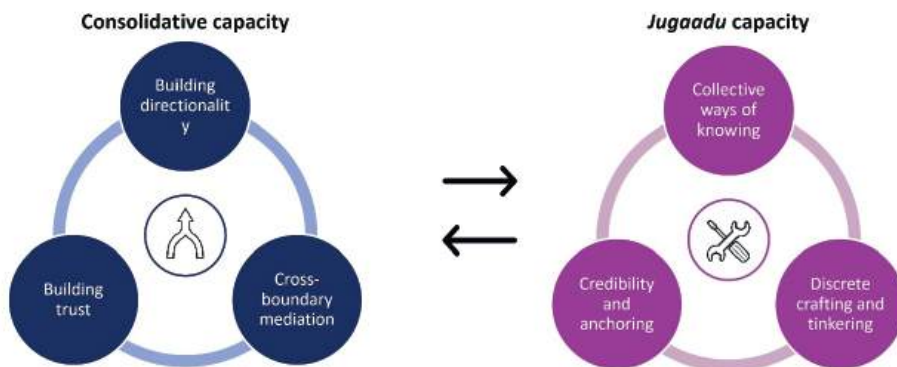
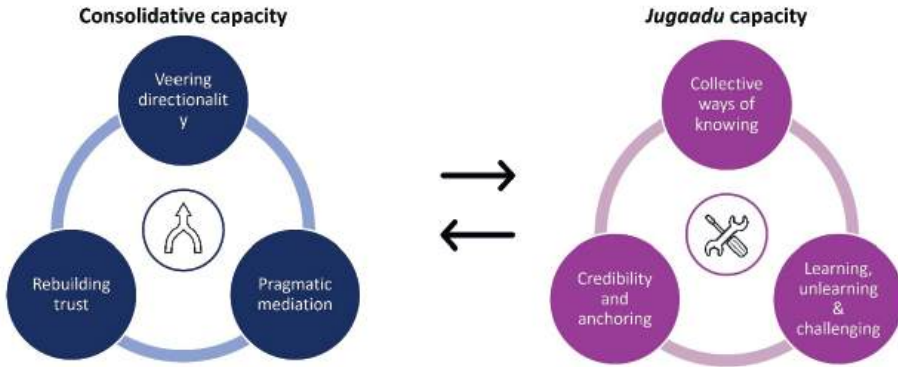


Figure 2: Capacities framework: Version derived only from desk research

My understanding of the framework evolved through field visits and visual ethnography. For example, the initial term ‘building’ within consolidative capacity implied a prescriptive, top-down approach. However, insights from the field prompted a re-evaluation of this terminology. Taking a decolonial perspective that values diversity and resists hegemonic structures, I replaced ‘building’ with ‘veering’ to reflect a more nuanced, inclusive approach to directionality. Literature on *veering* (Royle, 2011) supported this re-framing. Similarly, the dimension of mediation was refined to ‘pragmatic mediation’ to emphasise adaptation within existing constraints rather than imposing unrealistic ideals (Giordano & Shah, 2014). Field observations further highlighted that trust deficits differ significantly from distrust, shifting the focus towards ‘rebuilding’ trust rather than establishing it from scratch (Cheung, 2013; P. H. Kim et al., 2009; M. Williams, 2012). Consequently, the framework evolved to feature 1) veering directionality, 2) pragmatic mediation, and 3) rebuilding trust.

In my initial characterisation of *jugaadu capacity*, I focused solely on ‘doing.’ However, insights gained from workshops underscored the need to expand this to include ‘unlearning’ and ‘learning’ as essential components, a theme further explored by K. Becker (2008), Porter (2010), van Oers et al. (2023), and Visser (2017). This shift acknowledged that decolonising governance demands challenging entrenched wisdom and embracing alternative approaches. Fieldwork insights highlighted that it was not a lack of effort but rather a deficit in the recognition, routinisation, and validation of these efforts, as discussed by Dewulf et al. (2020). Thus, *jugaadu capacity* was revised to encompass 1) collective ways of knowing, 2) learning and unlearning, challenging conventional practices, and 3) establishing credibility and anchoring.

**Framework 3: Post-analysis refinement and literature re-engagement**



*Figure 3: Capacities framework revised after incorporating reflections from the field and the workshops*

The final iteration of the framework emerged during the analysis and writing phases, as I reconnected fieldwork findings with the literature, further refining the framework through abductive reasoning (Timmermans & Tavory, 2012). This phase involved recognising gaps where certain results did not align with existing dimensions, necessitating a rethinking and reconfiguration of the framework. This final version of the framework reflects a more comprehensive and nuanced understanding of the capacities required to effectively operationalise informality, integrating insights from field observations and scholarly literature.

The iterative process, informed by the literature review and fieldwork, enabled the development of a capacity framework that is theoretically rigorous and grounded in the practical realities of informality and its nuanced comprehension of reparation. By concentrating on consolidative and *jugaadu* capacities, the framework bridges the activities of actors with emerging governance structures, providing a critical perspective to understand how informality can be leveraged to achieve reparative outcomes and enhance water sensitivity in resource-constrained settings.

The latest version of the framework is described further.



## 4.5. The capacities framework: An overview

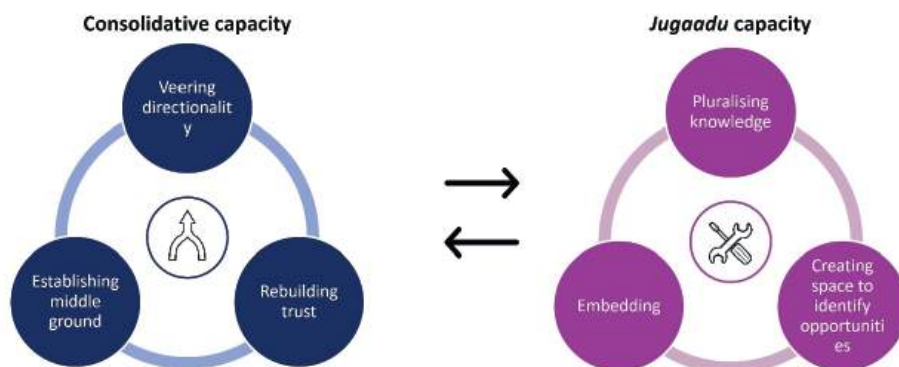


Figure 4: Capacities framework enabling reparation

### 4.5.1. Consolidative capacity

*Consolidative capacity* reflects the ability of actors to strengthen or develop conditions that facilitate the self-organisation of diverse groups. Bhan (2019) introduces the concept of ‘consolidative’ in the context of the Global South to describe the nuanced self-organisation and directional efforts evident in these settings. The term ‘consolidate’ is deliberately chosen for its connotation of uniting distinct entities into a cohesive whole while preserving their individual identities. It embodies a pluralistic approach that balances individual and collective roles, where actors with varied backgrounds and skills collaborate, challenging and reshaping traditional theories and methods to pursue a shared, forward-looking vision.

This dynamic is particularly pronounced when those who have experienced past injustices join forces with decision-makers working towards long-term goals within complex cultural and social frameworks. In such scenarios, informal governance structures become sites of healing, enabling actors to engage in processes that aim to mend through collaboration. Bhan (2019) further refines this concept by building on Hölscher et al.’s (2019) idea of orchestrating capacity, emphasising that consolidation transcends mere coordination in Southern contexts. It focuses on networks of healing rather than just task completion, adhering to mandates where associations are often voluntary, temporary, and discreet, facilitating better risk anticipation and a deeper understanding of diverse perspectives (Anand, 2017; Mayaux et al., 2022).

Incorporating the element of healing into reparation enriches consolidative capacity, encouraging sustained engagement, holistic thinking, and the inclusion of marginalised voices. It fosters the ability to appreciate viewpoints that have previously been dismissed. This capacity is driven by intrinsic motivation and perseverance, enabling actors to combine their varied agencies,

mandates, and interests to pursue restorative justice through informal means (Funder & Marani, 2015).

Enhancing consolidative capacity requires *veering directionality*—a process of aligning individual actions with broader, collective goals within institutional constraints (Dahlmann & Stubbs, 2023). This alignment is achieved by synthesising actions, sharing information, and fostering a collective sense of responsibility (Kudtarkar, 2021). Veering directionality nurtures a shared sense of duty and empathy, enhancing motivation and fostering emotional and intellectual collaboration that transcends mere incentivisation (Córdoba et al., 2021).

However, in contexts where distrust towards authorities, specific communities, actors, organisations, and particular disciplinary and knowledge systems, efforts might be perceived as isolated tasks rather than as part of a unified mission unless trust is actively rebuilt (*trust rebuilding*). Addressing distrust—a deeper and more complex issue than merely rectifying a trust deficit—requires acknowledging the vulnerabilities and concerns of marginalised groups wary of further mistreatment (P. H. Kim et al., 2009). To mend relationships and bolster consolidative capacity, clarifying the roles of actors, visibly demonstrating the efforts made by authorities, and effectively communicating these efforts are essential for rebuilding trust (Leahy & Anderson, 2008).

*Establishing a middle ground* through pragmatic mediation is critical. This approach creates essential frameworks, elucidates trade-offs, reinterprets local norms, and addresses translation challenges among diverse actors. Strategic brokers with systemic awareness and inter-scalar connectivity play a vital role in facilitating agreements in contexts where policies are disconnected or socially contentious (Funder & Marani, 2015; Mayaux et al., 2022). The middle ground encourages intellectual and emotional collaboration, creating spaces for understanding and aligning with collective goals, generating commitment to goals.

In the following section, a table will outline the specific activities that support or enable the conditions for consolidative capacity.

<i>Dimensions</i>	<i>Contribution of informality</i>
Veering directionality	<p>Translating and aligning the goals of various delivery configurations with the larger mission (Huitema &amp; Meijerink, 2013)</p> <p>Sparking intrinsic motivation to self-organise, align individual actions, and foster a sense of ownership towards the collective goal (Dahlmann &amp; Stubbs, 2023; Huitema &amp; Meijerink, 2010)</p> <p>Creating situated awareness that encourages forming alliances to collectively mitigate crises within institutional constraints (Córdoba et al., 2021; Kudtarkar, 2021; Zhao &amp; Wu, 2020)</p>
Rebuilding trust	<p>Increasing familiarity with local staff and processes to build trust with the government or former transgressors (Leahy &amp; Anderson, 2008)</p> <p>Assisting in organising events to rebuild a sense of community, which is essential for generating social trust and sustaining reciprocal interactions in heterogeneous neighbourhoods (Koshy &amp; Smith, 2023; Leahy &amp; Anderson, 2008)</p> <p>From the user's perspective, understanding the learning processes of the transgressor (authoritative party) helps mitigate distrust by acknowledging bureaucratic pressures, powerlessness, top-down management, legal discrepancies, and resource constraints (M. Williams, 2012)</p> <p>Publicising efforts and celebrating the success of technical skills and socio-ecological initiatives can help regenerate confidence in technical competency (Leahy &amp; Anderson, 2008)</p> <p>Focusing on outreach and exploring avenues to address unchecked distrust (Cheung, 2013) aids in developing shared interests and values (Leahy &amp; Anderson, 2008)</p>
Establishing middle ground	<p>Devising methods to provide usable legal tools, access to understandable data, and safe spaces to discuss failures (Huitema &amp; Meijerink, 2010; M. Williams, 2012).</p> <p>Extending current mandates to support various forms of mediation, including boundary spanners, knowledge brokers, cultural mediators (Anand, 2011; Cleaver &amp; Whaley, 2018; Jaglin, 2014b) and bureaucratic and policy entrepreneurs, in addition to the usual roles of leaders (Funder &amp; Marani, 2015; Hughes &amp; McKay, 2009; Mayaux et al., 2022)</p> <p>Highlighting the need for neutral, community-friendly organisations like schools, NGOs, and sports centres to serve as mediation spaces (Kudtarkar, 2021)</p>

*Table 4: Dimensions and activities supporting consolidative capacity*

#### **4.5.2. Jugaadu capacity**

This capacity is characterised by the ability to improvise through contextually viable methodologies, ideologies, and organisational structures, aiming at dismantling colonial legacies and fostering inclusivity in addressing challenges within resource-constrained environments (Elmqvist et al., 2018; Funder & Marani, 2015). While some may question the novelty of such innovations due to their cost-effectiveness, their true value lies in the timely adaptation and repurposing of existing knowledge as conduits for reparation. *Jugaadu* capacity encourages a flexible and adaptive approach to governance, integrating local knowledge and practices

to address historical injustices and fostering long-term healing and sustainability in water management (Cawood et al., 2022; Wahby, 2021).

Furthermore, *jugaadu* capacity is evident in efforts to *pluralise knowledge* by challenging entrenched disciplinary, geographic, institutional, and epistemological hegemonies. It promotes engagement with diverse forms of knowledge, including those that have been marginalised, to establish channels for transdisciplinary exchanges (Yates et al., 2017). This capacity thrives not only on scientific data but also on acknowledging collective memory—current and past experiences that aid in anticipating risks, identifying opportunities, and informing the efficiency of policies and mandates (Funder & Marani, 2015; Sultana, 2023). Given the persistence of coloniality, which often subordinates Indigenous, feminist, and socio-ecological practices, making space for this ‘othered’ knowledge becomes an integral dimension of *jugaadu* capacity (Sultana, 2023). This process also entails unlearning entrenched beliefs and relearning or re-establishing Indigenous practices that have been dismissed, which is central to the functioning of this capacity.

Frugality characterises this capacity as it is manifested through efforts to *create safe spaces* for deliberation, prioritisation, and the *identification of opportunities*. This fosters persistent optimism and courage in the face of uncertainty and fear of failure, reducing reliance on external justification and using constraints as resources for reparation (Funder & Marani, 2015). The decolonial perspective further underscores that opportunities do not necessarily involve action but also the critical process of undoing. The embeddedness of unsustainable practices can be painful to undo, as it impacts associated dependent practices. Therefore, creating informal processes that support methods such as storytelling to share failures is crucial, revealing new possibilities and fostering a more contextual approach (van Borek & Abrams, 2023; Ziervogel et al., 2016).

Moreover, *jugaadu* capacity is manifested in efforts to *embed improvisations* within the socio-political fabric. By relying on organic, informal arrangements and a flexible, trial-and-error methodology, communities can continuously adapt and refine processes, fostering a deep sense of ownership over the work rather than simply aiming for specific outcomes (Haapala et al., 2016). Informal collaborative decision-making is key to overcoming the rigidity of unsustainable practices, allowing for critical assessment and resistance to top-down approaches. This approach creates room for more contextually relevant solutions better suited to local conditions (Clever, 2002; Funder & Marani, 2015). At the heart of this capacity is the ability of actors to use their courage and emotional intelligence to discern when and how to implement these improvisations effectively within their specific contexts (Chandran et al., 2014; Kudtarkar, 2021; Zhao & Wu, 2020). However, improvisations could also risk perpetuating colonial structures and inequalities without careful consideration. Therefore, experiential, and systemic knowledge is crucial for assessing the broader socio-political context and ensuring that these improvisations challenge and transform existing power dynamics rather than reinforce them (Mayaux et al., 2022).

Below, I outline the specific activities and conditions that support and enable *jugaadu* capacity.

<b>Dimensions</b>	<b>Contribution of informality</b>
Pluralising knowledge	<p>Acknowledging past events (significant or insignificant) to anticipate risks, identify opportunities, and enhance the effectiveness of policies and mandates (Funder &amp; Marani, 2015; Haapala et al., 2016)</p> <p>Drawing on diverse forms of knowledge to build resilience in the face of uncertainty, integrating various perspectives and experiences (Koshy et al., 2022)</p> <p>Supporting the inclusion of Indigenous knowledge to challenge colonial systems and ensure that Indigenous perspectives are respected and valued in decision-making processes (Sultana, 2023)</p>
Creating space to identify opportunities	<p>Promoting alternative methods of narrative and experience-sharing to share successes and learn from community experiences, revealing new possibilities and fostering innovation (van Borek &amp; Abrams, 2023; Ziervogel et al., 2016)</p> <p>Creating safe platforms for deliberation and dissent, where even failures can be openly discussed, assessed, and learned from, encouraging continuous improvement (Chattaraj, 2019; Cornwall, 2004; Healey, 1997)</p>
Embedding	<p>Facilitating continuous adaptation through trial-and-error methodologies fostering a sense of ownership over processes rather than just focusing on outputs (Haapala et al., 2016)</p> <p>Utilising bricolage to integrate local knowledge and practices ensuring that innovations are embedded within the cultural and social fabric of the community, thereby enhancing their relevance and sustainability (Funder &amp; Marani, 2015; Haapala et al., 2016; Mayaux et al., 2022)</p> <p>Enabling flexible and organic institutional designs that allow communities to modify and adapt innovations over time, fostering long-term resilience and reducing dependence on rigid, top-down structures (Haapala et al., 2016)</p>

**Table 5:** Dimensions and activities supporting *jugaadu* capacity

## 4.6. Further applications

The capacities framework serves as a crucial tool for analytically assessing and proactively nurturing city governance capacities, aiming towards reparative water governance in cities of the Global South. In Chapter 5, the framework's utility is demonstrated in assessing the extent of the development of these capacities and supporting governance actors to enable reparation. Further, Chapters 6 and the Intermezzo outline the potential of this framework to facilitate transformative research approaches aimed at co-creating actionable strategies within a transdisciplinary research setting.

Additionally, the framework has provided five guiding considerations for structuring my research on reparative water governance. These considerations build on insights from Hölscher et al.'s (2019) capacities framework for transformative climate governance. Firstly, it facilitates an intergenerational perspective by integrating Indigenous practices and addressing historical

injustices. This approach aspires to extend beyond traditional sectoral boundaries, grounding governance in restorative justice principles and illuminating the synergies and trade-offs among competing objectives, enriching urban water governance with a comprehensive and inclusive viewpoint.

Secondly, the framework offers an agency-based understanding of governance by emphasising the role of intrinsic motivations and subconscious aspects of repair. It humanises governance capacities, acknowledging the complexity of these processes and affirming Indigenous practices that have been marginalised by conventional, often colonial, resource management strategies. This focus on agency highlights the deeper, often overlooked, drivers behind effective governance.

Thirdly, the framework challenges the often-negative perceptions of informality, rooted in colonial legacies, by advocating for decolonisation through culturally relevant concepts such as 'pragmatic' mediation and '*jugaad*.' These concepts are more attuned to the local cultural logic, thereby enhancing the operationalisation of capacities and offering a more contextually appropriate approach to reparative governance.

Fourthly, the framework elucidates the interconnectedness of consolidative and *jugaadu* capacities, demonstrating their cumulative potential for reparation. It guides the reassessment and realignment of coalitions, ensuring they are better equipped to pursue long-term goals of restorative justice. This interplay between capacities enables a more dynamic and responsive approach to governance.

Finally, by identifying capacity gaps, the framework critically assesses whether efforts are genuinely reparative or merely reactive. It sheds light on the cultural relevance and feasibility of reparative initiatives, helping to nurture these capacities strategically within urban governance structures. This capacity to identify and address gaps ensures that governance efforts align with social justice and sustainability goals.

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# 5

Repairing urban water  
governance through  
informality: Comparing  
how informality nurtures  
governance capacities for  
reparative transformation  
in Indian cities



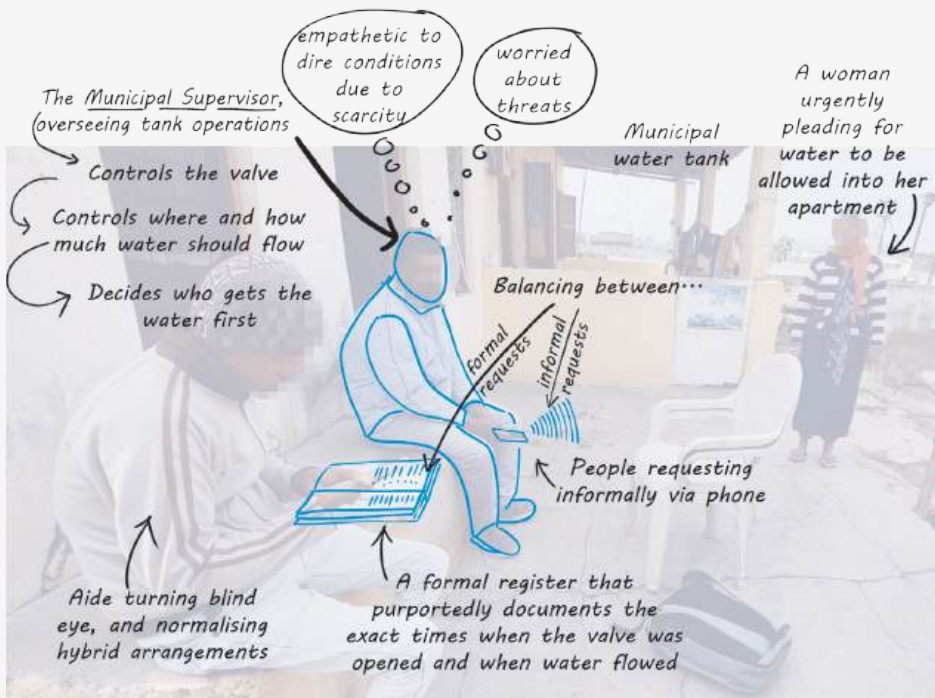


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**Photo Narrative 7: The humane tank supervisor**

*In this photograph, the intersection of formal and informal practices comes to life. The tank supervisor, the central figure, sits with his essential tools—a worn register for meticulously recording the timing and destination of each water release, noting which residential society received water and which operator handled the task. His aide, quietly observing, is poised to follow instructions, ensuring the information is logged as required.*

*But there's another layer to this scene. The supervisor's mobile phone rests in his hand, a gateway for personal requests, complaints, and the occasional angry outburst from residents. It's a tool of a different kind—one that channels the informal, human side of his role.*



As I capture this moment, a female resident enters the frame, her expression a mix of urgency and hope. She steps forward, making a personal plea: her neighborhood's water supply has run out, and she's asking for help. The supervisor listens, then turns to his aide for confirmation—when was the last time water was sent to her area? After a brief check, he agrees to her request. In this quiet exchange, the rigid schedule of water distribution bends. It's not the official process that guides his decision, but rather the immediacy of her need, perhaps tinged with the weight of her words. It's a subtle defiance of procedure, driven by a subconscious pull—maybe altruism, maybe the pressure of her plea. This scene is just one glimpse into the broader narrative of how informal governance intertwines with formal systems in cities like Bhuj and Bhopal. The upcoming chapter will explore these dynamics further, examining how such practices have shaped, challenged, and, to an extent, contributed to the transformative repair of governance arrangements towards sensitivity.

## Abstract

Addressing water challenges in resource-constrained 'Southern' cities requires 'reparation', a transformative governance approach rooted in restorative justice. In India, formal governance often struggles to tackle social stratification and colonial legacies effectively, sometimes even reinforcing them. This study compares how informality can foster reparative transformation towards the Water Sensitive City (WSC) approach, further referred to as 'water sensitivity' in secondary cities like Bhuj and Bhopal. Our findings reveal that informal strategies foster consolidative and jugaadu (innovation within constraints) capacities, which help reveal the multifaceted nature of water problems, dismantle hierarchical power structures, promote care, and enable the improvisations crucial for reparation. However, informality also risks perpetuating existing inequalities and may overlook long-term environmental sustainability without a clear normative focus on reparation. To address this, combining informal approaches within formal regulatory frameworks mitigates the instability and lack of sustainability inherent in informality. While informal strategies provide flexibility and innovation, formal frameworks offer the necessary stability, legitimacy, and continuity, ensuring the embedding of reparative efforts in the socio-cultural fabric. In conclusion, informality is critical to reparative efforts as it facilitates the incorporation of transdisciplinary perspectives from non-experts and sustains necessary improvisations through fostering a sense of care, ultimately advancing water-sensitive governance.

### Keywords

cities; Global South; governance capacities; informality; reparative transformation; water sensitive city (WSC)

### Status

This paper is accepted by the *Water Policy* journal.

### Fit with overall thesis

This paper fits within the broader thesis by presenting a comparative analysis of reparative urban water governance capacities in the secondary Indian cities of Bhuj and Bhopal. It directly addresses Sub RQ 2: How are capacities for reparative urban water governance mobilised through informality in secondary Indian cities? Through a comparative methodology, this study highlights how informality shapes reparative efforts in both cities, integrating marginalised perspectives and fostering a care-oriented approach to water management. By challenging entrenched technocratic norms and introducing culturally embedded values into governance practices, the paper contributes to the thesis's exploration of how informal mechanisms contest existing power structures and drive more contextually sensitive governance outcomes. The insights gained from this comparison underscore the role of informality in enabling reparation in resource-constrained urban settings.

## 5.1. Introduction

Cities in the Global South are increasingly adopting the Water Sensitive City (WSC) approach to address the escalating challenges of providing reliable, safe, and equitable water services (Mguni et al., 2022). These challenges are exacerbated by climate change, deteriorating infrastructure, and rapid urbanisation, which significantly strain efforts to protect ecological resources and serve marginalised communities (Bichai & Flamini, 2017). These issues are particularly pronounced in secondary cities, where infrastructure development often lags behind population growth (Marais & Cloete, 2017). In response, existing water management models, rooted in the ‘modern infrastructure ideal,’ tend to prioritise filling these infrastructural gaps (Bichai & Flamini, 2017). However, these technocratic and standardised solutions often remain disconnected from local ecological needs, overlook systemic issues, and fail to address deeply rooted social inequalities that influence access to water resources (Kaika, 2004).

In contrast, water sensitivity envisions a future where water resilience becomes a catalyst for societal transformation, advocating for decentralised, integrated approaches that not only meet technical needs but also require and promote social change (Bichai & Flamini, 2017). These approaches engage with the socio-political and historical injustices of the colonial past, demanding more democratic and inclusive governance (Mguni et al., 2022). However, transforming towards water sensitivity, especially in resource-constrained and socially complex settings like Indian cities, requires governance approaches that address infrastructural, cultural, and institutional shifts. This should emphasise a pragmatic approach to adapting to resource and social limitations rather than introducing entirely new structures and values that could become cumbersome and potentially cause more harm (Giordano & Shah, 2014).

Reparative governance, as we define it in this context, is a form of transformative governance crucial for addressing the socio-political inequities and historical injustices entrenched in colonial legacies that persist not only in imported infrastructures but also in institutions, perpetuating social and ecological problems that conventional approaches often overlook. By intertwining transformation with restorative justice, reparative governance actively works to rectify longstanding injustices, ensuring that the benefits of transformation are equitably distributed and sustainable across generations (Broto et al., 2021). Without such an approach, efforts to implement water-sensitive management risk falling into the trap of superficial changes—often termed greenwashing—where the root socio-political issues remain unaddressed, or even exacerbated, by reinforcing the status quo with new, exclusionary value systems (Kaika, 2004). By focusing on incremental, context-sensitive change, reparative governance aims to address the historical and socio-political inequities embedded in water governance, thereby repairing the socio-political fabric, and ensuring that the transformation is both just and enduring across generations (Wahby, 2021).

Informality serves as the empirical context within which water governance operates in Indian cities, mainly where formal structures are inadequate or disconnected from local realities

(McFarlane, 2012; Roy, 2009). Recognising how informality functions is essential for understanding how shifts toward reparative governance can be facilitated, enabling transformation in resource-constrained and socially complex settings. In settings characterised by diverse social structures, historical legacies, and cultural norms, we examine water governance in Bhuj and Bhopal to explore how informality functions as an organising logic within deliberately deregulated environments and supports reparative practices. These deregulated contexts demonstrate the strategic withdrawal of regulatory power, shaping how resources are allocated, and authority is exercised, potentially enabling the participation of non-state actors, such as local communities and informal networks (Roy, 2009).

A crucial question in advancing reparative governance is how informality can reconfigure power dynamics to enable historically marginalised groups to gain a voice in decision-making, and how this approach can promote equitable resource distribution through continuous negotiation and bargaining with rigid governance structures. Unlike traditional governance, which often relies on rigid, technocratic methods, informality fosters co-production through 'hybrid' systems that blend formal and informal practices, making governance more 'fluid' and responsive to local needs (Ahlers et al., 2014; Wahby, 2021). However, informality is not always equitable or just—it can provide adaptive solutions where formal systems fall short, but it also risks entrenching patronage, reinforcing pre-existing hierarchies, or creating new exclusions (Funder & Marani, 2015). While we acknowledge these potential pitfalls, our focus is on examining how informality's qualities can be leveraged in secondary Indian cities like Bhuj and Bhopal to balance adaptability and equity while critically engaging with the risks it poses in shaping governance outcomes. Although, the previous studies have highlighted the transformative potential of informality, less attention has been given to understanding how actors' agency within informal governance arrangements mobilises resources, facilitate participation in decision-making, and drive knowledge production and dissemination to achieve reparation. To address this gap, we assess these dynamics through the lens of governance capacity, extending the work of Hölscher, Frantzeskaki, et al. (2019) to study how informal practices are enacted—examining how and by whom informality is driven, the conditions it creates for organisation, innovation, and flexibility, and whether these conditions enable reparative outcomes by addressing socio-political inequities and historical injustices This agency-focused perspective also allows for exploring the conscious and subconscious motivations behind informal actions, enabling an assessment of whether the intentionality driving these practices aligns with the objectives of reparation. In addition to examining the underlying motivations and intentions governing actions, an agency-focused approach illuminates how individuals and groups strategically negotiate formal structures to achieve reparative outcomes within the contextual constraints of their environments (Clever, 2002). By investigating how informality contributes to the development of consolidative and *jugaadu* capacities, this study offers a comparative analysis of informality's potential to drive reparative governance and achieve water sensitivity in cities like Bhuj and Bhopal.

Comparing Bhuj and Bhopal—two cities facing distinct geographical and climatic challenges—allows us to assess how informality can address persistent water governance challenges to

achieve water sensitivity. Bhuj, grappling with water scarcity and salination, and Bhopal, struggling with unequal access to clean water and contamination, reflect governance structures common in other secondary cities. Despite their differences, our study explores whether hybrid formal-informal governance models can address these challenges, contributing to a broader understanding of the potential for informality in facilitating repairation towards water sensitivity.

The remainder of this paper is structured as follows: we first outline the capacities framework and how informality supports repairation, followed by our methodology. We then apply the framework to illustrate the reparative capacities in Bhopal and Bhuj, concluding with a discussion on how informality has enhanced water sensitivity in these contexts.

## 5.2. Reparative governance and informality

This section presents our reparative governance capacities framework mobilised by informality, aiming to investigate how informality contributes to reparative efforts towards water sensitivity. We first define *reparative governance* in relation to water sensitivity in Southern cities. The framework helps to describe how capacities are supported by informality to facilitate reparative actions, which entails *consolidation* and *jugaad* (noun form for *jugaadu*) to enable repairation for achieving water sensitivity.

### 5.2.1. Reparative water governance

Repairation, as a transformative approach, seeks to fundamentally reshape urban water governance systems by addressing the complex, uncertain, and contested dynamics of urban transformations while being mindful of historical injustices that should not be perpetuated (Broto et al., 2021). This approach is particularly relevant in contexts like India, where historical legacies of inequality rooted in colonial exploitation, caste discrimination, and religious divides continue to shape contemporary social and environmental challenges. In practice, reparative water governance aspires to address systemic injustices by acknowledging and including historically marginalised needs and practices by prioritising local and culturally contextual solutions. For instance, it would focus on restoring ecological integrity, creating more equitable access to water resources, and prioritising just and equitable goals in water management. Rather than merely restoring systems to their original state, repairation focuses on fostering a sensibility towards long-term healing and amendment (Bhan, 2019; Broto et al., 2021).

Repairation is especially pertinent in urban water management, particularly in the pursuit of water sensitivity, which requires managing water in an ecologically sustainable and socially equitable manner as described by Bichai & Flamini (2017). Achieving such shifts in approaches often necessitates transformative processes that can be resource-intensive, can weaken accountability, and may exacerbate social divides if not carefully managed (Giordano & Shah, 2014). For instance, initiatives aimed at greening urban areas, such as lakes, might inadvertently lead to gentrification, disproportionately affecting local indigenous populations (H. Kim & Jung, 2019). Moreover, the transplantation of urban green space concepts from developed countries

to tropical regions in the Global South can prove unsustainable and exacerbate social divisions due to varied enforcement policies regarding access. This underscores the need to integrate sustainability with justice goals, ensuring that efforts do not result in exclusive and unequal outcomes.

Reparation emphasises healing, reconciliation, and mending of relationships, centring restorative justice as a normative foundation while pursuing sustainability goals (Broto et al., 2021). In the context of water sensitivity, it ensures that reparative water governance efforts to actively work to include marginalised voices, bring forth the subaltern frames of water challenges thereby healing the divisions caused by past injustices while drawing on cultural knowledge and local practices to ensure relevance without perpetuating harm. Care, as a critical societal practice, facilitates this process by prioritising empathetic engagement and the sustained inclusion of these voices in decision-making processes, embodying a commitment to reconfiguring the relationships that underpin water governance (Conradi, 2015). Especially in secondary cities in India, where financial constraints, social stratification, and colonial legacies create unique challenges, reparation is crucial in addressing the social inequities that hinder water sensitivity goals.

### **5.2.2. Capacities framework**

Addressing water challenges in the Global South, particularly in India, requires a governance approach that is both adaptable and attuned to local contexts. With its inherent flexibility, informality offers a promising mechanism for advancing reparative efforts in socio-environmentally complex and resource-constrained settings. Reparation requires a governance model capable of navigating through cultural complexities and addressing historical injustices—objectives that formal governance, often constrained by rigid and lengthy bureaucratic frameworks, may struggle to achieve effectively. As Cleaver (2002) notes, formal governance structures tend to rely on technocratic solutions that overlook the socially embedded nature of local practices. Similarly, McFarlane (2012) argues that rigid distinctions between formal and informal governance can worsen inequalities, as formal systems are often inadequate for meeting the evolving and context-specific needs of resource-constrained urban environments.

However, while informality offers adaptability, it also carries risks, such as the potential to perpetuate inequalities or be co-opted by powerful actors if not carefully managed (Funder & Marani, 2015). The effectiveness of informality frequently depends on its integration with formal structures, which provide the necessary legitimacy and accountability. Scholars advocate for a hybrid governance approach, wherein informal networks operate as ‘tentacles’ that support and complement formal processes (Ahlers et al., 2014; Wahby, 2021). This hybrid governance model proves particularly effective in contexts where formal governance alone is insufficient to address local complexities. Ananya Roy (2009) conceptualises this strategic blending of formal and informal governance as ‘calculated informality,’ occurring in deregulated environments, where regulations are selectively and temporarily withdrawn. Given these dynamics, exploring how informality can genuinely support reparative efforts in India’s resource-constrained secondary

cities is crucial, as it could highlight governance capacities for sensitive water management, address historical injustices, and promote long-term social healing.

We identify two key governance capacities—consolidative and *jugaadu*—as essential for enabling reparative governance, particularly in the context of informality. This framework, drawing inspiration from the transformative urban climate governance model developed by Hölscher, Frantzeskaki, et al. (2019), promises to address the specific challenges of reparative urban water governance. The governance capacity framework offers a critical lens to understand agency - how informality is enacted, the conditions it fosters, and the extent to which these conditions facilitate reparative outcomes. By analysing governance through this capacity-focused perspective, we gain insight into the mechanisms that underpin informal practices, including the ability to organise, innovate, and remain flexible.

This approach highlights how informal actors strategically navigate within formal constraints to achieve reparative outcomes, aligning their practices with broader goals of social justice and environmental sustainability. The governance practices aimed at reparation seek to amend or heal urban water systems by proposing new conditions for collaborative, democratic, and locally led solutions in resource-constrained environments. Moreover, the governance capacity framework allows us to explore the actors' agency in informal governance, revealing both conscious and subconscious motivations behind their actions (Clever, 2002).

By focusing on consolidative and *jugaadu* capacities, our framework connects informal actors' activities with emerging governance arrangements, offering insights into how informality can be harnessed to achieve reparative outcomes and enhance water sensitivity in resource-constrained contexts.

#### **A. Consolidative capacity**

Consolidative capacity manifests in the ability of actors to strengthen or develop conditions for the self-organisation of varied types of actors. This is especially notable when victims of past injustices organise with decision-makers working on long-term future goals within complex cultural and social contexts, aiming towards healing through informal governance structures and process. Consolidation hinges on merging separate entities into a cohesive whole while preserving their unique identities and balancing individual and collective roles. Building on Hölscher et al.'s (2019) concept of orchestrating capacity, Gautam Bhan (2019) further nuance consolidation, emphasising self-organisation in Southern contexts within available means and highlighting a capacity that transcends mere coordination, focusing on healing rather than just task completion. Incorporating the attribute of healing into reparation encourages sustained follow-up, holistic thinking, inclusion of marginalised voices, and the ability to understand viewpoints that have been dismissed earlier. This entails materialising restorative justice through informality.



Enhancing consolidative capacity necessitates veering directionality – aligning individualistic actions with overarching goals within institutional constraints (Dahlmann & Stubbs, 2023). Veering directionality fosters a collective sense of care and responsibility, enhancing information sharing, intrinsic motivation, and a shared sense of duty, thus cultivating a commitment that surpasses mere incentivisation and fosters emotional and intellectual collaboration (Conradi, 2015). However, in contexts marked by distrust towards authority, efforts may be perceived as individual tasks rather than part of a purposefully driven collective mission without trust rebuilding. To mend relationships and foster consolidative capacity, transparent communication, role and intent clarification, the establishment of accessible (not necessarily formal) platforms, and showcasing the rationale behind governmental efforts are crucial (Leahy & Anderson, 2008). Establishing a middle ground through pragmatic mediation creates essential frameworks, elucidating trade-offs, reinterpreting local norms, and addressing translation challenges among diverse actors. This strategy, leveraging strategically positioned brokers between communities and authorities with systemic awareness and inter-scalar connectivity, becomes vital for facilitating agreements in contexts where policies are disconnected or socially contentious (Funder & Marani, 2015).

#### **B. *Jugaadu capacity***

Building upon transformative and unlocking capacities as articulated by Hölscher, Frantzeskaki, et al. (2019), *jugaadu* capacity is further nuanced through the incorporation of frugality and local logic, epitomised by the term *jugaad*, loosely translating to ‘innovative fix within constraints’ in Hindi language. This capacity is characterised by the ability to improvise through frugal, contextually viable methodologies, ideologies, and organisational structures aiming at improvisations while dismantling colonial legacies to foster inclusivity and alternative approaches essential for addressing water challenges. While the cost-effectiveness may raise questions about the novelty of the innovation, its essence lies in prioritising timely adaptation and repurposing existing knowledge and worldviews as a conduit for reparation. Furthermore, *jugaadu* capacity encourages a flexible and adaptive approach to governance, integrating local knowledge and practices to address historical injustices, fostering long-term healing and sustainability in water management practices.

*Jugaadu* capacity is further evident in efforts to pluralise knowledge by challenging entrenched disciplinary, geographic, institutional, and epistemological hegemonies. It promotes engagement with diverse knowledge forms, including marginalised ones, and scrutinises their synergies and trade-offs to establish channels for transdisciplinary exchanges (Yates et al., 2017). Frugality characterises this capacity as it is manifested through efforts to create a safe space for deliberation, prioritisation, and identification of opportunities. This fosters persistent optimism and courage to face uncertainties and fear of failure while reducing reliance on external justification and using constraints as resources for reparation (Funder & Marani, 2015). Moreover, *jugaadu* capacity embeds improvisations within the socio-political fabric by leveraging organic arrangements and trial-and-error methodologies aimed at continuous adaptation -resulting in a sense of ownership towards the processes rather than just focusing on the outputs themselves.

This involves a cultural practice of collaborative decision-making, which helps to break the rigidity of unsustainable practices while critically assessing and resisting top-down approaches and creating space for more contextual approaches (Clever, 2002; Funder & Marani, 2015).

<b><i>Governance capacity to enable repair</i></b>	<b><i>Dimensions</i></b>	<b><i>Contribution of informality</i></b>
Consolidative capacity	Veering directionality	Fostering a collective sense of care and responsibility enhancing information sharing, intrinsic motivation, and a shared sense of duty, thus cultivating a commitment to align individualistic actions with overarching goals within institutional constraints.
	Rebuilding trust	Utilising transparent communication and role clarification to mend relationships, rebuilding trust towards government authorities, and nurturing a sense of community.
	Establishing Middle ground	Leveraging community-accepted brokers and creating space and frameworks to elucidate trade-offs. Interpreting local norms and addressing translation challenges for facilitating agreements (not necessarily formal) in contentious settings.
<i>Jugaadu</i> capacity	Pluralising knowledge	Challenging entrenched disciplinary, geographic, institutional, and epistemological hegemonies. Foster improvisation by scrutinising their synergies trade-offs to establish channels for transdisciplinary exchanges
	Creating space to identify opportunities	Fostering environments for deliberation and dissent, supporting creative problem-solving, and encouraging continuous improvement.
	Embedding	Integrating improvisations within the social and political landscape through trial-and-error and organic adaptation.

**Table 6:** Conceptual framework on governance capacities to enable repair

### 5.3. Methodology

In this section, we first introduce the water challenges and water governance in Bhuj and Bhopal. We then outline the how data was collected, and comparative analysis was conducted.

#### 5.3.2. Water challenges and water governance in Bhuj and Bhopal

The selection of Bhuj and Bhopal as case studies allows for an in-depth examination of the role of informality in diverse physiographic settings—arid and tropical hinterlands—while highlighting the common governance challenges faced by secondary cities in India, thereby offering insights into broader patterns of informal governance.

Bhuj, a semi-arid secondary city on India’s border with Pakistan, has experienced rapid population growth, nearly doubling to 188,236 by 2011, strained existing infrastructure (van der Meulen et al., 2023). Traditionally, Bhuj managed its water needs through local practices due to its unique hydrogeology. However, population growth necessitated the expansion of piped networks connected to the Narmada Canal, exacerbating issues of over-extraction and aquifer

salinity ingress (van der Meulen et al., 2023). Despite facing frequent natural disasters and limited national support, residents have demonstrated resilience by independently organising resources, including efforts to revive aquifers (Bajpai & Kothari, 2020). However, contradictory approaches by the government aiming to increase water supply from external sources underscore the complexities of governance.

In contrast, Bhopal, a significantly larger city than Bhuj and the capital of Madhya Pradesh state, is home to over 2.4 million people and boasts 18 significant water reservoirs (CAG India, 2021). While the Upper Lake provides about 25% of the city's water supply, rapid urban expansion has led to water scarcity (Everard et al., 2020). Authorities have addressed rising water demand by sourcing water from distant locations, yet the city grapples with flooding risks and grave water quality issues exacerbated by contamination from the Union Carbide pesticide plant leak (CAG India, 2021; Everard et al., 2020). Despite these challenges, there is a perceived water sufficiency in Bhopal, reflecting a lack of academic focus and public awareness of its water challenges, thereby impacting urban water policy and governance (Everard et al., 2020).

The water governance landscape in both cities mirrors the complexity of their physiographical challenges. In Bhuj, the Bhuj Nagar Palika (Municipal Council) primarily oversees water supply operations but lacks autonomy, adhering to directives from the state capital, Gandhinagar, thus perpetuating a centralised governance model (Bajpai & Kothari, 2020). Even the elected councillors prioritise party agendas over representing local people's issues, showcasing top-down decision-making (Bajpai & Kothari, 2020). Similarly, in Bhopal, despite transitioning water supply management to the Bhopal Nagar Nigam (Municipal Corporation), influence from the state's Public Health Engineering Department (PHED) complicates governance efforts, highlighting centralisation issues and limited delegation of significant responsibilities (CAG India, 2021).

Amid escalating water challenges and rigid top-down governance structures, hybrid informal water governance has emerged, fostering innovative approaches to address these issues. In Bhuj, despite formal governance, civil society organisations (CSOs) like Homes in the City (HIC) have strengthened local governance and community engagement alongside government initiatives (Bajpai & Kothari, 2020). Citizen-led efforts, operating outside formal frameworks yet widely accepted, have driven rainwater harvesting, groundwater recharge, and lake rejuvenation with tacit municipal support. Similarly, in Bhopal, NGOs have made sporadic efforts to improve water access and address contamination issues. While water supply-focused NGOs collaborate with local governments, those addressing water quality issues are marginalised and overlooked in formal policy documents like the Bhopal Master Plan and Smart City proposal, leading to a lack of recognition for the importance of water quality. Consequently, informal efforts have emerged to fill this gap and address these critical issues, highlighting growing conflicts among governance actors

The intended governance model to empower municipalities through decentralisation has frequently fallen short in practice, revealing systemic issues in water resource governance in

secondary cities. Despite efforts like establishing *Ward Samiti* (Ward Committee) to enhance citizen engagement, results have been limited, highlighting the need for greater financial autonomy and institutional support (Bajpai & Kothari, 2020). As a result, informality has increasingly filled the gaps left by formal governance, making Bhuj and Bhopal compelling case studies for exploring the dynamics of informality within the governance frameworks of secondary cities.

### 5.3.2. Data collection and comparative analysis

Our research employed a qualitative, comparative case study methodology, incorporating desk research, ethnographic interviews, and observation to investigate how informality informs the governance capacities for repairing water sensitivity. The desk research included analysis of policy documents across various levels (e.g., Master Plan, Smart City proposal, National Water Policy 2012, Bhopal-Blue Green Master Plan). This literature on formal policy documents provided an understanding of the prescribed governance in the cities.

Field research in 2021 and 2022 utilised multi-sited ethnographic methods, combining 64 semi-structured interviews (32 in Bhopal and 32 in Bhuj) (detailed in Table 2) characterised by detailed descriptions and 10 observational notes. We enriched this robust dataset through cross-interview triangulation, observational insights, and photographic narratives. Interviews spanned a broad spectrum of stakeholders, encompassing state and non-state actors in various capacities within the city's water management ecosystem. This included national and state government officials, municipal officers of varying seniorities, NGO representatives, private sector actors such as real estate agents and urban planning consultants, and academicians, providing a comprehensive view across scales of engagement and decision-making processes.

	<i>Interviewees, according to sector</i>	<i>Interview period</i>
<b>Bhopal interviews – 32</b>	Local City Government – 8 (Engineers from different seniority – Commissioner to Supervisor)	09 – 12/ 2021
	National And State Government - 3	02-2022
	NGOs and CSOs - 7	06 - 2022
<b>Observation notes - 7</b>	Residents – 5	
	Educational Institute - 1	
	Private Organisations – 5 (Hotel owner + Planning Consultants + Private water service providers)	
	Politicians - 3	

**Table 7:** Detailed list of interviewees

	<i>Interviewees, according to sector</i>	<i>Interview period</i>
<b>Bhuj interviews – 32</b>	Local City Government – 6 (Engineers from different seniority – Water supply, storm water)	12-2021 to 1-2022
	National And State Government - 3	
	NGOs and CSOs - 7	
	<b>Observation notes - 3</b>	
	Residents - 5	
	Educational Institute - 1	
Private Organisations - 4 (Developers + Private water service providers)		
	Politicians - 4	

*Table 7: Detailed list of interviewees (Continued)*

The interview settings were strategically aligned with the participants' work environments or comfort zones, ranging from conventional office spaces to more unique locations pertinent to their duties, including underwater tanks or other city locales. This approach, including adjustments for pandemic-related constraints with some online interviews, was designed to foster an atmosphere conducive to open, reflective dialogue, enabling participants to speak candidly about their roles and the realities of water management governance.

Our ethnographic methodology was underpinned by the intent to facilitate in-depth, open-ended discussions, allowing for a thorough exploration of cultural practices, beliefs, and experiences from the participants' perspectives. This was augmented by visual methods, notably photographic documentation, to capture and analyse forms of informality in governance practices. Such visual and textual ethnographic data provided a unique lens to examine the undercurrents of informality, including tacit practices, unarticulated meanings, and subconscious motivations within the governance framework.

The interviews began with participants describing their roles and challenges, typically framing water issues in a politically correct, objective manner. Subsequent questions probed deeper, exploring how they addressed these issues and re-defined their mandates and capabilities to overcome challenges. The progression of interviews from initial descriptions of roles and challenges towards more intimate explorations of governance practices and the embodiment of informality was deliberate. This methodological trajectory built trust and peeled back layers of political correctness to reveal the nuanced operations of informality in governance. Through this comparative ethnographic lens, our analysis of Bhuj and Bhopal went beyond cataloguing divergent practices; it critically examined each city's governance strategies, contrasting them against one another.

Employing ATLAS.ti software for coding and analysis, we dissected the activities to decipher informal governance arrangements and their role in shaping consolidative and *jugaadu* capacities in each city. By abductive coding, we iteratively refined themes and concepts, directly informing

the development of a conceptual framework grounded in the empirical realities of the case studies.

## 5.4. Illustrating role of informality in reparative capacities

This study explores the diverse manifestations of consolidative and *jugaadu* governance capacities in Bhuj and Bhopal, demonstrating how informal practices interact with formal governance structures to address complex water management issues. In both cities, consolidative capacity played a crucial role by enabling community stakeholders to participate and devise ways to mediate trust issues between authorities and citizens within existing financial and cultural means while influencing water governance processes despite scalability and recognition challenges. On the other hand, *jugaadu* capacity emphasised improvising approaches that leveraged local knowledge and actors' system awareness to navigate bureaucratic hurdles and institutionalise water-sensitive practices. The contrasting approaches in Bhuj and Bhopal's efforts to repair water governance and foster water sensitivity are underscored by the development of conditions that enable both consolidative and *jugaadu* capacities.

### 5.4.1. Consolidative capacity in Bhuj and Bhopal

In the comparative study of Bhuj and Bhopal, consolidative capacity was demonstrated through informal efforts encouraging self-organisation, especially those directly impacted by water issues. These efforts involved extending formal authority to informal platforms facilitating collaborative decision-making with well-known CSOs and community figures. The awareness generated motivated stakeholders to address less-prioritised water issues and participate in discussions within institutional and fiscal constraints. These efforts helped diversify their understanding of the challenges. Efforts were driven by intrinsic motivation, personal networks, past experiences, and a sense of ownership in their respective places. Personal association with the problem, led citizens and government actors to extend their roles to and undertake the roles of mediators to achieve long-term water goals. However, limitations arose due to increased time for governance processes in secondary cities where city government actors still depend on state authorities to validate the on-ground strategies.

In the absence of formal platforms for exercising holistic local governance in Bhuj, consolidative capacity was manifested through efforts by the Urban Setu organisation to lead the development of *Ward Samiti* (Ward Committees) to address water challenges democratically. These ward committees facilitated holistic discussions on local issues involving government authorities, political leaders, and community figures. These efforts have attempted to localise power to the ground, enabling marginalised actors to contribute more actively to governance processes. However, maintaining consistent participation has proven difficult. Similarly, Bhopal's efforts to form *Mohalla Samiti* (Neighbourhood Committee) in marginalised areas have struggled with

authority and effectiveness. Unlike Bhuj's cause-driven initiatives, Bhopal's NGOs often focus on project-based activities<sup>3</sup>.



*Photograph 9: In Bhopal, the establishment of Mohalla Samitis lacks authority and effectiveness. Authorities or policy documents did not sufficiently address the protests on water contamination from the Union Carbide plant spillage, forcing victims to turn to independent platforms to voice their concerns.*

Councillors in both cities have played crucial roles as intermediaries between citizens and government authorities. In Bhuj, councillors participate in informal ward level meetings, lending formal authority to these unofficial platforms and enabling credible decision-making<sup>4</sup>. In Bhopal, councillors leverage their official capacities and social media platforms to promote community-oriented actions, supported by Member of Legislative Assembly (MLA) funding for swift project execution. However, they sometimes face pressures to align with party agendas, which can compromise local needs.

The role of informality in acknowledging and organising under-prioritised issues is evident in both cities. In Bhuj, CSOs have prioritised long-term initiatives like aquifer restoration, diverging from the government's<sup>5</sup> short-term focus on installing standalone water tanks as a solution<sup>6</sup> to scarcity. This collective effort has fostered solidarity networks<sup>7</sup>, particularly among women's groups, who integrate water management with broader empowerment goals. For instance, the *Kutch Mahila Vikas Sanghathan* (KMVS) in Bhuj has made environmental sustainability central to

3 Interview: BHO\_I\_15\_CS, 4/10/2021; Interview BHO\_I\_28\_CS, 3/12/2021; Interview: BHO\_I\_31\_CS, 30/6/2022

4 Interview: BHU\_I\_14\_PO, 22/12/2021

5 Interview: BHU\_I\_24\_G, 11/01/2022

6 Interview: BHU\_I\_13\_PO, 22/12/2021; Interview: BHU\_I\_14\_PO, 22/12/2021

7 Interview: BHU\_I\_11\_CS, 21/12/2021; Interview: BHU\_I\_18\_CS, 4/2/2022

their mission, arguing that addressing water issues is essential for improving women's daily lives<sup>8</sup>. A representative from KMVS elucidated the rationale behind integrating these two focal areas<sup>9</sup>:

*"...at every level, farming requires water, livestock requires water, and all are impacted. So, women understood those things properly, and wherever there were water crises in the villages, women had taken the seat in front of the administrative officers [...] So giving that importance (to water issues), somewhere it came out from the women only. When we are doing it, how to do it, so that our water will be saved, and we have our livelihood also. So, these concepts emerged because of the women only."*

In Bhopal, activists have emphasised the urgency of addressing water contamination issues, striving to elevate these concerns onto the formal policy agenda. This push has been stymied by a lack of shared vision and transformational leadership within the government and a notable reluctance to confront the legacy of water contamination from the Union Carbide plant spillage<sup>10</sup>. Consequently, government initiatives have been sporadic and insufficient, failing to comprehensively address the root causes of water problems<sup>11</sup>.

Reflecting on these challenges, it becomes evident that municipal efforts to mitigate water challenges in both cities rely on technocratic solutions, such as installing standalone water tanks. Unfortunately, this approach neglects the underlying issues of water scarcity and pollution, revealing a limited consolidative capacity to tackle the complexities of water management effectively.

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8 Interview: BHU\_I\_11\_CS, 21/12/2021; Interview: BHU\_I\_17\_U, 23/12/2021

9 Interview: BHU\_I\_11\_CS, 21/12/2021

10 Interview: BHO\_I\_23\_CS, 27/11/2021; Interview: BHO\_I\_24\_U, 27/11/2021

11 Interview: BHO\_I\_02\_G, 16/9/2021; Interview: BHO\_I\_23\_CS, 27/11/2021; Interview: BHU\_I\_13\_PO 22/12/2021; Interview: BHU\_I\_01\_CS, 8/12/2021





**Photograph 10:** The Bhopal Municipal Corporation has installed standalone water tanks in areas where groundwater contamination has occurred due to the Union Carbide plant spillage. However, this is not a permanent solution, as contamination is increasing, and during s summers, when the tanks are not refilled frequently, residents out of desperation consume the contaminated water for non-drinking purposes



**Photograph 11:** The residents of Bhuj have installed water tanks at every household due to an intermittent water supply. Installing such water tanks causes uneven water consumption, impacting distribution networks and hence is not advisable, this issue is not unknown to government authorities. The municipalities in both cities are aware of such techniques employed by citizens to bridge the system inadequacies.

In the absence of formal mediation agencies, both Bhuj and Bhopal have relied on informal mediators who use personal connections and expertise to navigate through bureaucratic obstacles and bridge divides between stakeholders. In Bhuj, respected community leaders broker solutions, fostering collaboration and aligning stakeholders with common goals. In Bhopal, senior officials act as generalists, further characterised as - ‘senior person<sup>12</sup>,’ ‘people person<sup>13</sup>,’ or ‘trouble-shooter<sup>14</sup>,’ bridging the gap between community needs and governmental capabilities. Especially when state agency interventions often limit the autonomy of municipalities in secondary cities, necessitating senior officers’ authority to implement decisions without constant state approval<sup>15</sup>. Despite these efforts, the informal governance arrangements in both cities have not fully manifested consolidative capacity, hampered by deep-seated distrust towards authorities and the marginalisation of vulnerable communities’ voices.

#### 5.4.2. Jugaadu capacity in Bhuj and Bhopal

This analysis investigates how informality supports the manifestation of *jugaadu* capacity in water governance, enabling reparation within the contexts of Bhuj and Bhopal. *Jugaadu* capacity involves pluralising knowledge by including marginalised knowledge frames and mobilising them to devise improvised solutions. Informality disrupted the conventional rigidity of what constitutes knowledge in water management by embracing a broader spectrum of knowledge forms, blending scientific hydrogeological water data with ancient water history. By employing scientists and non-expert residents, CSOs in Bhuj facilitated devising platforms to co-create credible and socially relevant knowledge. Additionally, the role of educational institutions in Bhuj in promoting water-sensitive practices within curricula, supplemented by community-focused activities, underscores the *jugaadu* capacity to make scientific knowledge accessible and culturally resonant, enabling reparation. In contrast, Bhopal, despite its identity as the ‘City of Lakes,’ remained bound by a technocratic approach led by the Central Irrigation Department, prioritising connections to distant water sources over local self-reliance on its lakes. While its water heritage was acknowledged rhetorically, governance frameworks failed to integrate wisdom on local water use, limiting adaptation and disconnecting Bhopal from the plural knowledge processes. Overall, *jugaadu* capacity in both cities reflected the ability to acknowledge local knowledge that empowered communities to become more autonomous in their water management—thriving in Bhuj through co-production of knowledge but constrained in Bhopal by technocratic dominance.

Informality has aided in pluralising water management knowledge by challenging traditional notions and embracing a broader array of knowledge forms. In Bhuj, integrating scientific research with traditional practices has led to initiatives to revitalise heritage water bodies, guided by modern hydrogeological insights and historic water narratives<sup>16</sup>. CSOs have strengthened

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12 Interview: BHO\_I\_32\_U, 30/06/2022

13 Interview: BHO\_I\_08\_G, 27/09/2021

14 Interview: BHO\_I\_02\_G, 16/09/2021

15 Interview: BHO\_I\_02\_G, 16/09/2021; Interview: BHO\_I\_08\_G, 27/09/2021

16 Interview: BHU\_I\_03\_CS, 11/12/2021

collaboration with local and international academia, creating a collective repository of ancestral wisdom and contemporary scientific data. This blending of knowledge has reinforced local citizens' ties to water heritage and enabled practical, ground-level activities, such as the 'Bhujal Jankar' (Groundwater Knowers) initiative, which trained citizens to collect water data and document groundwater salinity issues. However, these efforts have seen diminishing engagement over time as volunteers shift towards paid opportunities<sup>17</sup>. Conversely, Bhopal's approach illustrates a limited manifestation of *jugaadu* capacity, primarily relying on technological knowledge as outlined in the Master Plan (2005, Draft 2031), the Climate Action Plan, and the Blue-Green Master Plan. Through the superficial designation of Bhopal as a 'city of lakes,' without a deeper engagement with its integrated lake network ecosystem and its connection to Islamic urban planning and architecture, these plans highlight a missed opportunity to leverage local culture for broader environmental goals, demonstrating constrained *jugaadu* capacity.

The mobilisation of flexible funding sources has been instrumental in Bhuj, encompassing fellowships<sup>18</sup> that empower citizens to steward conservation efforts and funds with non-rigid conditions, allowing their use beyond technological upgrades. This adaptability has facilitated more citizen-led water governance models that respond effectively to local needs and priorities<sup>19</sup>. These fellowships have empowered local communities to overcome traditional governance barriers, facilitating innovative water management solutions that are both sustainable and inclusive. In Bhopal, the involvement of an international NGO through formal partnerships with local NGOs and informal associations with the locals demonstrates how community participation in fundraising activities can increase the sense of ownership towards implementation and uptake. An NGO representative explains<sup>20</sup>-

*"... (Mohalla Samiti) they used to take the responsibility and then Water Aid used to invest in it. Those kinds of systems started and how community also when we invested 5 lakhs, then 50,000 used to be the share of community [...] and they used to collect the money. [...] The Mohalla Samiti used to collect the money from the community, and that used to become part of the whole capital budget."*

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17 Interview: BHU\_I\_15\_U, 23/12/2021; Interview: BHU\_I\_32\_CS, 13/01/2022

18 Interview: BHU\_I\_09\_CS, 20/12/2021; Interview: BHU\_I\_17\_U, 23/12/2021

19 Interview: BHU\_I\_09\_CS, 20/12/2021

20 Interview: BHO\_I\_30\_CS, 18/02/2022



*Photograph 12: Rainwater harvesting tank doubling up as a performance stage in a school*



*Photograph 13: Citizens participating in water walks to enhance their awareness of their city's water heritage.*

However, sustaining these efforts over time has proven difficult, as declining volunteer participation reveals broader issues of motivation, engagement, and continuity.

Educational institutions in Bhuj have become vital in promoting water-sensitive practices, extending their role beyond traditional education. Initiatives like installing a rainwater harvesting (RWH) tank and educational programs outside of regular school hours have actively engaged students in environmental challenges<sup>21</sup>. These innovative first-hand experiences are enhanced

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<sup>21</sup> Interview: BHU\_I\_07\_U, 16/12/2021

by community activities, including water walks<sup>22</sup> and publishing updates on initiatives in local newsletters, which make water management practices more accessible and understandable to the public. This involvement reflects the flexibility of *jugaadu* capacity to innovate and integrate educational initiatives with broader environmental goals<sup>23</sup>. Furthermore, both cities showcased informal partnerships between developers and authorities encouraging the inclusion of rainwater harvesting systems in new buildings<sup>24</sup>. The mid-level government officers played a crucial role by informally advising citizens and developers on the proper implementation of these systems, ensuring they meet regulatory standards and contribute effectively to groundwater recharging. This involvement is key to promoting and ensuring the quality of water-sensitive practices in both cities.

Nevertheless, the path towards fully realising *jugaadu* capacity is fraught with obstacles in both cities, where bureaucratic complexities and the perceived financial burdens of transformation are formidable barriers. The administrative maze, characterised by extensive paperwork and the daunting task of persuading stakeholders, poses a significant challenge in implementing innovations<sup>25</sup>. While Bhuj has showcased the potential of *jugaadu* capacity through the collective efforts of a consortium of CSOs, these groups must remain open to incorporating new actors. This openness is essential in preventing the emergence of new exclusivities and ensuring a continually evolving, reparative approach to water management.

## 5.5. Discussion

This study examines how consolidative and *jugaadu* capacities contribute to reparative governance within secondary Indian cities such as Bhuj and Bhopal, focusing on water sensitivity objectives. Unlike primary cities with established water infrastructure and governance frameworks, secondary cities often face fragmented water management, pressing water demands, and limited institutional capacities, making standardized technocratic approaches less effective. In our analysis, we explore how informality plays a role in advancing reparative governance by leveraging these governance capacities. The findings illustrated whether and how hybrid formal-informal governance structures utilise consolidative and *jugaadu* capacities to support reparation efforts. However, many initiatives have not fully achieved their intended outcomes, prompting further examination of the hybrid governance mechanisms.

Our research highlights that informality shapes reparation efforts in Bhuj and Bhopal by attempting to incorporate marginalised issues, fostering a care-oriented approach to water management. This suggests that care, as a transformative societal practice, plays a crucial role in reparation by promoting mutual interdependence and attentiveness to marginalised

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22 Observation: BHU\_O\_01\_CS, 19/12/2021

23 Observation: BHU\_O\_02\_CS, 16/12/2021

24 Interview: BHU\_I\_19\_G, 05/01/2022; Interview: BHU\_I\_21\_PR, 06/01/2022; Interview: BHO\_I\_21\_G, 23/11/2021; Interview: BHO\_I\_26\_PR, 29/11/2021

25 Interview: BHU\_I\_10\_U, 16/12/2021

voices. As a result, this approach begins to challenge conventional governance hierarchies, integrating local knowledge and relational dynamics into governance processes, leading to more contextually relevant solutions, as articulated by Conradi (2015). The shift towards more care-oriented governance challenges entrenched bureaucratic norms, allowing culturally embedded values to inform governance practices. Consequently, reparative efforts are characterised by improvisation, with informal mechanisms gradually contesting existing power structures to ensure diverse voices influence and shape more inclusive, contextually sensitive governance outcomes in these cities.

We expand on the following insights derived from the study:

### **Insight #1 - Recognition of the multifaceted nature of water challenges**

Drawing on critiques of marginalisation embedded in urban climate responses (Broto et al., 2021) our study highlights how informality integrates varied knowledge types to address complex water challenges. The non-governmental platforms, often led by NGOs, merge hydrogeological science with historical and experiential knowledge, broadening the understanding of water governance across communities. These platforms critique the formal system's reliance on technocratic data and instead employ knowledge brokers to combine scientific insights with historical narratives, addressing both historical injustices and future water challenges.

In Bhuj, knowledge brokers connect personal stories with hydrological data, enhancing community understanding of how local landmarks relate to water issues. Similarly, in Bhopal, informal actors linked water quality insights with urban planning policies and human rights. However, despite broadening understanding, informal efforts faced challenges in gaining formal recognition, essential for sustaining their influence and integrating them into governance frameworks.

The literature indicates that informal knowledge and practices typically remain peripheral unless embedded within formal structures (Ahlers et al., 2014). In Bhuj, for instance, despite increased awareness, the multifaceted meanings of water practices are yet to be acknowledged in official policies, limiting their scalability and legitimacy. Embedding these practices within formal governance would challenge prevailing biases against non-traditional methods and ensure that diverse, integrative approaches to water governance are recognised.

### **Insight #2: Challenging power structures and localising decision making**

The study revealed that informality has brought decision-making closer to communities through platforms such as *Mohalla* and *Ward Samiti* (neighbourhood and ward committees). In contexts where formal mediation mandates are weak or poorly enforced, councillors, NGOs (such as KMVS in Bhuj), policymakers, and community leaders played crucial roles in facilitating dialogue and decision-making, fostering greater grassroots democracy. Drawing on Ahlers et al. (2014), informality can disaggregate power structures and foster co-production by extending existing roles rather than creating new ones. By involving atypical actors such as women in Bhuj

and senior citizens in Bhopal, decision-making processes have been decentralised, bringing governance closer to those affected by water challenges.

This inclusive approach aligns with the goals of water sensitivity (Bichai and Flamini, 2017; Mguni et al., 2022), integrating sanitation, housing, and gender empowerment into water governance. Unlike traditional integrated approaches, which often advocate for new governance entities like River Basin Organizations (RBOs), this method adapts existing governance structures to facilitate coordination while respecting bureaucratic divides. This adaptation is more feasible for Indian contexts, where creating new governance bodies may not be viable (Giordano and Shah, 2014). The study illustrates how decision-making can be localised by repairing and adapting governance structures to enable holistic water governance.

### **Insight #3 Creating space and synchronising improvisation**

Informal governance has proven adaptable, offering a mechanism to synchronise improvisations. While these often begin as informal practices, their long-term sustainability depends on synchronisation — transforming ad-hoc solutions into structured, repeatable processes within formal governance frameworks. Cleaver (2002) argues the need to carefully synchronise improvisations within social and cultural systems, allowing them to evolve into sustainable, scalable practices integrated into everyday routines.

In the Indian context, where socio-technical landscapes are deeply hierarchical, synchronising improvisation is a costly and culturally sensitive process. Informality thus serves as an incubator for trial, experimentation, and refinement. Informal spaces offer a lower-cost platform to test ideas, gather evidence, and repurpose resources, bypassing formal procedures.

Synchronising these improvisations legitimises them and routinises the effort, embedding them in everyday life (Cleaver, 2002). This process ensures improvisations transition from isolated successes to routine governance practices, shaping culturally relevant and sustainable solutions. For example, in Bhuj, efforts to institutionalise water-sensitive behaviours illustrate this process. In collaboration with research and advocacy organisations, schools developed specialised after-school curricula that bypassed lengthy reforms, demonstrating how informal initiatives can be synchronised into governance frameworks. Similarly, elected representatives informally create participatory spaces by leveraging their political networks, mediating between the state and citizens, and strategically engaging with governance structures to facilitate inclusion—though these spaces remain shaped by entrenched power dynamics (Cornwall & Coelho, 2007). In conclusion, this study underscores the potential of informality in leveraging consolidative and *jugaadu* capacities for reparative governance. However, for these practices to achieve long-term impacts, it is essential to synchronise improvisations, ensuring their sustainability and embedding them into everyday governance structures.

**Insight #4: Characterising reparative governance through networks of care**

Informality, characterised by networks of care, prioritises community-driven, cooperative approaches over hierarchical systems. This study illustrates how these networks, driven by intrinsic motivation, manifest in activities like water walks, after-hours teaching of water-sensitive behaviour, and mediating conflicts through personal connections. These stewards build trust and streamline decision-making within municipalities, bypassing bureaucratic processes and fostering solidarity, as Conradi (2015) discussed. Even formal municipal officers, often constrained by limited autonomy, mobilise these networks out of care for project well-being, overcoming governance challenges by leveraging personal relationships and applying local knowledge for context-specific solutions.

While informality provides flexibility and agility, it also presents risks. Over-reliance on informal mechanisms can marginalise key challenges and weaken long-term engagement. For instance, inconsistent participation in *Ward Samiti* (Ward Committee) and declining volunteer involvement exposes the vulnerabilities of informality. Additionally, state-led agendas can overshadow community-driven efforts, limiting their impact. In this context, repair offers a guiding framework to address these challenges. As Wahby (2021) suggests, repair fosters more inclusive and equitable outcomes by sustaining participation, engaging diverse actors, and countering political pressures. It helps align informality with the needs of marginalised communities, integrating the city's water identity into more meaningful water sensitive management practices.

**5.6. Conclusion**

Informality functions as a hybrid governance approach, providing the flexibility to develop and iterate reparative strategies. When the rigidity of formal systems hinders adaptation, the flexibility of informality acts as the necessary grease to address the resistance to change embedded in formal governance structures. It also contextualises governance mechanisms to better align with local needs and conditions. However, for this reparative potential to be fully realised, formality must step in to synchronise and sustain these changes.

Without regulatory support, the reparative gains of informal governance can easily be undermined by political instability. As Kösters, Bichai and Schwartz (2020) note, new governance approaches risk being eroded by political shifts if they are not backed by robust regulatory frameworks. This was evident in Bhopal, where informal governance practices faced challenges due to the lack of institutional reinforcement, and similar risks could threaten Bhuj if efforts to legitimise these practices were not strengthened.

While informality fills critical gaps in governance by introducing much-needed flexibility, it also runs the risk of perpetuating existing power hierarchies unless it is integrated into broader governance structures. To ensure informality contributes to lasting systemic change, it must be synchronised in a way that challenges rather than reinforces power imbalances. Our research



## Chapter 5

further prompts a critical inquiry: how can future governance frameworks effectively synchronise informal practices while safeguarding their inclusivity and resilience in the face of political shifts?

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# 6

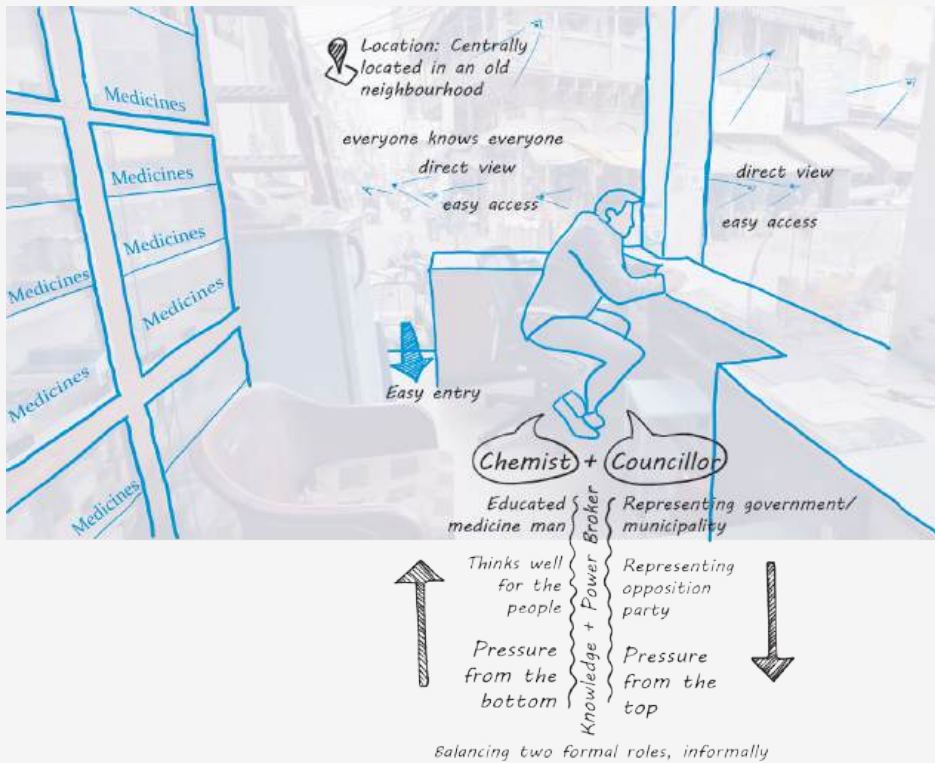
Nurturing transformative  
spaces: Leveraging  
informality for transitioning  
to water sensitive  
governance in Indian cities



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**Photo Narrative 8: The knowledge broker**

*In water governance, all actors are not always drawn from technical backgrounds like water engineering. For example, Mr. Vyas (name changed) is a chemist whose shop occupies a central spot in the local market, granting him significant status within the community. His role as a trusted medicine man, viewed just below a doctor, has elevated his social standing, leading to his election as a local representative. This position not only benefits the local government but also leverages his reputation as an educated and respected figure. Mr. Vyas effectively bridges the gap between complex municipal issues and the general public by communicating policies in accessible terms. His dual capacity to represent community concerns to the government and be taken seriously by officials makes him an ideal knowledge broker in the context of water governance.*



However, despite his crucial role, the participatory platforms in water governance often become exclusionary due to the dominance of technocratic jargon and hierarchical structures, which can marginalise non-technical actors like him. These barriers prevent knowledge brokers from fully engaging with engineers and other technical experts, limiting their contributions. The following chapter will discuss how creating transformative spaces incorporating informal networks can empower knowledge brokers like Mr. Vyas. By fostering environments that value diverse forms of knowledge, these spaces can enhance the participation of such brokers in urban water governance, ensuring that their valuable perspectives are not overlooked but integrated into the decision-making process.



## Abstract

This paper introduces a novel approach to designing and applying transformative spaces that leverage informality—characterised by flexibility, adaptability, and creativity—along with culturally situated collaboration to promote water sensitive governance in Indian cities. These transformative spaces provide ‘safe-enough’ environments where diverse actors engage in experimentation, dialogue, and co-creation to address the challenges posed by India’s technocratic and hierarchical water governance systems. While established methodologies like Transition Management (TM) utilise structured transition arenas, we adapt these into a broader concept of transformative spaces, tailored specifically to India’s collaborative governance context. Informality, a prominent mode of governance in India, is harnessed in this framework through three core principles: cultivating confidence to challenge regressive power structures, fostering frugality and creativity, and instilling faith in the transformative spaces. These spaces are critical for navigating the complexities of hierarchical governance and enabling more inclusive, pluralistic approaches. This paper explores how transformative spaces, shaped by informality, enable actors to confront entrenched hierarchies and foster meaningful engagement towards water sensitive governance, particularly within contexts characterised by power asymmetries and technocratic dominance in Bhopal and Bhuj. Ultimately, these spaces help to advance water sensitive governance by creatively framing solutions that move beyond technocratic models and empower local actors.

### Keywords

transformative Spaces, informality, water governance, water sensitive cities, Global South, workshops

### Status

This paper is under review in the *Action Research* journal.

### Fit with overall thesis

In this chapter, I respond to the sub-research question: *What methods facilitate the identification and nurturing of governance capacities to enable reparation?* This inquiry also advances methodological innovation within my research. While Chapter 3 introduced a visual methodology to identify governance capacities in urban settings, this chapter shifts focus to transformative spaces as a means of nurturing these capacities. I develop a framework, informed by informality, which situates transformative spaces within India’s collaborative cultural context, fostering pathways for reparation and addressing entrenched governance challenges.

## 6.1. Introduction

This paper introduces a novel approach to designing and applying transformative spaces to address water governance challenges in Indian cities and achieve water sensitivity goals. Water sensitivity envisions a future where water resilience catalyses broader societal transformation, advocating for decentralised, integrated approaches that meet technical needs and promote social change (Bichai & Flamini, 2017). Achieving these goals requires collaborative environments that foster transformative approaches, ensuring discussions are grounded in local collaborative logic. Such spaces should facilitate meaningful engagement that enables genuine transformation. By grounding transformative spaces in informality, their inherent flexibility, adaptability, and creativity create environments where diverse actors can experiment, engage in dialogue, and co-create solutions to complex urban water governance issues.

In India, water governance is dominated by technocratic approaches that prioritise engineering solutions, concentrating decision-making power among technocrats (Mollinga, 2008). This focus on infrastructure marginalises non-technical perspectives, side-lining socio-political and ecological dimensions of water management (Hartley & Kuecker, 2021; Zwartveen, 2017). Entrenched power hierarchies based on gender, seniority, and institutional authority further exclude local actors and alternative viewpoints (Kumar, 2018; Mollinga, 2008; Rijke et al., 2013). As a result, governance processes fail to embrace pluralistic approaches that could address India's complex water challenges more effectively, reinforcing existing power structures and limiting opportunities for inclusive dialogue and innovation.

Current participatory spaces often fail to support meaningful discussions on governance challenges due to the risks of exposing institutional weaknesses, which hampers transformation (Prasad et al., 2023). Actors are hesitant to engage openly, fearing that raising these issues may be seen as a threat to authority (Pereira et al., 2015). Consequently, these spaces tend to reinforce the status quo rather than challenge power structures. Overcoming this requires the creation of 'safe enough' spaces where open dialogue can occur without fear (Pereira et al., 2015). Leveraging informality in these spaces—by mobilising tacit knowledge, personal relationships, and non-standard procedures—can reduce actors' hesitancy in addressing governance challenges (Haapala et al., 2016). Without such approaches, technocratic dominance persists, obstructing progress toward a water-sensitive future. Therefore, adaptive, and inclusive methodologies, such as transformative spaces, are essential to normalise governance discussions and address India's complex water challenges.

Transformative spaces aim to introduce a paradigm shift by broadening participation, normalising discussion on governance challenges, and disrupting entrenched hegemonies through their flexible capacity to address power imbalances while functioning within resource constraints and including non-technical perspectives (Pereira et al., 2015, 2020). Managing transformations effectively requires systemic changes in thinking, management practices, and resource allocation (Westley et al., 2013). Transformative spaces create opportunities for sustained dialogue and

reflection, facilitating these changes through participatory approaches and encouraging close interaction with key actors (Pereira et al., 2015, 2020). By recognising the role of human agency in governance and actively seeking perspectives that challenge dominant narratives, transformative spaces nurture the capacities needed to adapt roles and develop innovative, effective solutions for transformation (Pereira et al., 2015, 2020).

Parallely, existing methodologies like TM offer structured processes to tackle governance challenges by empowering diverse stakeholders and enabling long-term sustainability transitions (Frantzeskaki et al., 2019; Loorbach et al., 2017). TM's five-step process—system analysis, problem structuring and envisioning, pathways development, experimentation, and monitoring—relies on transition arenas, which serve as incubators of change (Nevens et al., 2013; Roorda et al., 2014). These arenas are typically led by local frontrunners who spearhead innovative solutions and strategic transitions. However, research suggests that TM's structured approach often struggles to engage deeply with power imbalances and hierarchies in Southern cities, thus overlooking informal governance structures and, ironically, reinforcing technocratic solutions (Nastar & Ramasar, 2012). In response, this paper adapts TM's transition arenas into a more flexible framework of transformative spaces, better suited to India's complex collaborative logic.

Rooting transformative spaces through informality holds particular promise. Informality, with its inherent flexibility, relational capacity, and adaptability, allows transformative spaces to resonate with local practices (Haapala et al., 2016; Rijke et al., 2013; Wahby, 2021). This adaptability provides the foundation to embed transformative spaces within India's socio-political landscape. Moreover, by interacting with formal structures, informality enables a hybrid governance model that allows actors to participate more flexibly and responsively (Ahlers et al., 2014; Wahby, 2021). Importantly, informality's ability to navigate hierarchical power dynamics creates the relational flexibility needed to challenge entrenched structures without directly threatening institutional authority (Jaglin, 2014; Jayaweera et al., 2023). This study examines how the design of transformative spaces can harness informality's characteristics—such as personal networks and creativity—to adapt the transformation process towards water sensitivity in India.

We apply the framework of the transformative space in Bhopal and Bhuj through workshops focused on water sensitivity goals. In these contexts, entrenched hierarchies prioritising technocratic methods hinder the shift towards water sensitivity by obstructing decentralisation and integration. While these spaces aim to nurture governance capacities, reform urban water governance, and promote water sensitivity, this paper focuses on how informality can shape their development. By offering actors space for introspection, these spaces seek to 'nurture' transformative capacities rather than 'building' externally.

The following sections outline the development of transformative spaces rooted in informality. Section 2 explores how informality shapes these spaces, Section 3 describes their application through workshops, and Section 4 analyses their adaptation to Indian collaborative logic.

Finally, Section 5 considers how this approach addresses technocratic hegemony by fostering transformative collaborative governance anchored in informality.

## 6.2. Leveraging informality to shape transformative spaces

In our research, the transformative spaces adapt the structured approach of *transition arenas* while situating it within the Global South context by leveraging *informality*. *Transition arenas*, a vital tool in TM, facilitate long-term societal transformations through structured participation. It operates through phases such as problem structuring, envisioning, backcasting transition pathways, experimenting, and monitoring, facilitated by a diverse ‘transition team’ (Nevens et al., 2013). In this paper, we focus on the backcasting of transition pathways. Earlier stages provided valuable time and insight to reflect on and rethink the methodology, adapting it to India’s unique governance context. Transition pathways are co-created as comprehensive roadmaps integrating various policy domains and strategies (Frantzeskaki et al., 2019). While TM is effective in stable, well-resourced settings, it struggles to address the socio-political complexities and power imbalances prevalent in the Global South (Noboa et al., 2019).

In contexts like India, where hierarchical governance and significant power asymmetries dominate, TM can unintentionally perpetuate these imbalances. Originating in the Global North, its structure does not align with the informal governance practices (Noboa et al., 2019). Although TM has sought to incorporate informal governance through ‘shadow processes’ (Loorbach et al., 2015), these efforts remain insufficient to capture the nuanced power dynamics (Nastar & Ramasar, 2012). Consequently, TM risks becoming overly technocratic, limiting its impact beyond its immediate participants and reinforcing the very technocratic dominance present in India’s urban water governance (Loorbach et al., 2015; Nastar & Ramasar, 2012). Furthermore, TM’s reliance on short-term, externally funded programmes in the Global South often leads to ‘projectisation,’ disempowering marginalised groups and undermining sustained systemic change (Jayaweera et al., 2023).

To address these limitations, transformative spaces in our study adapt structured elements from transition arenas, such as co-creation and experimentation, but apply them with greater flexibility and sensitivity to local contexts. Unlike traditional TM, transformative spaces recognise the political nature of governance transitions and seek to address the socio-political complexities TM overlooks. These spaces create ‘safe enough’ environments where a broader range of actors, including those excluded from formal processes, can engage in open dialogue, and co-create solutions (Pereira et al., 2015). Transformative spaces align better with India’s collaborative governance practices by leveraging informality. While retaining the structure of transition arenas to ensure direction and progress, these spaces remain adaptable, accommodating informal governance practices essential for navigating India’s urban water challenges.

Achieving transformative change within governance systems, particularly in contexts like India, requires significant malleability and openness to rethinking entrenched institutional structures.

This often necessitates challenging long-standing approaches, which can be unsettling for governance frameworks that rely on formal procedures and hierarchical control. This discomfort is exacerbated by the need to acknowledge and address inherent flaws within the system itself—a daunting endeavour for authoritative figures who may perceive such challenges as a direct threat to their established power. Moreover, transformative spaces advocate for including non-experts, who bring valuable experiential insights to challenge the traditional dominance of technocratic dominance (Pereira et al., 2015). While necessary for democratising decision-making, this inclusion often faces resistance as it disrupts established power dynamics (Cornwall, 2004).

Informality plays a crucial role in this context, operating within a state of ‘deregulation,’ where institutional rules are often suspended or loosely applied, creating zones of exception (Roy, 2009). In these zones, actors can navigate beyond formal structures, blending experiential knowledge with rational frameworks to co-create locally relevant and sustainable solutions (Funder & Marani, 2015). When applied both proactively and reactively, informality enables governance actors to navigate the socio-political complexities, enhancing the potential for transformative water-sensitive governance outcomes (Rijke et al., 2013).

From these insights, three key parameters of informality emerge as critical for informing the design of transformative spaces in the Global South. First, informality cultivates *confidence to challenge regressive structures*. Second, it *nurtures frugality and creativity*, which are particularly important in resource-constrained settings. Third, it *instils faith in transition processes*, fostering long-term engagement. We elaborate on them below.

### **6.2.1. Cultivating confidence to challenge regressive structures**

TM is driven by the expertise and initiative of ‘front runners’—change agents—who develop long-term visions and experiments to foster sustainable change (Hölscher et al., 2018; Roorda et al., 2014). However, the structured nature of TM may inadvertently reinforce technocratic control in sectors like water management in India (Loorbach et al., 2015). Informality serves as a crucial counterbalance, amplifying marginalised voices and weaving diverse epistemologies into grassroots networks and self-organisation (Haapala et al., 2016; Mayaux et al., 2022). This inclusive approach combines expert knowledge with users’ lived experiences to enrich dialogue on governance issues. Collaborative storytelling and regular gatherings in these informal settings encourage critical learning and cultural exchange, fostering solidarity and shifting the focus from technology to governance challenges (Goldstein et al., 2013). These spaces facilitate introspection and iterative discussions, easing the challenge of confronting regressive structures. Informality strives to empower critical discourse, strengthen community-led initiatives, and utilise existing hierarchies to address oppressive governance effectively (Cornwall, 2004; Frick-Trzebitzky, 2017).

### **6.2.2. Nurturing frugality and creativity**

TM fosters creativity and innovation through transition arenas (Hölscher, Wittmayer, et al., 2019); however, in resource-constrained regions, maintaining such innovation can be challenging

(Jayaweera et al., 2023). Informality here emerges as a crucial strategy, enabling a shift from focusing on resource constraints to embracing creative problem-solving. By fostering frugality and creativity, informality encourages reimagining limitations as opportunities, making solutions feasible and practical. Cultural validations of this approach, through concepts like *Jugaad* in India or *Gehood Zateya* in Egypt, exemplify this mindset, where actors repair and innovate by mixing formal and informal tactics to make things work (Wahby, 2021). Informality capitalises on deregulated settings by reorganising resources and authority strategically (Ahlers et al., 2014; Roy, 2009), facilitating the implementation of frugal initiatives. This frugal approach emphasises the strategic use and repurposing of available resources making informality a transformative tool that turns constraints into the bedrock for innovation.

### 6.2.3. Instilling faith in the proposed novelties

Transition Arenas leverage transition networks to progressively engage a diverse range of societal actors in promoting and executing a transition agenda through experiments and by integrating these into broader initiatives (Hölscher et al., 2018; Roorda et al., 2014). In parallel, informal networks play a pivotal role, providing essential support and guiding stakeholders through comparable challenges. These networks are established through personal relationships, hierarchical influences, and an in-depth understanding of the socio-political landscape, which are crucial for identifying loopholes and seizing opportune opportunities. Such insights are vital for sustaining initiatives and weaving them into larger programmes by harnessing personal and professional agency, particularly in resource-limited settings. ‘Safe-enough’ spaces, where participants can reshape their interaction dynamics, are crucial for enhancing their influence and fortifying the network that underpins evaluating and realising their innovative proposals (Haapala et al., 2016). This organically developed methodology not only ensures alignment of local solutions with wider external trends but also significantly bolsters their acceptance. Notably, in fields like water governance where adaptability is essential due to inherent unpredictability (Dewulf et al., 2008), these strategies foster a sense of ownership and confidence in the transformative potential of the initiatives. By prioritising flexible transition mechanisms over fixed goals, informal networks underscore the importance of proactive involvement in transformation processes, thus reinforcing faith in the transformative outcomes.

## 6.3. Methodology

This section outlines the methodology employed during the workshop to develop transition pathways for the Water4Change (W4C) research programme.

W4C is a collaborative research initiative launched by the Government of India, co-funded by India’s Department of Science and Technology (DST) and the Dutch Research Council (NWO). The programme aims to apply the Water Sensitive City (WSC) concept using the TM approach over five years (2019-2024), focusing on Bhopal and Bhuj due to their diverse geographical and socio-economic contexts. W4C collaborates with local Indian academic and research institutions in Bhopal and Bhuj as knowledge partners. These partners work to nurture capacities for water-

sensitive governance and sustain the programme's outcomes by engaging relevant stakeholders and adapting the TM approach to co-create locally sensitive solutions.

We first establish an understanding of the case studies before delving into the adaptation of transformative methodologies.

### **6.3.1. Case Studies: Bhopal and Bhuj**

Bhopal and Bhuj each face distinct urban challenges shaped by their unique geographical and socio-economic contexts. Bhopal, the capital of Madhya Pradesh, is centrally located and known for its lakes. Despite this, official reports highlight issues with water quality and quantity (CAG India, 2021). Fieldwork further revealed that local stakeholders have a false sense of water sufficiency due to reliance on external sources, overlooking groundwater contamination, particularly by Persistent Organic Pollutants (PoPs) (Everard et al., 2020). Conversely, Bhuj, located in India's arid north-western frontier, historically benefited from unique hydrogeology and traditional water management (van der Meulen et al., 2023). However, rapid population growth has led to groundwater depletion and increased salinity (Saha & Gor, 2020). Field observations reveal conflicts between local aquifer restoration efforts by NGOs and citizen groups and government initiatives prioritising distant water sources.

Despite differing water issues, both cities face similar governance challenges exacerbated by rapid urban growth, migrant inflows, and haphazard infrastructure development. Limited resource allocation and centralised decision-making further hinder effective water management. In Bhuj, the Bhuj Nagar Palika (Bhuj Municipal Council) manages the water supply but lacks autonomy, following directives from the state capital, Gandhinagar (Bajpai & Kothari, 2020). Similarly, in Bhopal, the transition of water supply management to the Bhopal Nagar Nigam (Bhopal Municipal Corporation) is complicated by the continued influence of the state's Public Health Engineering Department (PHED), highlighting issues of centralisation and limited delegation of responsibilities (CAG India, 2021).

### **6.3.2. W4C workshops**

The programme proposal had already set out a plan for four workshops, each aligned with the four steps of TM: problem framing, envisioning, pathway development, and city-specific adaptation. The first two workshops focused on identifying key challenges and developing a shared vision within each city. However, as we reflected on the outcomes and overall experience, it became clear that the transferred methodology of TM did not translate seamlessly into the Indian context. This highlighted the need for a more grounded and flexible approach, particularly for the third workshop on 'pathway development,' where informality emerged as a crucial element.

This realisation prompted a shift in strategy. Rather than adhering rigidly to a predefined process, we turned to informality as a means of fostering more locally relevant and transformative engagement. Consequently, this chapter explores how the third workshop was specifically

designed with informality at its core. It also examines how this shift helped address governance and procedural barriers—issues that had previously been dismissed as minor or accepted as part of the status quo.

The following sections detail the methods employed.

### **6.3.3. Pathways development workshop**

#### **A. *Prior Fieldwork***

The study began with extensive fieldwork, including 64 semi-structured interviews in Bhopal and Bhuj. Using ethnographic methods (Gobo, 2008), the first author engaged with government officials, NGOs, civil society, academics, and citizens to understand the informal practices shaping water management. Visual ethnography (Pink, 2013) revealed unconscious traits influencing the actors. This fieldwork highlighted distinct repair practices in each city and how informality shaped these practices.

#### **B. *Venue and participants selection***

Delhi city was chosen as the workshop venue due to its national significance and accessibility, allowing the inclusion of national experts to provide insights to city stakeholders. These experts were chosen based on their approachability, diverse experience, and openness to candid discussions.

For participant selection, the team used prior workshops and fieldwork insights to identify key stakeholders crucial to each city's water management. A diverse group of 6-7 stakeholders from each city, including government officials, academics, civil society members, and citizens, was chosen by Indian and Dutch researchers. Selection criteria included relevance to ongoing projects, willingness to engage, and availability for future workshops.

While the goal was to include a balanced representation, local partners also invited influential figures resistant to change to strengthen their relationships, which risked marginalising transformative voices. To balance this, PhD researchers invited stakeholders based on research needs. This move provided a transparent view of governance dynamics, with these influential figures potentially becoming agents of change if they embraced the workshop's learning.

#### **C. *Training for facilitation***

Empathetic facilitation is crucial for preventing the reinforcement of hierarchies and addressing bias (Haapala et al., 2016). Experienced facilitators in the W4C programme conducted mock sessions to equip PhD researchers with the skills needed to create an environment that fosters organic discussion, respects marginalised voices, and allows for in-depth patient interactions. W4C aimed to develop researchers as knowledge brokers and change agents, skilled in resolving conflicts, bridging expert and non-expert gaps, and driving transformative change. Maintaining



a high facilitator-to-stakeholder ratio (1:2) ensured participants felt heard and motivated for sustained engagement.

#### **6.3.4. Workshop design**

Given the resource constraints, the two-day workshop was designed to adapt existing transition pathways to achieve Water Sensitive Cities (WSC) objectives. The sessions were crafted to *cultivate confidence in challenging regressive structures, encourage frugality and creativity, and instil faith* in the transformative process while respecting India's collaborative culture.

*Session 1* aimed to cocreate transformation pathways while aligning them with existing projects using backcasting. The backcasting process (Robinson et al., 2011), which works backwards from a desired future to identify the steps required to achieve it, was employed iteratively. This iterative design allowed for multiple rounds of questioning the feasibility of pathways, reflecting on challenges, and providing anonymous feedback through tools like Mentimeter. The emphasis was on creating an environment that normalised reflection and course correction, supported by sensitive facilitation and strategic nudge questions to foster confidence in participants. The inclusion of multiple facilitators was intentional to ensure that the implications of suggestions were explained from different disciplinary perspectives, enabling a more comprehensive understanding.

*Session 2* aimed to consult with experts and seek solutions for challenges identified in earlier sessions that could hinder the uptake of transformation pathways. Recognising that discussing governance challenges can be difficult, the session was designed to take place in a relaxed, informal setting resembling a food fair to encourage spontaneous dialogue. The use of culturally relevant snacks and informal, off-the-record discussions was deliberate, allowing participants to engage in unfiltered conversations akin to 'coffee machine chats.' This approach was meant to cultivate confidence, making it easier for participants to ask questions without the pressure of needing to sound correct or knowledgeable. The design promoted flexibility, allowing participants to engage with experts at their comfort level, fostering a more meaningful exchange of knowledge while reflecting on how to frugally address their issues. However, the design also acknowledged that some participants might face hierarchical barriers, such as seniority or gender dynamics, which could limit their willingness to engage openly. This led to the design of an additional session (*Session 3*) without any experts.

*Session 3* was designed to facilitate peer-to-peer learning between stakeholders from different cities in addition to what they had learned from experts in the previous session. The session adopted a classroom-style format without a central authority figure to promote balanced dialogue and collaboration. Leveraging the existing hierarchy, senior participants from one city were paired with junior participants from another, fostering a mentorship dynamic. The design aimed to create a safe-enough space where participants could openly discuss 'loopholes' in their approaches, which are often avoided in formal settings. By encouraging continuous engagement and building rapport throughout the workshop, the design enabled participants to share

individual experiences and practical insights. This helped in developing long-term relationships and collaborations beyond the workshop itself. The session celebrated the identification and resolution of challenges, fostering creativity and faith in applying novel solutions within resource constraints.



*Photograph 14: Actors discussing during backcasting session. (Photograph Courtesy - Johnathan Subendran)*

### **6.3.5. Workshop follow up and evaluation**

Post-workshop, stakeholder contributions were documented using Miro software, and the first author conducted 8 follow-up semi-structured interviews (3 in Bhopal, 2 in Bhuj, 3 with national experts). These interviews analysed using ATLAS.ti software, helped us understand the participants' learnings and examine the extent to which it facilitated achieving their respective goals. This was to comprehend how the space facilitated the nurturing of transformative capacities and to ascertain the role of informality in this process.

## **6.4. Results**

We analysed workshop outputs and follow-up interviews to illustrate how these parameters shape transformative spaces in India. Additionally, we compared these findings with interviews conducted with the same stakeholders during the first author's earlier fieldwork to trace shifts in their governance capacities. This analysis offers insights into how the workshops and subsequent engagement contributed to nurturing the governance capacities needed to navigate entrenched hierarchies and challenge the technocratic dominance in Indian water governance.

#### **6.4.1. Cultivating confidence to recognise dismissed issues**

The workshop encouraged participants to challenge entrenched water governance structures by sharing individual experiences rather than impersonal, third-person accounts. This approach humanised the issues, emphasising the need for non-engineering solutions. At the Bhopal table, personal stories repeatedly surfaced about the lack of awareness about contamination, highlighting concerns often dismissed in formal settings. Facilitators skilfully introduced these overlooked topics, fostering an environment where participants felt validated and confident in addressing them.

These dialogues also led to a reassessment of problems, encouraging more open dialogue, and altering perceptions of experts and those initially seen as transgressors. This shift helped resolve long-standing issues, as evidenced by a stakeholder<sup>26</sup> who initially denied contamination problems but later acknowledged them, albeit minimally:

*“It is correct that it is a problem, but the extent of what he was saying was that there were a lot of things that were not true.”*

Tools like Mentimeter played a role in addressing overlooked topics such as institutional resistance, political bullying, and vested interests, thereby exposing hidden challenges in the system.

#### **6.4.2. Frugality and creativity aid in broadening the proposal to seek funding**

Informal settings, like food fairs as unofficial discussion spaces, fostered frugality and creativity. These organic environments encouraged candid conversations between experts and stakeholders, free from formal constraints such as recordings, strict timelines, or external judgment. This flexibility allowed stakeholders to take ownership of solutions, leading to sustained engagement.

Initially focused on technological upgrades, discussions soon shifted to addressing managing expectations and emotions in resource-constrained environments. One conversation centred on navigating funding challenges by adopting a frugal mindset. This was emphasised during expert consultation where stakeholders explored innovative strategies for securing funding. What began as a focus on technical expertise evolved into discussions on broadening the scope of funding proposals. The expert<sup>27</sup> remarked,

*“...the problem is not with funding; the problem is how you propose for funding”.*

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26 Interview: WS\_I\_06\_Bhopal, 19/05/2023

27 Interview: WS\_I\_05\_Expert, 18/05/2023

The expert advised the stakeholders to frame their projects with broader applicability, such as disaster management, thus broadening their perspectives.



**Photograph 15:** Informal setting such as food-fair allowing candid conversations. (Photograph Courtesy - Johnathan Subendran)

#### 6.4.3. Bhopal-Bhuj instil faith by mentoring each other simultaneously

The workshop also strengthened trust in water governance strategies through cross-city mentorship. Senior stakeholders from one city mentored juniors from another, using existing hierarchical structures to foster open discussions on overcoming governance challenges. This cross-city mentorship enabled open discussions on overcoming governance challenges, transcending technical details to focus on real-life problem-solving. Senior stakeholders shared their successes and challenges, enhancing credibility and providing a balanced perspective on navigating governance obstacles. The format encouraged juniors to ask candid questions, leading to a deeper understanding of feasible solutions.

Mutual inspiration between the cities was evident, with Bhopal institutionalising a lake development authority and Bhuj focusing on community awareness. Each city offered valuable insights to the other. A stakeholder<sup>28</sup> from Bhuj described their experience:

*“There was a team from Bhopal that mentioned they have a lake development committee, which we don’t have here. If we had a lake development committee and a pressure group that included media, eminent citizens, and working women—people from all walks of life—it would make a significant difference. These points were particularly important for me”.*

While not providing direct solutions, the informal settings were crucial in identifying the conditions for enabling repair. Discussions revealed previously unrecognised capacities for coordination, collaboration, innovation, and adaptation, even within the constraints of formal rules and limited resources. Through thoughtful facilitation in these informal settings, participants became better equipped to nurture these capacities, advancing their water sensitivity goals, and developing more sustainable solutions.

28 Interview: WS\_I\_02\_Bhuj, 28/04/2023



**Photograph 16:** Senior stakeholders from one city mentoring junior stakeholders from other cities. (Photograph Courtesy - Johnathan Subendran)

The three parameters played a key role in grounding the transformative process within the Indian context, fostering governance capacities to an extent. While not all objectives were fully realised, these parameters influenced the development of the pathways. By addressing overlooked issues such as representation, data credibility, and institutional awareness, the parameters enabled participants to move beyond technocratic approaches, contributing to more inclusive and systemic solutions. Including marginalised voices ensured that the pathways extended beyond purely technical concerns, incorporating suggestions to develop mediating bodies, community-led data management, and innovative funding strategies. Although challenges remained, the pathways became somewhat more actionable, drawing on ongoing projects and collaborative networks, and were shaped by a practical understanding of local contexts. This iterative and informal approach, while imperfect, helped transform ambitious goals into more feasible and contextually grounded outcomes, reflecting the ongoing need for adaptive, sustainable governance in India's water sector.

## 6.5. Discussion and conclusion

Our study explored how informality fostered transformative spaces in the Indian context. By leveraging three key parameters, these spaces nurtured governance capacities and influenced the development of new pathways. We examine how informality challenged technocratic dominance in water governance and led to nurturing governance capacities, as opposed to the external capacity-building approach often promoted by Northern-sponsored programmes. Finally, we discuss how these spaces helped situate water sensitivity within the local context, moving beyond external frameworks to adopt locally grounded approaches.

### 6.5.1. Addressing technocratic hegemony

The transformative spaces aimed to challenge the dominance of technocratic approaches in Indian water governance, though progress was gradual. Initially, workshops were dominated by discussions of technological upgrades and infrastructure, reflecting the entrenched preference for engineering-driven solutions. This dominance was reinforced by authoritative actors using specialised jargon, which marginalised non-technical voices and alternative perspectives. As the workshops unfolded, participants began to recognise the limitations of purely technological solutions. Broader conversations emerged around the need for governance reforms, mediation, and community engagement—topics often side-lined in technocratic discussions. This shift from focusing on ‘what to do’ to ‘how to do it’ opened discussions on democratising data, addressing governance rigidities, and fostering community involvement, all crucial for a more inclusive water management approach as discussed by Zwarteven (2017) and Hartley & Kuecker (2021).

Informality was central to this shift. Drawing from Cornwall’s (2004) concept of ‘unofficial spaces,’ alongside Pereira et al. (2015) idea of ‘safe enough spaces,’ the workshops created informal environments like food fairs and classroom-style settings that encouraged openness and creativity. Tools such as Mentimeter facilitated anonymous and off-the-record engagement, allowing participants to challenge technocratic dominance without fear of repercussions. This design helped humanise water management and fostered broader discussions, incorporating marginalised voices and non-technical perspectives. Though technocratic dominance was not entirely dismantled, these informal spaces marked a step toward questioning entrenched power structures. The spaces did not immediately produce concrete solutions but laid the groundwork for more participatory and collaborative governance approaches, demonstrating the potential of informality to challenge rigid, formal structures.

### 6.5.2. Spaces for nurturing capacities, not building them

The introspective processes highlighted in our study suggest that transformative efforts in the Global South do not require building new capacities but rather nurturing existing ones. While we did not focus on specific capacities in this paper, our findings indicate that transformative spaces can help programmes and projects shift from external capacity-building to an approach that acknowledges and strengthens what is already present.

The governance structures we observed were characterised by entrenched hierarchies based on gender, experience, and administrative levels, which perpetuate governance challenges. Rather than dismantling these hegemonies entirely, our framework leveraged informality—self-organisation, grassroots networks, reciprocity, and reverence-based seniority—as a means to navigate them. This locally grounded approach, often overlooked by external perspectives, holds the potential for meaningful transformation. By fostering alternative approaches that pluralise water management governance, these spaces aligned with Mormina & Istratii’s (2021), argument that nurturing local capacities, rather than building external ones, leads to more sustainable, contextually rooted outcomes.

### **6.5.3. Situating sensitivity**

The transformative spaces created through the W4C programme enabled stakeholders to explore pathways toward water sensitivity while reflecting on past and present governance challenges. Rather than adopting an external, Australian-derived approach, these spaces fostered a collective understanding of what water sensitivity could mean for India. The WSC framework emphasises integrated water cycle management, community-led governance, urban resilience, and ecological sustainability (Bichai & Flamini, 2017). In India, however, the focus shifted towards localising decision-making within resource constraints by fostering awareness, creating mediation mechanisms, and strengthening transformative capacity for community-driven governance.

The findings suggest that water sensitivity can be realised through a synergistic approach, where sectors and domains collaborate to repair existing governance arrangements rather than creating new overarching structures (Giordano & Shah, 2014). Participants could situate water sensitivity in a pragmatic, frugal, and locally relevant manner by promoting knowledge sharing, enhancing mediation, raising awareness, and democratising data.

### **6.5.4. Acknowledging the political position of W4C**

Despite these advances, the transformative spaces created by the W4C consortium faced challenges. Supported by the central government, the consortium sometimes struggled with perceptions of bias. The Indian partners had to cautiously navigate a politically sensitive landscape, requiring careful management of professional relationships to ensure future engagement. Their established networks were crucial in engaging authoritative stakeholders, but maintaining a balance between prompting reflection and instigating change required a nuanced approach.

In response to the technocratic hegemony within the W4C research program, researchers with engineering and urban planning backgrounds expanded their roles to function as knowledge brokers across disciplines and geographies. These efforts underscore the significance of social, emotional, and relational factors in interpreting knowledge rooted in Action Research (AR), as Fazey et al. (2018) emphasised.

### **6.5.5. Future scope and limitations**

The findings of this study are specific to the Indian context, and their generalisability is limited unless they are adapted to regions with different governance structures and cultural settings. Although informality was emphasised as a key mechanism, sustaining these transformative spaces may require support from formal institutions to ensure their long-term credibility. Furthermore, the success of these spaces is closely tied to the quality of facilitation, which can influence outcomes and introduce bias.

Because of these limitations, we advocate for expanding beyond workshops to create diverse transformative spaces such as living labs, accelerator hubs, and learning platforms. These spaces should foster collaboration in India and other post-colonial contexts rooted in local

ethics and practices. In doing so, development corporations and funding bodies must avoid a 'white saviour' mindset, as critiqued by Escobar (1995), and instead support local transformative cultures without appropriation. Likewise, local stakeholders should use Northern frameworks as inspiration rather than rigid models to validate locally grounded methodologies.

Building on Silva et al. (2024) upscaling this approach invites practitioners to reflect on their political positions and collaborative behaviours. Meaningful and honest facilitation rooted in local contexts will help define transformative spaces, contributing to more sustainable and culturally sensitive development practices.



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Intermezzo

A

Nurturing reparative  
governance capacities  
through transformative  
spaces

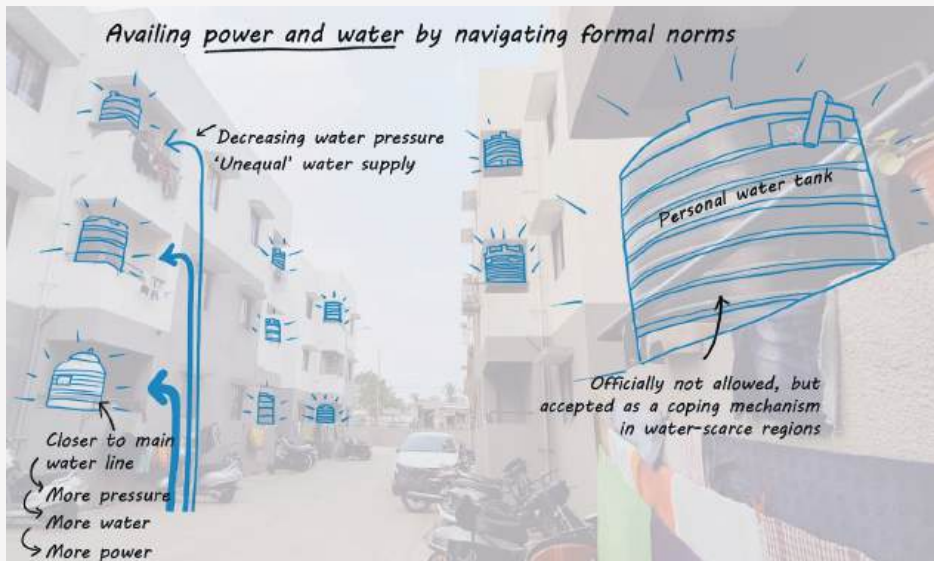


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**Photo Narrative 9: Informal tanks- Symbols of power**

*Legally, owning a personal water tank violates regulations, as it can lead to water hoarding and contribute to unequal water distribution. However, water scarcity has normalised the practice in this community, making water tanks a standard feature. These tanks have become a practical necessity and a symbol of social prestige. The proximity of a tank to the primary water source or tap is particularly significant; the closer the tank, the higher the water pressure, allowing for faster filling and providing greater benefits to the owner.*

*This dynamic is well understood by the municipal supervisor, who chooses not to challenge the status quo despite being a citizen of the same city and fully aware of the inequities. Instead, he seeks to maintain consumer satisfaction by ensuring that some water is supplied to each tank at least once a week. This arrangement, while imperfect, alleviates pressure on the local government by reducing the volume of complaints related to water scarcity. Over time, residents have adapted to this scarcity and the resulting unequal access, and the water tanks have taken on multiple layers of meaning.*



*These complex and negotiated practices surrounding water management play a crucial role in the overall governance of water resources. This raises important questions about what governance capacity truly looks like in such contexts: How does it manifest, and how is it exercised within these discreet value systems? In this intermezzo, I explore whether and how these capacities were nurtured through the transformative spaces of the W4C programme, which operates within this unique cultural context and resource-constrained environment. The reflections from the W4C workshops further illuminate the role of informality in shaping these governance capacities, providing a foundation for rethinking water management strategies in similar settings.*



## Intermezzo A

This intermezzo delves into the outcomes of the ‘pathway development’ workshops, designed to cultivate reparative capacities essential for fostering water sensitivity. The W4C workshops comprised four stages: problem framing, visioning, pathway development, and pathway detailing. The problem framing and visioning workshops took place in the cities of Bhuj and Bhopal, laying a foundation for the subsequent workshops focused on pathway development and detailing.

Upon completing my fieldwork, insights from the problem framing and visioning workshops prompted me to rethink the development of transformative spaces, particularly by adapting these spaces through informality, as discussed in the previous chapter. I modified TM’s transition arenas into a more flexible framework of transformative spaces, better suited to India’s complex collaborative dynamics. I developed a ‘safe-enough’ transformative space specifically for the ‘pathway development’ workshop, held at a neutral venue in Delhi, where I invited stakeholders from other cities to foster inclusive engagement.

In this intermezzo, I critically examine whether, and to what extent, the pathway development (held in Delhi) and detailing workshops (conducted in respective cities) nurtured the capacities necessary for reparative action, which are intrinsically embedded within pathways towards water sensitivity in both cities. I specifically analyse the development of reparative capacities by exploring the intended objectives of the established pathways (Section A.1) and examining observed acknowledgements, shifts, and recommendations regarding the capacities required to fulfil these pathways (Section A.2), based on on-site discussions and follow-up interviews with stakeholders and experts. This evaluation also incorporates ‘table chatter’—the informal yet meaningful exchanges—and subsequent dialogues that helped integrate these insights into strategies for sustainable implementation.

The identification and nurturing of capacities emerged not solely from the two workshops but rather through a gradual process of reflection and learning. By consistently engaging the same actors across workshops and revisiting visions and pathways, participants were encouraged to reflect on whether current efforts aligned with the proposed pathways towards water sensitivity. This iterative engagement normalised discussions around obstacles and deviations, alongside solutions and the capacities needed to bring these pathways to fruition.

I examine the tangible actions observed during the workshops, illustrating how governance capacities—both consolidative and *jugaadu*—manifested in practice and contributed to advancing pathways towards water sensitivity goals. This analysis offers insights into how these capacities facilitated iterative adjustments, collaborative engagement, and refinements to the overarching goals.

## A.1. Outputs: The pathways

This section presents the pathways developed as outputs from the collaborative workshops aimed at achieving water sensitivity. Pathways are comprehensive roadmaps designed with input from diverse stakeholders and crafted to encompass multiple policy domains, integrating strategies synergistically (Frantzeskaki et al., 2019). These pathways play a crucial role in enabling structural change across various societal systems, spanning socio-cultural, institutional, political, economic, technological, and ecological dimensions. Such a multifaceted approach is essential for addressing the complex challenges and aligning with the long-term goals of water-sensitive cities.

The pathways were developed iteratively through sessions that emphasised refining and validating strategies. The pathway development workshop was divided into three focused sessions: (1) Identifying roadblocks, (2) Expert consultations at a food fair, and (3) Peer-to-peer exchanges in a classroom setting. These sessions allowed participants to identify barriers, engage with experts, and collaboratively brainstorm solutions. Participants engaged in backcasting from the water sensitivity goals defined in an earlier visioning workshop to ground the pathways in a realistic trajectory. This approach (Robinson et al., 2011) works backwards from a desired future state, identifying actionable steps and intermediary goals needed to reach that future. Unlike forecasting, backcasting emphasises a desirable endpoint and strategises backwards to map feasible actions to present conditions, making it particularly effective in navigating uncertain futures where traditional projections may fall short.

The initial pathways crafted during these sessions were found to be overly ambitious and required refinement to align more closely with current efforts and constraints. Stakeholders assessed the pathways against previously identified problems, comparing them with ongoing efforts to determine alignment with water-sensitive city goals. This iterative process enabled participants to reflect on practical feasibility, using tools like Mentimeter to provide anonymous feedback and involved discussions with experts and peers to address roadblocks and make pathways more actionable. The pathways were ultimately validated and detailed further with a larger group of stakeholders at the 'pathway detailing' workshop within their respective cities.

The final pathways diagram highlights two main outputs: first, it facilitated alignment among the various pre-existing goals of stakeholders toward a unified vision of water sensitivity; second, it underscored the need for a context-specific first step for the Global South, recognising that 'soft take-offs,' often overlooked, are essential in ensuring sustained progress across diverse efforts.

For both the cities of Bhuj and Bhopal, these outputs translated into actionable steps by breaking down the overarching goal of water sensitivity into achievable sub-goals and operationalising them within the local context (represented by black circles in Figures 5 and 6). The initial round of backcasting activities to realise these goals was aligned with their immediate priorities. For example, as illustrated in Figure 5, Bhopal was already undertaking some ecological restoration

## Intermezzo A

and financial sustainability efforts. However, these disparate initiatives were now unified under the broader framework of water sensitivity. Furthermore, the stakeholders identified key impediments to achieving these objectives, including the need for real-time data, increased awareness of pressing issues, and the importance of having mediators and knowledge brokers. These elements were considered essential first steps to 'repair' their ongoing efforts towards water sensitivity. By acknowledging these initial steps, the stakeholders also brought attention to previously overlooked concerns, such as water contamination and the lack of access to water quality data.

Similarly, as seen in Figure 6, the backcasting process in Bhuj, characterised by vibrant NGO activities, underscored the need to bolster existing efforts related to awareness, regulation, and knowledge repositories. However, further deliberation revealed that the activities of local government and NGOs were frequently disjointed and competitive, impeding the achievement of water sensitivity. This realisation prompted the recognition that establishing a unified local governance structure would be an essential first step. Such a governance unit could better coordinate efforts, facilitate more effective resource sharing, and align the endeavours of NGOs towards a shared objective.

These initial steps closely aligned with the principles of restorative justice, facilitating reparation by elevating historically marginalised perspectives and concerns. Furthermore, they repurpose fragmented and disjointed efforts, redirecting them towards a collective objective.

Further, I have shared the simplified pathway diagrams for both cities, which visually encapsulate these insights.

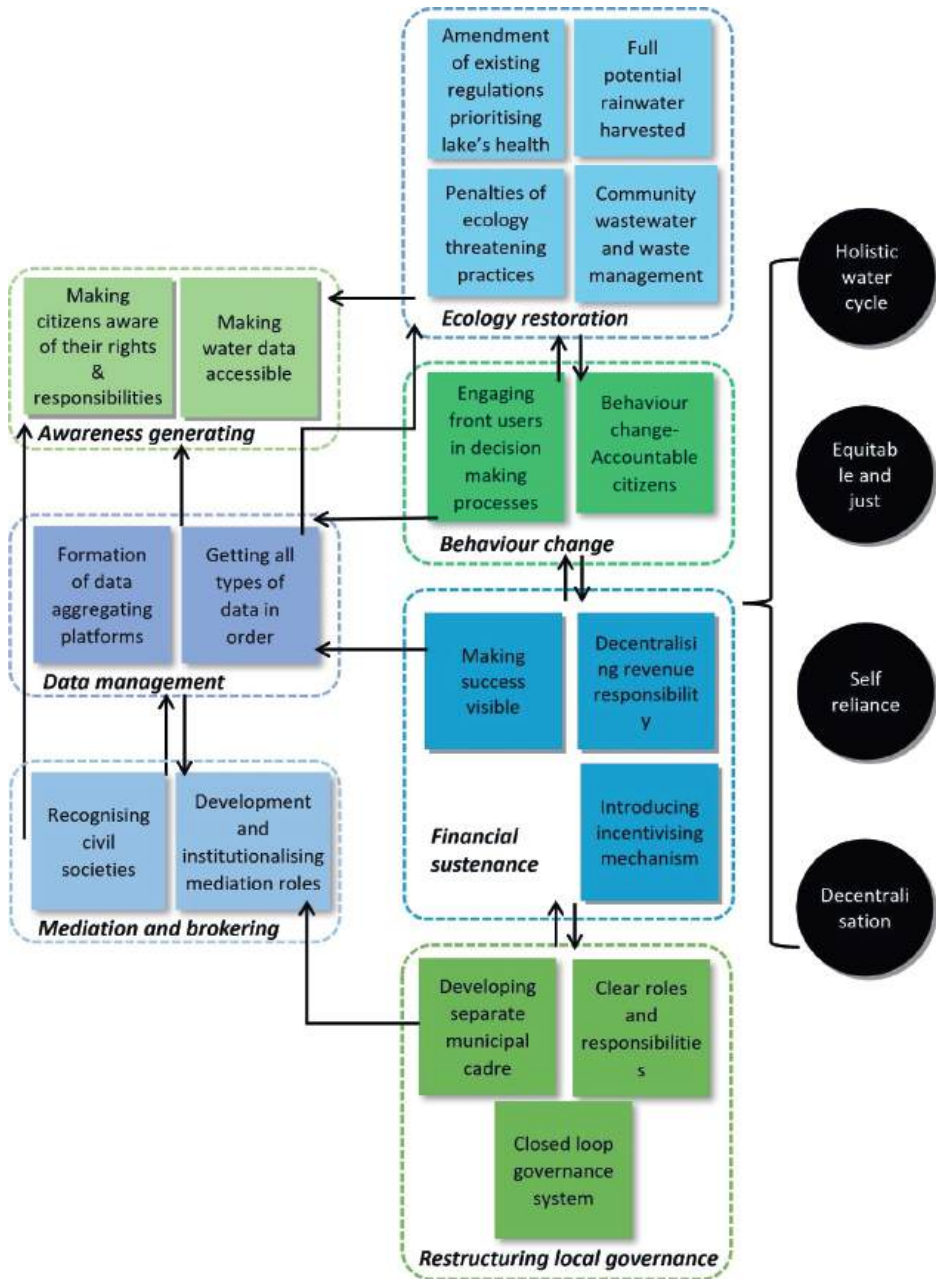


Figure 5: Simplified Bhopal Pathways

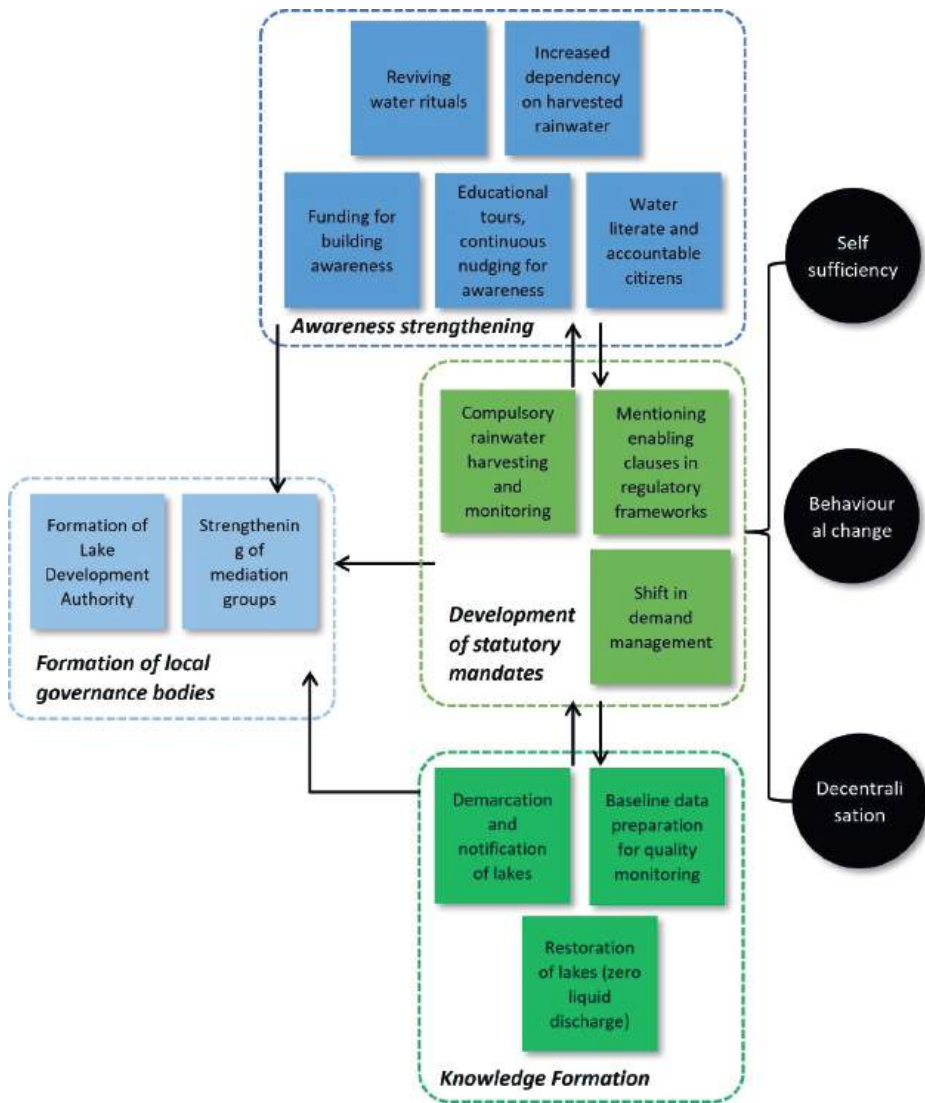


Figure 6: Simplified Bhuj Pathways

In the following section, we elaborate on how these two capacities materialized into actionable steps towards reparation.

## A.2. Outcomes: Reparative capacities

In this section, I analyse the observed acknowledgements, shifts, and recommendations that emerged regarding the capacities needed to bring these pathways to fruition, drawing on workshop interactions and follow-up interviews with stakeholders. The shift towards recognising reparative capacities unfolded as stakeholders began reflecting on the skills and resources required to implement the pathways.

The initial discussions centred on technological upgrades, model finalisation, and the implementation of new systems. However, within the safe, unofficial space of these workshops, conversations evolved beyond technocratic solutions, encompassing governance challenges as well. As these dialogues progressed, stakeholders acknowledged that while they shared similar end goals, they had yet to fully address underlying issues that were non-technocratic. Normalising discussions around these challenges and shedding light on previously overlooked concerns led the group toward actionable steps for realising these ideas.

Throughout the exchanges, stakeholders identified latent attributes of water sensitivity within their existing work, including system connections across sectors, intergenerational aspirations, holistic water management approaches, and democratising decision-making. Although such efforts were often fragmented, this process of reflection aligned them with a collective objective. In the subsequent analysis, I explore the emergence of consolidative and *jugaadu* capacities, examining how these were nurtured within the workshops and the extent to which they facilitated progress towards the desired pathways for water sensitivity.

### A.3.1. Consolidative capacity

Consolidative capacity emerged as the ability of stakeholders to strengthen or cultivate the conditions necessary for self-organisation towards a shared and long-term goal within a culturally complex, and resource-constrained environment. This capacity was nurtured through the workshops in several ways. First, by *reprioritising issues*, stakeholders could shift focus towards addressing underlying social challenges that had previously been neglected. The discussions also facilitated a *balance between universal objectives and local aspirations*, ensuring that global goals were adapted to fit the specific needs of the communities involved. Moreover, the capacity was actualised by emphasising the necessity of *devising a mediating agency* to rebuild trust and navigate complex stakeholder relationships. Finally, the workshops fostered *localising power and decision-making*, encouraging a shift towards decentralised governance that empowered local actors and brought decision-making closer to the source of the problem. Together, these actions collectively enhanced the consolidative capacity of the stakeholders, positioning them to better self-organise and address challenges in a sustainable manner.

#### 1. *Re-prioritising issues*

The workshops facilitated discussions illuminating critical issues, fostering engagement among diverse stakeholders to address their challenges. Mentimeter facilitated this process by

prompting consideration of previously overlooked or underappreciated concerns. The anonymity provided by this tool enabled participants to express sensitive sentiments openly, revealing that some core issues, such as 'unwillingness to change,' 'taken for granted', and 'sense of hopelessness', had been neglected, as illustrated in Fig. 3. Consequently, participants focused primarily on tangible, technocratic issues due to their perceived linearity and manageability.

The Mentimeter session revealed pressing concerns, such as the 'need for awareness,' 'need for data,' and 'need to repair trust.' In response to these concerns, the workshops involved stakeholders from other cities and invited experts who introduced fresh perspectives that challenged conventional approaches to some extent. The iterative nature of the discussions fostered continuous reflection on the complex, multifaceted nature of water-related problems. Stakeholders acknowledged that addressing these issues through a purely techno-managerial lens was inadequate and, in some cases, exacerbated the challenges.

This broadened the scope of discussions, allowing social issues to be considered alongside technical ones. The discussions cultivated confidence, and participants recognised that these social challenges were not only significant but also addressable. As a result, city stakeholders began to acknowledge the need for a more interdisciplinary approach, including new actors and perspectives beyond traditional engineering solutions.

Therefore, the informal nature of the workshops facilitated a departure from the rigid, colonial-influenced governance models typically employed in Bhuj and Bhopal. This shift encouraged a more open exploration of governance challenges from various disciplinary angles.

Despite the shift towards a more open exploration of governance challenges, government stakeholders in Bhopal maintained a rigid stance. They asserted that the concerns raised were not novel and claimed that they had never been disregarded in the first place. Furthermore, they contended that even if the issues had been overlooked, it was beyond their capacities to address them, contradicting the claims made by citizens and civil society organisations. However, these same government employees subsequently acknowledged the problems privately, though they could not admit them publicly as official government representatives<sup>29</sup>.

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29 Interview: WS\_I\_06\_Bhopal, 19/05/2023

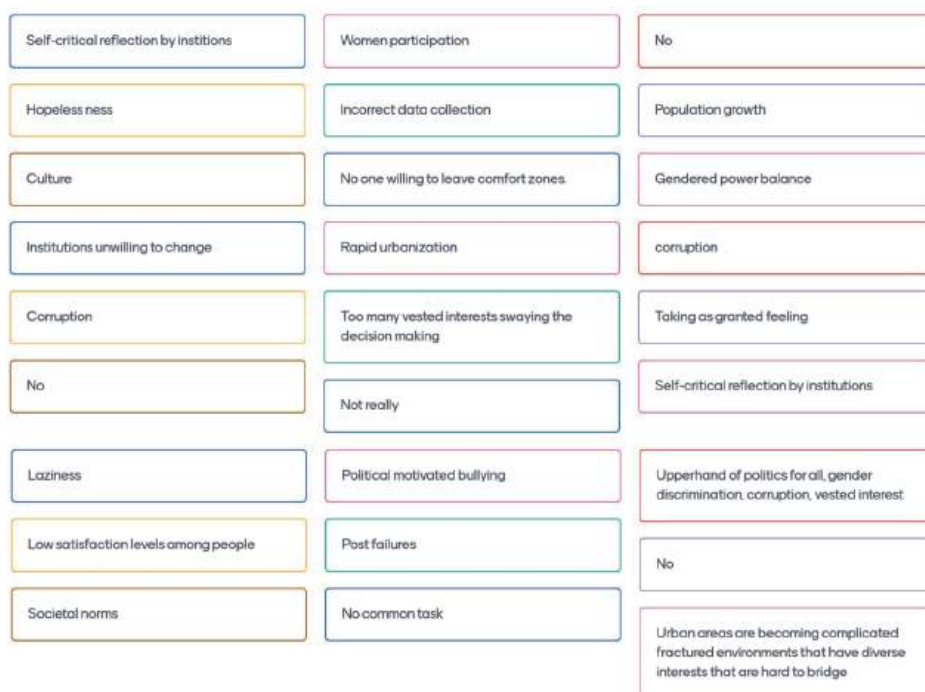


Figure 7: Mentimeter results

## 2. *Balancing between universal goals and local goals*

The workshop discussions underscored a tension between universal goals and local objectives. Government representatives<sup>30</sup>, often aligned with international funding bodies, emphasised global sustainability objectives such as SDG 6 or the continuous provision of water services as overarching goals<sup>31</sup>. These were viewed as essential for sustaining long-term development. However, local citizens and CSO representatives perceived these goals as distant and abstract, leading them to focus on more immediate, localised objectives.

In Bhopal, for instance, sustainability was redefined to prioritise the health of local water bodies by addressing contamination issues. This reinterpretation helped bridge the gap between broad, high-level objectives and the practical needs of the community, highlighting the disconnect between policy goals and their actual implementation. Conversely, stakeholders in Bhuj recognised the importance of integrating water management goals with broader climate adaptation efforts. This approach fostered a sense of interconnectedness and unveiled new

30 Interview: WS\_I\_06\_Bhopal, 19/05/2023

31 Interview: WS\_I\_06\_Bhopal, 19/05/2023, Interview: WS\_I\_07\_Bhopal, 19/05/2023



funding opportunities<sup>32</sup>, demonstrating how local and global objectives can be aligned to achieve more meaningful outcomes.

### **3. Devising a mediating agency**

A notable outcome of the workshops was the recognised need for a mediating agency to facilitate collaborative problem-solving among stakeholders. This need was identified in the pathway diagram (Fig. 2) and reinforced through follow-up interview<sup>33</sup>, which highlighted the importance of mediation. The introduction of a third-party actor was proposed to address trust issues, develop familiarity among stakeholders to understand the capabilities and limitations of municipal processes<sup>34</sup>, foster familiarity among stakeholders, and facilitate difficult discussions. This would enhance collaborative governance and enable the effective implementation of water management initiatives.

Rebuilding trust was explicitly highlighted by a government official<sup>35</sup> from Bhopal, who acknowledged the negative perception held by citizens towards the government. The official remarked,

*“The biggest issue is that the people who we work for, don’t trust us, but then we are working for their own good; this is the major drawback in the government or the municipal sector. Because the people who you work for don’t feel that you their well-wisher”*

This sentiment underscored the necessity of mediation to resolve these trust deficits and ensure the successful consolidation of efforts.

In Bhuj (as seen in Fig. 3), the third-party mediator’s role was envisioned as crucial for maintaining current initiatives, including coordination, fundraising, behavioural change, and strengthening awareness. The establishment of such mediating bodies was a direct response to the palpable mistrust towards governmental agencies. These bodies aim to foster transparency, equitable decision-making, and trust-building among all stakeholders.

Additionally, further discussions resulted in proposals for dedicated governance entities, including the ‘People’s Commission’ in Bhopal and the ‘Samiti’ (committee) in Bhuj. In Bhopal, the discourse transitioned from a primarily technology-centric approach to incorporating more facilitative roles within governance. Concurrently, a participant<sup>36</sup> from Bhuj advocated for establishing a ‘pressure group’ to monitor and ensure the implementation of proposed initiatives through

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32 Interview: WS\_I\_02\_Bhuj, 28/04/2023

33 Interview: WS\_I\_01\_Bhopal, 28/04/2023

34 Interview: WS\_I\_06\_Bhopal, 19/05/2023

35 Interview: WS\_I\_07\_Bhopal, 19/05/2023

36 Interview: WS\_I\_02\_Bhuj, 28/04/2023

persistent follow-up. These new entities were conceptualised as neutral platforms to facilitate dialogue, clarify roles, and foster mutual understanding among citizens, experts, and authorities.

However, the lack of substantive government participation in the final workshops resulted in ambitious proposals that lacked the practicality required for prompt implementation. This highlights the necessity for sustained dialogue and exploring these initiatives across diverse forums to refine and effectively nurture consolidative capacity.

#### **4. Localising power and decision-making**

Decentralisation emerged as a core theme in the workshops, highlighting the need to distribute authority across new governance structures to reduce governmental dominance in decision-making. This shift towards a hybrid, decentralised model was intended to restore trust, enhance accountability, and ensure effective monitoring by involving citizens and third-party entities.

By engaging a range of actors—including NGO actors, active citizens, and (non-engineering) subject matter experts—the workshops demonstrated how incorporating less powerful stakeholders could reshape governance dynamics and help prevent the replication of hegemonic power structures. For instance, the proposal for a third-party mediator in Bhopal stemmed from a lack of trust in municipal authorities and aimed to reduce the strain on overburdened stakeholders.

The workshops' informal format revealed how traditional power dynamics could be reconfigured, promoting more dynamic interactions and new ways of disaggregating power. Their extended duration and casual setting also fostered personal relationships, which proved essential for building trust and collaboration among participants. These connections enabled in-depth discussions on practical challenges, empowering stakeholders to explore governance arrangements that are more responsive to local needs.

##### **A.3.2. Jugaadu capacity**

*Jugaadu* capacity refers to the ability to improvise through frugal, contextually viable methodologies, ideologies, and organisational structures. This capacity aims to foster inclusivity and alternative approaches essential for addressing water challenges in resource-constrained environments. This capacity was manifested through delineating strategies, empowered stakeholders with the insight to ingeniously reconfigure institutions and material frameworks, heralding 'social tinkering' as a pathway to remediation. This capacity was nurtured in several ways during the workshops. First, the sessions facilitated an *evolution in the understanding of knowledge*, shifting the focus from linear techno-managerial approaches to a more systemic approach that values diverse perspectives and governance challenges as essential knowledge. Additionally, the *ability to leverage constraints* was cultivated as stakeholders began to view previously insurmountable challenges as manageable opportunities, drawing inspiration from successful examples in similar contexts. Finally, the workshops were instrumental in *cultivating a sense of care and ownership* among participants, fostering a commitment to sustaining efforts

beyond the workshop despite the challenges of embedding such transformative thinking into existing frameworks. Together, these activities collectively enhanced the *jugaadu* capacity of the stakeholders, enabling them to address challenges within their resource-constrained environments creatively. However, the uptake of this capacity was significantly hampered by the absence of stewards capable of integrating these interventions into the socio-political context.

### **1. Evolution of understanding ‘knowledge’**

Throughout the workshops, a significant evolution in the understanding of knowledge was observed, paralleling the shift in problem framing. Initially, participants viewed knowledge as a set of ready-made solutions transferable across contexts, focusing mainly on technological and financial aspects, with minimal attention to governance. However, as the workshops progressed, particularly through peer-to-peer sessions, participants began recognising governance challenges as a critical form of knowledge. This realisation promoted a more systemic approach to problem-solving, acknowledging the value of diverse perspectives. The shift from a narrow focus to a holistic view<sup>37</sup> of knowledge was evident in pre- and post-workshop interviews<sup>38</sup>, highlighting the growing appreciation for alternative approaches to addressing challenges.

A pertinent example of this evolving understanding is seen in the urban planning officer’s<sup>39</sup> shifting perspective on water contamination in Bhopal. Initially, the officer regarded contamination as an ‘othered’ issue, restricted to a specific, less significant area, thus marginalising its impact. In a pre-workshop interview, the officer stated,

*“Well, it is not much. Ok, in that area specifically yes. But not here,”*

effectively framing the issue as peripheral. However, after engaging with an NGO activist who advocates on behalf of affected communities, the officer’s stance softened, moving from outright dismissal to reluctant acknowledgment. In a post-workshop reflection, the officer remarked,

*“It will take some time; it will take a long time. In some area there was pollution, and the ground water was polluted there is no doubt about it. On the district government’s instructions, the hand pumps that are in that area, Municipal Corporation has said that this water is not good. They have put up boards that it is to be closed.”*

Although the officer’s response remains cautious, the shift illustrates an opening for accountability and highlights how informal interactions within the workshops broadened his understanding of governance knowledge. This evolving awareness underscores the workshops’ role in promoting

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37 Interview: WS\_I\_02\_Bhuj, 28/04/2023, Interview: WS\_I\_08\_Bhuj, 09/06/2023

38 Fieldwork Interview: BHO\_I\_02\_G, 16/09/2021; Fieldwork Interview: BHO\_I\_06\_A, 23/09/2021; Interview: WS\_I\_06\_Bhopal, 19/05/2023; Interview: WS\_I\_07\_Bhopal, 19/05/2023

39 Fieldwork Interview: BHO\_I\_02\_G, 16/09/2021; Interview: WS\_I\_06\_Bhopal, 19/05/2023

alternative perspectives and reveals how informal spaces can subtly challenge entrenched views, gradually integrating complex social and environmental dimensions into official narratives.

## **2. Leveraging constraints**

A fundamental change during the third workshop was the burgeoning belief in the feasibility of change, driven by inter-city peer discussions. These discussions fostered confidence and belief in proposed solutions, shifting the focus from a perceived deficit in resources to navigating bureaucratic obstacles and aligning public expectations. Previously insurmountable constraints were now viewed as manageable, with the workshop environment fostering a respectful acknowledgement of these challenges. Strategies were celebrated for their ingenuity across cities, encouraging a shift from resentment towards constructive acknowledgement and efforts to overcome these challenges<sup>40</sup>.

For instance, one participant<sup>41</sup>, rather than attributing the limited success of the ‘Sathisingini’ – women empowerment initiative to insufficient funding, sought inspiration from counterparts in Kozhikode who achieved success under similar financial constraints.

*“But where is the gap? How they are running Kudumbashree so perfectly and why our Sathisingini is not working so effectively”*

In response, an expert<sup>42</sup> demonstrated that the real issue did not lie in the availability of funding but rather in the approach to utilising those resources. He suggested that adopting a more strategic and creative perspective could unlock new opportunities to address the challenges at hand:

*“the problem is not with funding, the problem is how you propose for funding... There are number of financing channels which are there, which can be used for different projects and all. If you look at the fundamental things, what I suggested to them to use, there are different mechanisms. SDMG State Disaster Mitigation Grant, National Disaster Mitigation Grant, then there are grant in health sector. For different sectors there are different sectors of funding, which are to be there.”*

## **3. Cultivating sense of care and ownership to sustain efforts**

The workshops tried to foster sense of care and ownership among stakeholders, which was crucial for sustaining efforts beyond the workshop’s duration. This was evident in how local partners communicated the programme’s intent to local stakeholders, emphasising the importance of long-term commitment not just for fulfilling project mandates but also out of

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40 Interview: WS\_I\_06\_Bhopal, 19/05/2023; Interview: WS\_I\_02\_Bhuj, 28/04/2023; Interview: WS\_I\_07\_Bhopal, 19/05/2023

41 Interview: WS\_I\_02\_Bhuj, 28/04/2023

42 Interview: WS\_I\_05\_Expert, 18/05/2023

genuine care and altruism towards the issues and communities involved. In Kozhikode (this case city is outside the scope of this study), this sense of ownership was institutionalised through the ‘Water Folks’ platform, serving as a model for inclusive dialogue. However, Bhuj and Bhopal struggled to embed similar transformative thinking. In Bhuj, a ‘living lab’ was proposed but remained a suggestion. At the same time, Bhopal faced difficulties finding an organisation to lead, primarily due to a lack of trust in authoritative bodies. The absence of solid stewardship to integrate these efforts into existing frameworks highlighted a critical gap in sustaining the momentum generated during the workshops.

Presenting below a summary of the results:

<i>Capacity</i>	<i>Manifestation</i>	<i>Description</i>
Consolidative Capacity	Re-prioritising Issues	Shifted focus from technocratic solutions to addressing underlying social challenges, fostering interdisciplinary approaches
	Balancing universal and local goals	Adapting global sustainability goals to fit local needs, bridging the gap between high-level objectives and practical implementation
	Devising a mediating agency	Proposed a third-party mediator to rebuild trust and facilitate collaborative governance, addressing trust deficits
	Localising power and decision-making	Decentralised governance, reconfiguring power dynamics to empower local actors and bring decision-making closer to the problem source.
Jugaadu Capacity	Evolution of Understanding Knowledge	Shifted from viewing knowledge as ready-made solutions to recognising the value of diverse perspectives
	Leveraging Constraints	Reinterpreted constraints as manageable opportunities, drawing on successful examples and strategic approaches to funding
	Cultivating a Sense of Care and Ownership	Fostered long-term commitment among stakeholders, despite challenges in embedding transformative thinking into existing frameworks

**Table 8:** Results summary

### A.3. Reflection

The Water4Change workshops highlighted the importance of informality in cultivating transformative capacities, particularly within complex, culturally diverse, and resource-constrained urban environments like Bhuj and Bhopal. This reflection delves into how informality contributed to reshaping governance approaches, fostering iterative learning, and nurturing existing capacities to achieve long-term water sensitivity goals.

### **A.3.1. Role of informal transformative spaces to nurture capacities**

Although the limited duration of the workshops was insufficient for tangible outcomes, these informal, temporary spaces provided a crucial platform for exploring ‘what if’ scenarios and deliberating on alternatives. The scarcity of resources and the urgency of interventions often leave little room for experimentation or innovative thinking. However, the informality of the workshops created the much-needed space to consider alternative approaches, especially in the face of constraints.

This setting revealed that governance structures, while often perceived as rigid, are, in fact, malleable. Although the workshops did not culminate in final governance measures, visions, or pathways, they initiated and offered a preview of how reconfigured power dynamics might look and how initial steps in repairing pathways, particularly in the social sector, could unfold. Informal interactions encouraged stakeholders to view the governance system as an evolving framework, capable of adaptation and modification, facilitating deeper engagement with all actors in the system—regardless of their perceived influence—and broadening the scope for collaboration and innovation.

Moreover, the workshops were instrumental in identifying the key conditions that foster the nurturing of consolidative and *jugaadu* capacities, where stakeholders could consolidate efforts or adopt improvisational approaches to promote water sensitivity through reparative actions. The informal environment played a vital role, demonstrating how stakeholders could unite to devise solutions that formal regulations might otherwise constrain. While regulations ensure order and accountability, they can also impose rigidity, limiting the questioning of existing structures or the development of innovative alternatives (Molle, 2004). Informal spaces provided the flexibility needed to challenge these entrenched systems, allowing stakeholders to experiment with new ideas and approaches that might not fit within the strict confines of formal governance (Mayaux et al., 2022).

Through this deregulated (not unregulated) setting (Roy, 2009), the workshops showcased how informal interactions could nurture capacities for restorative justice through reparation. They underscored the significance of identifying and addressing these nuanced conditions by fostering an environment where seemingly less prominent issues and marginalised perspectives could be acknowledged and elevated.

### **A.3.2. Normalising discussions of governance challenges**

The informal workshop setting helped normalise discussions about governance challenges, often side-lined in more formal contexts. The relaxed atmosphere encouraged participants to confront and discuss governance issues openly, acknowledging them as critical forms of knowledge rather than peripheral concerns. This shift allowed stakeholders to recognise that water governance challenges are central to effective water management and planning, aligning with the OECD’s (2011) assessment that the water crisis is primarily a governance crisis.

### **A.3.3. Promoting iterative and organic approaches**

The informal setup of the workshops encouraged iterative learning and organic strategies, building on the learning described by Haapala et al. (2016). This enabled stakeholders to continuously revisit and reassess their strategies, using tools like the problem tree to incorporate new perspectives and refine their approaches. This iterative process, enriched by the engagement with experts and peers from other cities, led to the reprioritisation of issues and the recognition of the limitations of existing mandates. For example, acknowledging the need for mediators in Bhopal emerged after multiple revisions of pathways through fluid and informal discussions.

The relaxed atmosphere of the workshops, characterised by a food fair, unsupervised classroom arrangement, and flexible durations, contributed to less formal engagement conducive to open dialogue and collaborative problem-solving. This setting allowed for an extension of session times and reorganisation of discussions, fostering a sense of ownership among city stakeholders and leading to a reprioritisation of issues based on collective insights. The approach was crucial in reconciling different problem framings and fostering a deeper understanding of the complexities involved.

## **A.4. Limitations and recommendations**

The workshops demonstrated several limitations, notably the need for a consistent, authoritative presence to maintain stakeholder engagement and translate discussions into concrete actions. Although government representatives in Bhopal privately acknowledged water contamination issues, this did not result in public actions addressing the problem. Future initiatives should strive to integrate a hybrid approach, blending the innovative flexibility of informal structures with the procedural accountability of formal governance, as suggested by Kösters et al. (2020). Furthermore, these workshops were interventions conducted within a limited timeframe. Sustained, meaningful engagement incorporating both formal and informal elements will ensure progress and guarantee that all stakeholder perspectives are heard and valued within the governance process.

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# 7

Discussion, conclusion,  
and future direction



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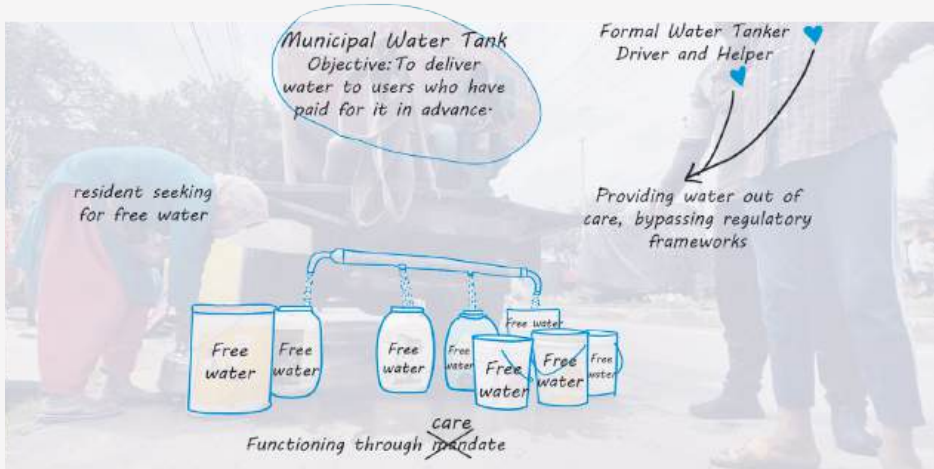
**Photo Narrative 10: Informal acts of compassion on contaminated lands**

*Policy decisions are typically grounded in rational frameworks, yet when the objective is to ensure equitable access to water, human compassion and altruistic values often become the unseen drivers of impactful choices, as demonstrated in this study.*

*I spent a day with a water tanker driver and his helper, observing their daily journey along dusty roads, each stop marked by the urgent need for water.*

*The driver's official route included only those residents who had submitted formal requests and held government-issued receipts. Yet, as we approached a neighbourhood perched on a slope above a contaminated aquifer, he made an unrecorded stop. The people here—a marginalised community, primarily from minority backgrounds—lived on land poisoned decades ago by a catastrophic chemical spill from the Union Carbide Plant. Their groundwater was irreparably contaminated, a lasting consequence of an industrial disaster they did not cause.*

*The tanker was their only reliable water source, but official allocations were persistently insufficient.*



*Aware of this, the driver did what he could: he retained portions of water from other deliveries, conserving enough to return to these residents with what remained. In this quiet act of defiance, he took on the role of a contemporary Robin Hood, filling their containers with an unspoken promise—an assurance that, even if the system overlooked them, someone saw their plight. Here, formal actors extend their roles informally, guided by values no policy can mandate. While these small, unofficial gestures may not directly address the systemic injustices underlying this crisis, they offer an immediate respite to those otherwise rendered invisible. These residents, forced to subsist on land contaminated by corporate negligence, depend on the driver’s quiet defiance for their survival. Meanwhile, formal policies remain indifferent, slow to acknowledge and respond to this enduring legacy of contamination. And so, through these informal channels of compassion, water continues to flow to those left unseen by official structures.*

The core of this research was to explore how informality could contribute to reparative urban water governance. In this thesis, I developed a conceptual framework to evaluate both the potential and the extent to which informality can support reparative governance capacities. This study has illuminated the meaning of water sensitivity and how water-sensitive futures can be achieved through reparative governance capacities shaped by informality. More specifically, it contextualises transformative governance through the lens of ‘reparation.’ This mode of transformation is incremental, iterative, and contextually grounded, complementing the often-ambiguous goals of water governance, especially those related to adaptation.

In developing the conceptual framework, I drew extensively on scholarship (Ahlers et al., 2014; Cawood et al., 2022; McFarlane, 2019; Misra, 2014; Roy, 2005, 2009; K. Schwartz et al., 2015; Wahby, 2021) that reconceptualises informality not merely as a reactive response to formal governance gaps but as an active, co-constitutive force within governance arrangements. This perspective positions informality and formality as interdependent, hybrid arrangements that function beyond conventional binaries. The lens of governance capacities allowed me to understand how these hybrid arrangements enable reparation.

My research further revealed that merely identifying transformative capacities through informality was insufficient. Such approaches might address local or domain-specific issues while inadvertently perpetuating social injustices. Within this context, the concept of reparation emerged as a normative foundation, guiding the direction of transformation, and situating water sensitivity more appropriately for secondary cities in India. The precarity and ambiguity of water governance, the urgency showcased by these secondary cities, and the governance capacities stemming from informality to enable reparation are key areas my research seeks to understand and explore.

In this chapter, I revisit the research questions and synthesise the findings and insights from my study. I also reflect on my positionality, interpreting the results within the broader context of contemporary discussions on transformative water governance, particularly from a Global South perspective. This involves analysing the research through the lenses of decolonisation, informality, and reparation studies. Additionally, I aim to identify future research directions on how reparation can be further contextualised and how intersecting various forms of justice with transformative governance might foster diverse forms of transformation, better suited to specific geographies and contexts. of water sensitivity and how water-sensitive futures can be achieved through reparative governance capacities shaped by informality. More specifically, it contextualises transformative governance through the lens of ‘reparation.’ This mode of transformation is incremental, iterative, and contextually grounded, complementing the often-ambiguous goals of water governance, especially those related to adaptation.

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## 7.1. Revisiting the research questions

This section revisits the sub research questions to assess - *To what extent and in what ways can informality contribute to the development of governance capacities that can facilitate reparation to achieve water sensitivity in secondary Indian cities?* By addressing each sub-question, I unpack the findings, examining how informality functions as a mechanism for reparative governance in these contexts.

### 7.1.1. Sub research question 1 – How can capacities for reparative urban water governance, supported by informality, be conceptualised?

Persistent water challenges have been attributed to the limitations of formal local governance structures, which frequently rely on technocratic, quick-fix solutions (Enqvist & Ziervogel, 2019). Typically devised through missions, programs, and projects by local municipal and development authorities, these responses tend to be sporadic, episodic, and lacking in transformative potential. A transformative approach involves addressing the underlying root causes of issues, cultivating collaborations and learning across multiple stakeholders, sectors, and scales (Rink et al., 2018). This transformative perspective highlights the complex dynamics, deep uncertainties, disruptions, and contested nature of the radical changes stemming from climate change and

other pressing social, economic, and environmental risks and pressures (IPCC, 2018; Wise et al., 2014).

However, in contexts like India, simply adopting a transformative governance perspective to achieve goals such as water sensitivity is insufficient. Such approaches might not result into just and equitable goals, raising important questions: transformation for whom? And at what cost? Hence, resilience, sustainability, or sensitivity goals often need to be more clearly defined. Historical injustices due to colonial exploitation, caste, and religious divides necessitate a reparative approach to avoid perpetuating existing injustices. Reparation as a mode of transformation suggests addressing past issues to heal towards a more just future, centring on restorative justice as a normative foundation (Gibbs, 2009; Kim, 2021; Zhang, 2018).

Studies have shown that novel transformative governance arrangements facilitated through water management ideals (such as IWRM) can sometimes harm existing financial and cultural governance fabrics (Denby et al., 2016; Giordano & Shah, 2014; Shah & van Koppen, 2016). However, this is where existing informal arrangements have demonstrated potential, reminiscent of reparative governance approaches, to tackle urgent and persistent water crises (Cawood et al., 2022; Mayaux et al., 2022; Wahby, 2021). Therefore, in this study, I conceptually explore whether informality in secondary cities with impending water crises, limited resources, and complex cultural contexts has created capacities for reparative urban water governance to achieve goals such as water sensitivity.

Reparation provides a nuanced orientation to transforming urban water governance by acknowledging the complex, uncertain, and contested dynamics of urban transformations across scales and sectors. This perspective helps identify and address the structural root causes of persistent water challenges, including issues of scarcity, excess, contamination, and unequal distribution. Further, this thesis has shown that informality has the potential to fundamentally alter urban governance arrangements by including unconventional actors, considering cultural norms and resource-constraint vulnerabilities, and comprehending the complex nature and contested dynamics of urban water transformations. Informality demonstrated the potential to gracefully transform the existing urban water governance structures and processes through iterative and context-sensitive processes.

In addressing persistent water issues, scholars such as Misra (2014) and McFarlane (2019) highlight the hybrid nature of informality, describing it as a symbiotic relationship with formal systems. This involves recognising the limitations of formal structures, selectively disaggregating specific service delivery mechanisms, and collaboratively creating new, co-produced entities (Ahlers et al., 2014). Such hybrid arrangement integrates a wide array of actors, actions, and strategies deeply rooted in the local context, showcasing its capacity for reparative governance arrangements. While some studies indicate that informality can perpetuate injustice and inequality, other cases highlight its potential to address and overturn these issues, manifesting

as reparation effectively. The challenge is therefore to understand how informality addresses the need for reparation.

Focusing specifically on India's rapidly growing secondary cities, reparation as a transformative approach holds particular relevance, as these urban centres attract migrant populations from nearby towns and villages (Krishnamurthy et al., 2016; Roberts, 2014). However, this rapid urban expansion outpaces infrastructural development, leading city actors to rely on informality to manage urban water needs. Globally, secondary cities are recognised for their potential to alleviate pressures on primary urban centres by integrating into a broader urban network (Cities Alliance, 2019; Kalwar et al., 2020; Marais & Cloete, 2017). Yet, governance challenges in these cities are intensified by a system that often disempowers local governments, restricting their capacity to effectively address critical issues (Jacob, 2019). Although the 74th CAA aimed to increase autonomy and institutional support for cities, its implementation has fallen short; the intended powers and institutions remain largely underdeveloped, limiting their impact on urban management (Jha & Vaidya, 2011). This systemic gap complicates resource management, especially for water. Consequently, secondary cities rely heavily on state agencies for governance and service delivery (Bajpai & Kothari, 2020; BMC, 2009; Jha & Vaidya, 2011; KPMG, 2018). This dependency is evident in the operations of the PHED and the State Irrigation Department in Bhopal, as well as the GWSSB in Bhuj, positioning secondary cities as ancillary service providers with limited autonomy and flexibility in governance.

My study explored how informality can address these limitations in secondary cities of India by enhancing the efficiency of decision-making processes and harnessing local knowledge for tailor-made solutions. For instance, initiatives such as Urban Setu in Bhuj, or the collaborative efforts in Bhopal between Water Aid and local NGOs exemplify the potential of local governance frameworks to enable reparation. The involvement of elected officials and municipal staff in these platforms promotes immediate and reparative interactions at the local scale, changing the hindering governance mechanisms sensitively.

I conceptualised reparative governance capacities emerging from such informality in my study for which I drew extensively from a substantial body of literature on governance capacities such as integration (Freeman et al., 2013), cooperation (Dang et al., 2016), collaboration (Ansell & Gash, 2008), connective (Bettini et al., 2016), orchestration & transformative (Hölscher et al., 2019) and flexibility (Termeer et al., 2015). The conceptualisation of these capacities served as a guiding template to identify the reparative characteristics within informality. The literature provided a guiding light to understand how governance characteristics such as coordination, collaboration, innovation, and doing *jugaad* can enable reparation.

While the existing literature provided a foundational understanding, I needed help finding pertinent research on how informality demonstrate reparative potential, particularly in the water sector. This limitation stemmed from a dearth of scholarship from the Global South and a tendency within academia to marginalise such governance forms as anomalous, peripheral,



or dysfunctional (Ahlers et al., 2014). To support this endeavour, the seminal works of scholars such as Ananya Roy (2005, 2009), Naura Wahby (Cawood et al., 2022; Wahby, 2021), Gautam Bhan (2019), Ahlers et al. (2014), Michelle Kooy (2014), and Sahana Chattaraj (2019) and Thomas Elmqvist et al. (2018); have been crucial in conceptualising the significant presence of informal governance mechanisms and employing precise terminologies that retain their nuanced, contextually embedded meanings.

Drawing from the scholarship on governance capacities, the works of Gautam Bhan on informal governance in the Global South have further nuanced the characteristics, moving away from terms like integration, coordination, and collaboration. The study revealed that actors with different roles and mandates do not always coalesce cohesively due to professional insecurities, political tensions, and institutional vulnerabilities. By acknowledging these contextual nuances through a restorative justice approach, I conceptualised the capacity for consolidation. Similarly, I characterised the capacity to innovate and adapt as *jugaadu*, a term grounded in the Indian conditions of being innovative within resource-constrained contexts.

*Jugaad* views such constraints not as hindrances but as contexts that shape capacities aligned with Indian sensibilities and socio-economic realities. Both consolidative and *jugaadu* capacities demonstrate a reparative 'organising logic', where water services are disaggregated and co-produced using locally accessible resources and rationale to enable repair. Hence, I identified two reparative capacities stemming from informality: consolidative and *jugaadu*. *Consolidative capacity* entails the amalgamation and self-organisation of individuals, ideas, and practices. Meanwhile, *jugaadu capacity* refers to the adeptness in devising innovations and exnovations, embodying the frugal acumen to navigate and improvise within constraints—bureaucratic, cultural, financial, and behavioural obstacles—while achieving long-term objectives.

By developing a framework centred on consolidative and *jugaadu* capacities, this study demonstrates how informality mobilises repair. These capacities—through their focus on bridging gaps, fostering self-organisation, and innovating within constraints—highlight how informality can reshape reparative urban water governance. Ultimately, this conceptualisation provides a nuanced understanding of how reparative capacities arising from informality can counteract the limitations of conventional governance, paving the way for just and sustainable urban water sensitive futures in India's secondary cities.

### **7.1.2. Sub research question 2: How are capacities for reparative urban water governance mobilised through informality in secondary Indian cities?**

In exploring how informality contributes to reparative governance capacities for water sensitivity are mobilised in secondary Indian cities, I draw on my field experiences (analytical findings) and insights from workshops (action research findings) in Bhuj and Bhopal. This discussion delves into how informality, leveraged through governance capacities, enables repair within these urban contexts. While not all governance initiatives culminate in repair, my focus is on how these capacities, observed in both the field and the workshops, contribute to repairation

and to what extent. Additionally, I highlight how reparation aids in contextualising the goal of water sensitivity, grounding it in restorative justice, especially considering the persistent water challenges faced by secondary Indian cities. I also identify the gaps and limitations of these capacities, beginning with a comparative assessment of urban water governance and its challenges in Bhopal and Bhuj.

Bhuj and Bhopal, each with unique water management challenges and similar governance structures, offer valuable insights into how informality may enable reparation toward water sensitivity. Bhopal, the capital of Madhya Pradesh and home to over 2.4 million residents, relies on 18 major water reservoirs but faces persistent water quality issues, flooding risks, and contamination from the Union Carbide disaster (CAG India, 2021; Everard et al., 2020). In contrast, semi-arid Bhuj, with a population nearly doubled to 188,236 by 2011, has relied on traditional water practices but is now straining its resources due to reliance on the Narmada Canal, leading to over-extraction and aquifer salinity (Sheth & Iyer, 2021; van der Meulen et al., 2023). Both cities illustrate challenges of India's secondary cities, where rapid growth and centrally-reliant governance structures hinder local decision-making, restricting quick and contextual responses to pressing water needs (Bajpai & Kothari, 2020).

This is where hybrid formal-informal governance comes into play, supporting formal arrangements and potentially optimising services or enabling repair to address persistent water challenges. My fieldwork sought to illuminate the extent and manner in which capacities emerging from informal governance structures and processes contributed towards reparative outcomes that lead to water sensitivity. Additionally, findings from workshops highlight the extent to which these capacities can be strengthened to foster water sensitivity.

Reparative water governance aims to amend or heal urban water governance systems by proposing conditions for collaborative, democratic, locally led, innovative, and flexible approaches to addressing persistent challenges. Hybrid formal-informal governance arrangements aim to support reparation by developing conditions for the self-organisation of varied types of actors (consolidative capacity). This is particularly notable when victims of past injustices organise with decision-makers working on long-term future goals within complex cultural and social contexts, aiming towards healing through informal governance structures and processes. Supporting this, *jugaadu* capacity emerges, manifested through conditions that enable improvisations via frugal, contextually viable methodologies, ideologies, and organisational structures, while dismantling colonial legacies to foster inclusivity and alternative approaches essential for addressing water challenges in resource-constrained environments. Informality encourages a flexible and adaptive approach to governance, integrating local knowledge and practices to address historical injustices, fostering long-term healing and sustainability in water management practices.

Through these conditions, I identified four key insights that mobilise repair to some extent from both analytical and action research in the field and workshops: recognition of the multifaceted nature of water issues, dismantling traditional power hierarchies and including unconventional actors, governance based on networks of care, and flexibility for improvisation.

***Insight 1: Recognising multifaceted nature of water issues***

Drawing on Cadieux et al.'s (2019) critique of populist resource management and Broto et al.'s (2021) call for engaging with diverse knowledge forms and urban material histories, my fieldwork highlighted how informality helped combine varied knowledge types, unravelling the complex nature of water challenges over time. Non-governmental platforms, frequently orchestrated by NGOs in both cities, were pivotal in synthesising hydrogeological science with historical knowledge to broaden the comprehension of water-related challenges across diverse communities and temporal scales. These platforms subtly critiqued the limitations inherent in formal governance and policy frameworks that focus solely on technocratic issues which involved engineering domain-specific actors while missing out on integrating actors from different domains.

To fill the gaps, NGOs utilised knowledge brokers to integrate scientific insights with experiential and historical narratives, enriching the discourse around water issues and addressing historical injustices and future implications. For example, in Bhuj, NGO workers engaged in water conservation acted as knowledge brokers, leveraging personal narratives and historical interactions to interpret hydrological data and connect the significance of local landmarks to overarching water concerns. This approach enhanced community members' understanding of the interplay between daily life, water quality, and geological features. Similarly, in Bhopal, NGO workers focused on human rights served as brokers, linking insights on water quality with urban planning and human rights concerns. Examining water issues through a human rights lens in both cases led to varied forms of consolidation, aiming for repair through restorative justice. In both Bhuj and Bhopal, NGO actors pluralised knowledge by integrating personal experiences, geological data, and historical narratives, thereby enriching the understanding of water-related challenges and enhancing efforts to address them. These initiatives went beyond the scope of traditional formal policy documents, such as Master Plans or Climate Action Plans, which often overlook the social, cultural, and lived dimensions of water issues. By employing participatory platforms that extended beyond conventional governmental frameworks, these actors facilitated the exchange of vital information, particularly in contexts where official channels were either inaccessible or insufficient.

The capacities encouraged marginalised voices, bringing attention to overlooked practices and acknowledging concerns to a certain degree. However, these efforts did not always culminate in tangible outcomes. Rather than achieving comprehensive recognition, they often amounted to awareness-raising exercises, as formal authorities have not yet fully embraced these diverse perspectives, relegating them to the periphery. This concern aligns with the observation made

by Kösters et al. (2020), who note that these pressing and pertinent hybrid forms of governance risk being overshadowed by political shifts unless bolstered by regulatory frameworks.

The workshops facilitated a rich exchange of perspectives by inviting a diverse range of participants, including those with experiential knowledge rather than just domain expertise, and employing sensitive facilitation. This process enabled introspection on the root causes of the issues, revealing connections to non-technocratic domains such as behaviour. The queries and requests for clarification from non-experts reflected and deepened understanding of municipal processes and the limitations of governmental responsibilities. For instance, the suggestion of needing a third-party mediator for Bhopal arose from a distrust of municipal authorities and as a means to alleviate the burden on already overburdened actors. However, the decision-makers were not equipped to address the multifaceted nature of the persistent problems and lacked the authority to modify formal structures to acknowledge the complexity of the issues. Consequently, the workshop as a temporary platform was insufficient to achieve reparation.

***Insight 2: Challenging traditional power hierarchies and localising decision making***

The capacities, leveraged through informality have shown potential in reshaping conventional urban water governance by challenging the engineering hegemony and centralised power structures prevalent in secondary cities of India. In my fieldwork, I discovered how these informal mechanisms foster a democratic and participatory model of water management, attempting to include marginalised actors.

My fieldwork revealed how informality challenged power hierarchies in Bhuj and Bhopal by allowing actors to step beyond their formal mandates and engage in collaborative decision-making. I observed that policymakers, NGO representatives, educators, and engaged senior citizens extended their traditional roles to also do mediation and brokering. In contexts where formal governance structures were limited and had a restricted impact, informal platforms like *ward samiti*, as seen in Bhuj, became vital spaces for community engagement. These platforms enabled diverse stakeholders to voice their concerns and participate in the decision-making process, thereby undermining existing power dynamics.

For example, in Bhopal, despite facing challenges such as inadequate support, instances of reparative leadership emerged as these informal spaces empowered previously marginalised actors—like women and senior citizens—to contribute to discussions that directly affected their lives. By including unconventional participants such as housing developers and community members in local deliberations, the process disrupted traditional hierarchies that often sidelined these voices. This approach not only aligned with broader water management objectives but also integrated critical issues such as sanitation, housing, and gender empowerment into the water governance narrative, effectively challenging the established order and promoting a more equitable distribution of power.

My research also showcased how the holistic governance arrangements could look like which integrated water management approaches like water sensitivity advocates. Unlike integrated approaches, which often advocate for new governance entities like River Basin Organisations (RBOs), the study demonstrates the adaptation of existing governance structures to facilitate coordination while respecting bureaucratic divides. This approach avoids the cumbersome and costly process of forming a homogenous governance unit by fostering synergistic connections across distinct domains and sectors, enabling them to function cohesively without necessitating complete integration.

The findings from my fieldwork echo the critiques by Giordano & Shah (2014), Denby et al. (2016), and Shah & van Koppen (2016), who warn against the ‘packaged’ approach of Northern integrated water management models. These models often suggest adapting existing structures to fit their frameworks, rather than empowering local ones. While I recognise the risks of perpetuating existing hierarchies, dismantling them entirely can sometimes cause more harm than good. Hence, IWRM and similar models need to serve more as inspirational tools for assessing existing mixes, rather than rigid templates. Informality demonstrated the strength of current agglomerations of actors and the potential for unconventional combinations to navigate social hierarchies. However, sustaining these mixed groups that challenge traditional hierarchies remains a challenge. New groups formed out of necessity, but without ancillary support mechanisms, they lack the authority and autonomy to continue their work.

For the action-research part of my study, the workshops facilitated the creation of safe spaces to openly discuss and challenge existing power hierarchies. Techniques such as using anonymous voting tools (e.g., Mentimeter) enabled stakeholders to voice concerns about detrimental power structures without fear of repercussion. Additionally, repeated meetings fostered the development of personal networks, empowering participants to propose and consider governance arrangements better suited to local needs. The peer-to-peer discussions allowed stakeholders facing similar challenges to move beyond common complaints and openly examine uncomfortable truths about the complexities of power dynamics. While these mechanisms demonstrated the potential to counter hierarchies by fostering new collaborative arrangements, the conversations did not fully address strategies for dismantling the existing centralised structures. Although the capacities highlighted the necessity of challenging dominant hegemonies, they did not articulate detailed plans for how to do so effectively. Suggestions of protest and continuous negotiation with authorities were made but not elaborated upon, indicating a need for further exploration in this area.

The findings from this research suggest that while capacities mobilised through informality demonstrate potential for disrupting traditional power structures in water governance, substantial challenges persist. The path towards reparative urban water governance remains an ongoing endeavour, necessitating sustained efforts to integrate diverse viewpoints and dismantle deeply entrenched power dynamics.

***Insight 3: Networks of care enabling repair***

The findings from this study emphasise the reparative potential of governance capacities stemming from networks of care, particularly in Indian contexts where challenging the unsustainable status quo poses significant risks. These networks serve as crucial channels for navigating complex challenges and enabling repair by fostering trust, streamlining decision-making, and aligning solidarity practices.

In contexts where calling out or challenging the unsustainable status quo is risky and culturally discouraged, networks of care offer an essential mechanism for addressing these challenges. Scholars like Sultana (2022) and Williams (2017) highlight the intentional nature of care, recognising its limitations while exploring possibilities through challenges without naivety. Care is also inherently political (Sultana, 2022), and self-care can act as resistance against neoliberal capitalism and coloniality that devalues life (Conradi, 2015). This care politics centralises the addressing of interlocking oppressions by creating coalitions against intersectional harms (Lugones, 2010).

Fieldwork results show that stewards are motivated by care and engage in activities such as hosting water walks, teaching water-sensitive behaviours, and mediating conflicts between state agencies through personal connections. These individuals build trust and streamline decision-making processes within municipalities, bypassing bureaucratic procedures and aligning solidarity practices, as Córdoba et al. (2021) discussed in their case study in the Andean region in South America.

Formal municipal officers, whose autonomy is often restricted, mobilised networks out of care and concern for project well-being. Dominance by state agencies, such as the PHED in Bhopal and the GWSSB in Bhuj, limits municipalities' autonomy and agility in governance (Bajpai & Kothari, 2020; BMC, 2009). However, the study shows that governance capacities aided in overcoming these constraints by speeding up decision-making and applying local knowledge for context-specific decisions. Ethnographic insights revealed how mid-level municipal authorities leveraged personal connections to navigate bureaucratic impediments swiftly.

This analysis, therefore, demonstrated how informality, spearheaded by non-state actors with the support of state entities, can enable swift, trust-based engagement and decision-making, thus facilitating repair to an extent. However, reliance on informality also carries the risk of subalternating challenges. Therefore, the transformative potential of repair grounded in restorative justice seeks to provide an ethical framework, guiding informal processes to re-evaluate their intentions and political stances continuously. By integrating care and care ethics, these informal governance structures not only address immediate issues but also hold the potential to revitalise revolutionary possibilities in the face of systemic violence, particularly those linked to climate coloniality (Sultana, 2022). This holistic approach can contribute significantly to the realisation of reparation.

Further, the W4C workshop findings indicated that the session's extended duration and informal nature facilitated the development of personal relationships, which is crucial for fostering trust and collaboration among stakeholders. These personal connections enabled deeper discussions about practical challenges, such as budget approvals, which are often difficult to acknowledge and address in more formal settings. Seyla Benhabib's (1986, 1992) work on the care network's ability to reshape models of deliberation supports this view, as these networks foster inclusive and equitable decision-making processes.

These interactions underscored the significance of care networks, highlighting how care encompasses long-term, future-oriented processes (Tschakert et al., 2021). Furthermore, stakeholders from the same secondary cities demonstrated a shared commitment, empathising with one another rather than competing over their respective outputs. This aligns with Lawson's (2007) scholarship, which suggests that care work, despite its challenges, becomes more actionable when grounded in shared experiences and a common sense of injustice, particularly in solidarities rooted in specific places and contexts.

Informal care networks have the potential to provide effective support, but their sustainability often falters when issues are neither immediate nor personal. The *Bhujal Jankars* (groundwater knowers) programme, which empowered locals to manage groundwater data, gradually declined due to the lack of financial compensation. As a result, participants—residents who initially led the initiative—lost their connection to the cause. In contrast, in Bhopal and Bhuj, local champions with deep community ties approached the work as a personal, almost spiritual journey to give back to the earth. This comparison underscores that when a cause lacks personal resonance, participants may join out of solidarity but struggle to maintain ownership and commitment. This challenge is particularly pronounced in resource-constrained contexts, where the absence of financial support further limits long-term engagement.

#### ***Insight #4 Synchronising improvisation***

The identified governance capacities have been manifested through highly adaptive mechanisms that support improvisation while also enabling its synchronisation within formal institutional landscapes. These improvisations can be synchronised through trial and error and social tinkering within complex socio-political and socio-technical landscapes, as discussed by Kemerink-Seyoum et al. (2019), Elmquist et al. (2018) and Mayaux et al. (2022). In Global South contexts, for instance, developing and synchronising innovation is often expensive and culturally sensitive, leading to exclusionary practices that perpetuate marginalisation (Mariano & Casey, 2015; Onsongo & Knorringa, 2020; Patiño-Valencia et al., 2022). Informality provides a crucial temporary space to test new ideas, gather evidence, and repurpose existing resources frugally. The concept of 'improvisation' reflects the flexible nature of this innovation, allowing for rapid adaptation and experimentation to address complex challenges (Liu et al., 2018). By providing this flexible and accessible platform, governance capacities can foster more responsive improvisations to resource-constrained and culturally sensitive contexts, ultimately enabling reparation efforts.

In Bhuj, efforts to nurture water-sensitive behaviour exemplify this process. Collaborations between schools, research institutions, and advocacy organisations led to the developing of specialised after-school curricula, circumventing the typically lengthy processes of overhauling educational systems. Furthermore, the installation of rainwater harvesting tanks in the schools enabled communities to observe and replicate the technology within their means, facilitating the gradual synchronisation of innovative approaches. In societies with rigid social hierarchies, critical discussions are often stifled. Informality helps create platforms for such reflections. For example, public spaces in Bhopal were used for protests and exhibitions, and grey literature disseminated information on water contamination. These activities reclaimed space for collective reflection, illustrating how informality fosters the synchronisation of innovative practices through inclusive and participatory avenues.

Similarly, in workshops, iterative learning and organic strategies emerged, reinforcing the kind of learning described by Haapala et al. (2016). This iterative process normalised corrections and improvisations. Participants were encouraged to assess the feasibility of pathways using the problem tree method, incorporating new perspectives introduced by experts and stakeholders from other cities. This back-and-forth engagement compelled participants to confront and reconcile their problem framings with those of others. This critique prompted city stakeholders to reconsider their priorities without compromising their institutional standing or perceived competence. It also prompted them to recognise the limitations of their mandates and the need for interdisciplinary approaches, as evidenced by the acknowledgement of the requirement for mediators in Bhopal. The realisation of the constraints of technocratic approaches emerged after multiple revisions of the same pathways through diverse, dynamic engagements. Furthermore, the critiques emphasised the necessity of diverse disciplines, underscoring the need for mediation and collaborative problem-solving.

While the research demonstrated significant potential in promoting and supporting improvisation that facilitates repair, its impact was limited by the presence of rigid platforms and hegemonic terminologies within existing governance structures. These platforms often fail to acknowledge and recognise such efforts as significant contributions to urban water governance because they do not conform to traditional engineering indicators.



	<i>Description</i>	<i>In field</i>	<i>In workshop</i>	<i>Limitations</i>
<b>1. Recognising multifaceted nature of water issues</b>	Informality helped combine varied knowledge types, unravelling the complex nature of water challenges over time	NGOs acted as knowledge brokers, integrating scientific and experiential knowledge.	The workshops facilitated exchange of perspectives including those with experiential knowledge rather than just domain expertise	Limited tangible outcomes as formal authorities often overlook diverse perspectives.
<b>2. Challenging traditional power hierarchies</b>	Capacities have demonstrated potential in reshaping traditional water governance by challenging the engineering hegemony and centralised power structures to include othered voices	Participatory platforms incorporated unconventional actors, including senior citizens, and housing developers, in local deliberations and actions, challenging the dominance of formally imposed groupings (RBOs, WUAs etc.)	The workshops facilitated the creation of safe-enough spaces to openly discuss and challenge existing power hierarchies. Peer-to-peer discussions allowed stakeholders facing similar challenges to move beyond common complaints and openly examine uncomfortable truths about the complexities of power dynamics.	Difficulty in dismantling centralised structures and sustaining new groups without formal support.
<b>3. Networks of care</b>	Care networks are intentional and political, which navigate challenges by fostering trust, streamlining decisions, and aligning solidarity practices.	Municipal officers in Bhuj and Bhopal used personal connections to expedite decisions and apply local knowledge.	Extended duration and informal nature facilitated the development of personal relationships, which is crucial for fostering trust and collaboration among stakeholders. These personal connections enabled deeper discussions about practical challenges, such as budget approvals, which are often difficult to acknowledge and address in more formal settings.	Limited recognition and maintenance of care networks; governance networks based on social trust remain fragile and vulnerable to shifts in political will, leadership changes, and financial constraints.

*Table 9: Summary explaining to what extent capacities enabled reparation*

	<i>Description</i>	<i>In field</i>	<i>In workshop</i>	<i>Limitations</i>
<b>4. Synchronising improvisation</b>	The capacities have demonstrated high adaptability, creating mechanisms to support improvisation that enable repair. These improvisations can be validated through trial-and-error method within resource constrained and culturally sensitive environments.	Bhuj's collaborations for after-school curricula and leading through example by building rainwater harvesting tanks in school exemplify this.	Iterative learning and dynamic engagements prompted stakeholders to reassess priorities, normalising going back and forth.	Rigid platforms and hegemonic terminologies hinder recognition and integration of othered efforts.

*Table 9: Summary explaining to what extent capacities enabled repair (Continued)*

### **7.1.3. Sub research question 3: What methods facilitate the identification and nurturing of governance capacities to enable repair?**

The previous research questions explored how to conceptualise governance capacities to enable repair, its mobilisation and effectiveness, and the hindrances involved. This third question delves deeper into the complexities of recognising and nurturing these capacities, mainly when they aim to facilitate repair.

Hybrid formal-informal governance approaches acknowledge the limitations of formal structures and involve dismantling existing service delivery mechanisms to collaboratively establish new, co-produced entities (Ahlers et al., 2014). This integrated approach, which draws on a diverse range of locally embedded actors, actions, and strategies, demonstrates the potential for developing reparative governance arrangements. However, in contexts marked by hierarchical tendencies influenced by factors such as age, seniority, and gender, like Indian urban water governance (Kumar, 2007), it becomes increasingly challenging to highlight system discrepancies and inefficiencies openly. Recognising the need for informality necessitates discreetly acknowledging flaws in the formal system, as overt criticism could pose risks to state and non-state actors by challenging the authoritative powers. Additionally, in resource-constrained environments, openly acknowledging the need for repair may be a sensitive issue, and efforts to address it could perpetuate this sensitivity, resonating with concerns raised by Pereira et al. (2015) regarding the need for safe engagement platforms.

In light of the highly precarious governance landscape, I developed sensitive methodologies for my fieldwork and workshops to identify capacities leveraged through informality and explore the manifestation of repair. The ubiquitous and ambiguous nature of the capacities makes them

challenging to identify and strengthen. Additionally, assessing whether these capacities possess reparative value presents a significant obstacle, necessitating a departure from conventional epistemic boundaries and considering more contextually relevant methods for identifying and evaluating these reparative capacities.

When examining urban water governance challenges in Global South locales, most informal governance activities get obscured due to over-normalisation, making them difficult to observe. Given that the resource in question is water, the actors involved included not just authoritative figures and NGO actors but also everyday residents. Ghosh et al. (2021) aptly refer to these challenges as 'everyday struggles,' shedding light on their emancipatory value for reparation. These authors highlight the persistence of coloniality within formal structures and how capacities mobilised through informality underscore struggles through protest, negotiation, and bypassing imposing formal structures to strive towards reparation, especially in the context of restorative justice. However, the same formal structures often frame hybrid extensions to formal processes as 'not-so-formal,' presenting me with three dilemmas in mapping informality in the field: 1) documenting transient oral narratives; 2) discrepancies between verbal accounts and observed practices, and 3) ethical concerns associated with documenting illicit activities.

To address these dilemmas, I combined ethnographic approaches with photographic methods. Ethnography provided reflection, clarity, and a documented record, although it introduced a delay in capturing observations (Adhikari, 2018). Photographic methods compensated for this by offering an immediate visual record and facilitating live analysis alongside textual notes. The ethnographic notes aimed to capture the real execution of formal mandates, highlighting the actual roles of actors, and identifying gaps between their actions and prescribed responsibilities. By examining the decision chain of actors at different hierarchical levels, I sought insights into their vulnerabilities and intentions in adopting informal practices. This holistic approach deepened my understanding of informality. As elaborated in Chapter 3, I outlined five routines of conducting visual ethnography applied in the cities of Bhopal and Bhuj to shed light on how various actors enact informality in addressing gaps within urban water governance. These five routines helped me to address the three dilemmas. I further explain how these routines helped to illustrate whether and how capacities leveraged through informality result in reparation.

The first dilemma, ensuring the accuracy of oral accounts, was addressed by employing visual ethnography sensorially. This approach proved decisive for understanding intentions. Oral accounts, while indicative, often left much to interpretation. However, visual cues enabled a comprehensive interpretation of unspoken markers when decoded using the routines.

The second dilemma, resolving discrepancies between oral accounts and actions, was addressed through triangulation and cross-verification of accounts with other actors in the governance landscape. This process highlighted inconsistencies and revealed the complexities inherent in the system. Additionally, the visual perspective often uncovered overlooked elements, emphasising the significance of personal relationships within informal systems.

Addressing the third ethical dilemma of documenting illicit activities involved two ethnographic approaches: *immersive presence* (Roncoli et al., 2009) and maintaining distance using the *rear-mirror technique* (Wamsiedel, 2017). Immersion fostered trust and understanding of interviewees' vulnerabilities, capturing implicit cues, and adding meaning to photographs. Conversely, the rear-mirror technique maintained a critical distance from illicit activities, allowing reflection on biases and influence, ensuring ethical integrity and respect for participants' confidentiality.

These routines served as a photographic praxis that allowed me to critically engage with both human and non-human actors in these locales. Through these routines, I examined whether capacities informed by informality, resulted in reparation. The routines also revealed that reparation is not an absolute value but rather a spectrum. In this case, regional languages like Hindi helped expand the nuanced meanings of repair, with terms such as *Marammat* (returning to the original), *Rafu karna* (bolstering the old with the new), *Dosh rahit* (emphasising faultless repair), and *Sudharna* (seeking betterment for the future). These vocabularies provide a heuristic map for the multifaceted approaches to repair within the given constraints and opportunities through informal means.

My doctoral study also involves action research, where I examine established approaches like the TM to address persistent challenges in water governance (Brown et al., 2013; Frantzeskaki et al., 2018; Loorbach, 2010). TM nurtures stakeholder innovation and empowerment by providing an integrated mental, social, and physical setting to foster the creation of new ideas, a unified vocabulary, and shared objectives (Loorbach et al., 2015; Nevens et al., 2013). Within TM, *transition arenas* emerge as a process tool to apply the framework within political systems, serving as platforms for diverse actors to overcome structural injustices and collaboratively develop capacities for repair. Research suggests that TM's structured approach through the arenas often struggles to engage deeply with power imbalances and hierarchies in Southern cities, thus overlooking informal governance structures and, ironically, reinforcing technocratic solutions (Nastar & Ramasar, 2012). In response, this study adapts TM's transition arenas into a more flexible approach of *transformative spaces*, better suited to India's complex collaborative logic.

To understand the context in which these transformative spaces are situated, I also studied the Indian governance system, its challenges, and how informality can aid in addressing them. The Indian governance context is characterised by deeply entrenched social and political hierarchies (McFarlane, 2008). In this context, informality plays a crucial role in countering the dominant technocratic hegemony that permeates water management. This hegemony, firmly grounded in 'rationalist perspectives' and 'engineering-focused approaches', often overlooks the interconnectedness with broader ecological, political, and economic systems (Hartley & Kuecker, 2021). These technocratic approaches, rooted in colonial legacies, have influenced urban infrastructure planning and management, instilled a strong sense of urban identity and perpetuated elitist development models that marginalise vulnerable groups (McFarlane, 2008; Mollinga, 2008; Unnikrishnan et al., 2020). Consequently, these models have systematically

disregarded the critical dependence on natural ecosystems, exacerbating environmental disconnection (Unnikrishnan et al., 2020).

In the given context, informality serves as a strategic alternative. Characterised by innate networks (Jaglin, 2014), flexibility, adaptability, and innovativeness (Ahlers et al., 2014; Simone, 2008), and culturally situated collaboration methods (Chattaraj, 2019; Wahby, 2021), informality attempted to facilitate the creation of 'safe-enough' spaces, as framed by Pereira et al. (2015) within established structures. By leveraging informality, I employed its faculties to integrate experiential knowledge alongside rational knowledge frameworks, as Funder & Marani (2015) discussed while explaining the work of bricoleurs. This approach holds the potential to generate transformative applicable solutions while catalysing local collaboration logic for sustainable integration. This resonates with Ghosh et al.'s (2021) suggestion to explore more meaningful and participatory research methods that empower actors by reducing reliance on external knowledge and aid. Consequently, it became imperative for me to reconsider the design of these spaces, with greater sensitivity towards the precarious and hierarchical governance contexts prevalent in secondary Indian cities.

Drawing on these insights, informality provided three key parameters to guide the design of transformative spaces that nurture capacities for reparation within the complex socio-political and socio-cultural contexts of the Global South. They encompassed: 1) fostering confidence to challenge regressive structures; 2) nurturing frugality and creativity, and 3) instilling belief in transition processes. These parameters were intended to motivate actors to engage meaningfully and consistently over an extended period.

The adapted transformative spaces *cultivated confidence* among participants, persuading authoritative powers to acknowledge previously dismissed issues in water governance. While the actors who had earlier denied or were unaware of the issues showed some temporal acknowledgement, this did not lead to formal recognition or informal acceptance. This necessitates support from institutional frameworks to scale up the recognition of the issues, which would then embolden marginalised actors to speak more openly in such spaces. During the workshops, this temporary confidence manifested through forming informal networks, bringing together individuals facing similar challenges.

The encouragement to *mobilise frugality and creativity* led stakeholders to expand their systemic understanding of water management. This resulted in recognising overlooked domains, such as brokering, liaising, generating awareness, training, creating sustainable financial innovations, and qualitative monitoring, thereby humanising the water management sector. These innovations integrated domains like social psychology and management, previously eclipsed by centralised water management approaches.

The workshops leveraged hierarchical structures based on experience *to instil belief and credibility* in the transition processes. The spaces made senior mentors open up and share their

honest experiences, allowing junior mentees to realise that the goals were achievable. The emphasis on organic session designs and storytelling proved more effective than rigid, well-documented structures, fostering a sense of community and belief in the goals. The organic design of these interactions, where stakeholders had control over the duration and nature, empowered them, leading to sustained engagement and ownership of the solutions. Mutual inspiration among cities was evident, as seen in Bhopal's establishment of a Lake Development Authority (LDA) and Bhuj's focus on community awareness, each offering valuable insights to the other. While the organic design was a significant advantage, it could also be challenging to replicate in the same way. Designing in-situ engagement designs that provide a sense of ownership to the participants may become too customised if the facilitation actors have to do it at many other places, as seen in development projects with limited time and financial resources, challenging its feasibility to replicate.

Developing a sensitive 'facilitator cohort' was equally crucial in devising transformative spaces. Facilitators skilfully brought dismissed topics to the table, fostering respectful and careful discussions. The transformative spaces showcased the impact of qualitative facilitation. Documenting details, maintaining a high facilitator-to-stakeholder ratio, and adopting a non-imposing approach enhanced participants' sense of being heard and encouraged further engagement. Methods such as food fairs and classroom discussions facilitated comparisons and empathy with the proposals, resonating with Pereira et al.'s (2015) conceptualisation of such spaces. However, this process was full of internal politics. The Indian partners in the W4C consortium found themselves in a politically sensitive position. Maintaining professional relationships with stakeholders for future engagements required a tactful approach. Although their established networks proved advantageous in engaging with authoritative stakeholders, the process demanded a careful balance in their assertiveness to prompt reflection and instigate change. Therefore, the aim was not to make facilitation an apolitical process but rather a politically aware one, as (Wittmayer et al., 2024) discussed. Consequently, I concur with referring to these spaces as safe-enough rather than entirely safe, given the presence of internal politics and prevailing tensions.

Furthermore, I also reflect on my positionality as a field researcher and facilitator in the workshops.

### ***Positionality***

As a researcher, my positionality was integral to shaping the methods used to identify and nurture governance capacities for reparation. My Indian background provided an insider perspective, facilitating trust and deeper engagement with stakeholders in Bhuj and Bhopal. This enabled me to employ culturally sensitive methodologies, such as ethnography and informality supported workshop formats inspired by bazaar-like settings, which created 'safe-enough' spaces for open dialogue and reflection. Recognising the actors' discomfort in discussing governance challenges, I adapted these formats to navigate hierarchical barriers and foster meaningful participation.

My affiliation with a Dutch institution introduced power differentials, which I managed through techniques like the 'rear-mirror' approach (Wamsiedel, 2017) and maintaining a humble, respectful demeanour. Balancing Dutch ethical standards with local norms, I employed methods that respected cultural sensitivities while enabling the collection of rich, context-specific narratives. Familiarity with Indian social norms and languages allowed me to decipher unspoken markers, further enriching the data and deepening my understanding of governance capacities.

By critically reflecting on my positionality, I navigated power dynamics, cultural nuances, and ethical dilemmas, ensuring that the methods were contextually relevant and effective. Integrating decolonial perspectives (Datta, 2018; Ghosh & Arora, 2021; Sultana, 2023), I prioritised local knowledge systems and practices, recognising their value in fostering reparative governance. This reflexive approach strengthened the integrity of my research, demonstrating how positionality can inform methods that identify and nurture governance capacities in complex, resource-constrained contexts.

## **7.2. Summarising the main contributions**

This thesis contributes to the field of urban water governance, particularly within post-colonial geographies of the Global South, by examining the dynamics of informality and the processes of repair.

### **7.2.1. Theoretical contributions**

This thesis makes a significant theoretical contribution by advancing the understanding of transformative processes within the socio-political contexts of the Global South, particularly in secondary cities in India. The research innovatively positions reparation as a transformative approach in urban water governance while addressing the complex, uncertain, and contested dynamics of urban transformations across various scales and sectors. It incorporates historical injustices into the transformation discourse, ensuring that these injustices are acknowledged and addressed rather than perpetuated.

By integrating the concept of reparation within post-colonial contexts, this research seeks to address and prevent the recurrence of historical harms, providing a more nuanced understanding of transformation (Bhan, 2019; Broto et al., 2021; Cadieux et al., 2019; Wahby, 2021; Webber et al., 2022). This approach advances the discourse on transformative and transition research by intersecting it with justice elements, thus clarifying the goals of transformation, in this case – reparation (T. Forsyth & McDermott, 2022; McCauley & Heffron, 2018; Thomas & Twyman, 2005). This particular approach is well-suited for water transitions, where the goal-setting processes are more complex and ambiguous than other sectors, and intermediate endpoints play an essential role (Dewulf et al., 2008; Huitema & Meijerink, 2009).

A pivotal aspect of this thesis is the centring of reparation within the elements of restorative justice. It provides a normative goal of determining the reparative goal and why reparation

is necessary in the first place. I engaged with scholarships that focus on just transformation, reparation, and environmental governance that enriched this perspective while emphasising the importance of restorative justice (M. Forsyth et al., 2022; Gibbs, 2009; Kim, 2021; McCauley & Heffron, 2018; Vasilescu, 2022).

Moreover, the thesis builds on informality literature to highlight its reparative potential, particularly in the Indian context. This challenges the traditional view of informal governance as merely a survival strategy for the poor, instead framing it as an organised, transformative, and resilient approach to governance (Cawood et al., 2022; Chattaraj, 2019; Elmquist et al., 2018; Funder & Marani, 2015; Mayaux et al., 2022; Wahby, 2021). By leveraging conditions stemming from informality, I developed a capacities framework that further aims to enable reparation. The development of the capacities framework furthers the scholarship established by Bettini et al. (2016), Hölscher et al. (2019), Koop et al. (2017), and Wolfram (2016).

### **7.2.2. Empirical contributions**

This thesis makes an empirical contribution by shifting the focus of urban water governance research from India's primary cities to its lesser-studied secondary cities, specifically Bhuj and Bhopal. While existing literature on informality has predominantly focused on larger, primary cities (McFarlane, 2012; Ranganathan, 2014; Wahby, 2021), this study innovatively examines transformative urban water governance approaches within these secondary cities, providing insights into their unique governance landscapes.

The research highlights unconventional actors, lesser-known practices, and under-acknowledged water issues, thereby supporting and extending critical scholarship (Bajpai & Kothari, 2020; Everard et al., 2020; van der Meulen et al., 2023). By closely examining governance practices in the two cities, the study uncovers how the distinctive socio-political and ecological characteristics of secondary cities shape governance traits and present water-specific challenges. This study not only identifies the capacities required for reparative water governance but also pinpoints capacity gaps critical to achieving water sensitivity, underscoring that secondary cities govern differently from primary cities and require tailored governance approaches.

Additionally, this research deepens the empirical understanding of urban water governance by providing a detailed account of governance practices and capacities in Bhuj and Bhopal. Through descriptive narratives and visual documentation, the study builds on existing knowledge of governance in these cities, offering a comprehensive picture of the unique ways in which they navigate water-related issues. This contribution further enriches the literature on governance in secondary cities, as discussed by Haysom (2022) and Kalwar et al. (2019), and underscores the importance of contextualised governance strategies that address the distinct challenges and opportunities these cities face.



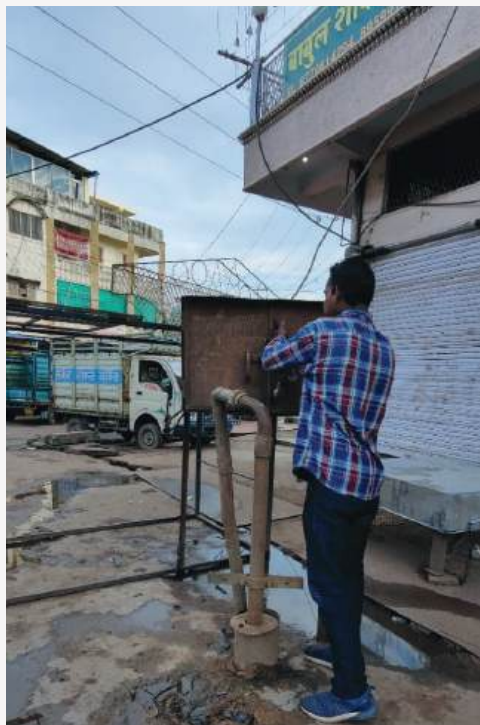
### **7.2.3. Methodological contributions**

I developed a nuanced visual methodology for my thesis to complement the conceptual innovation. Building on the visual ethnography and documentary photography scholarship of Becker (1995), Brace-Govan (2007), Pink (2013a, 2015a) and D. Schwartz (1989), my research outlines five routines for conducting visual ethnography in Bhopal and Bhubaneswar. These routines, functioning as a form of photographic praxis, enable critical engagement with human and non-human actors, illustrating how informality can facilitate reparative processes.

As an action researcher, I further contribute by adapting transformative spaces through parameters drawn from informality. This involves co-producing goals for water-sensitive governance and challenging entrenched technocratic hierarchies. Emerging scholarship on developing transformative spaces in various forms—such as workshops, living labs, and accelerator hubs—particularly in the Global South (Bulkeley et al., 2016; Drimie et al., 2018; Gustafsson & Lidskog, 2018; Hebinck et al., 2023; McCrory et al., 2020; Pereira et al., 2020) has informed this aspect of my research. By evaluating the outcomes of transformative spaces adapted through informality and discussing how these spaces manifest in secondary cities of India, my study contributes to this growing body of scholarship.

Furthermore, the thesis has led to the development of a ‘Repair Manual,’ (not part of this thesis) a practical guide for establishing transformative arenas in the complex geographies of the Global South. With its clear and actionable steps for implementing transformative spaces, this manual significantly enhances the adaptable methodological guide available to researchers and practitioners operating in similar contexts.



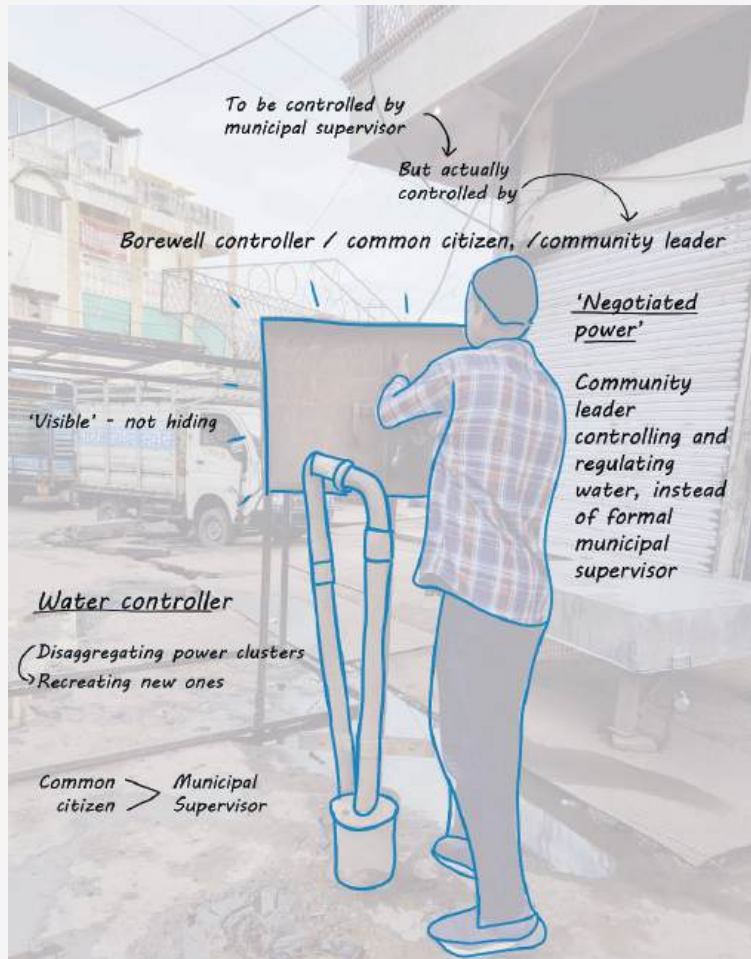


**Photo Narrative 11: De facto water**

*In the previous photo narrative, we observed how communities situated above a contaminated aquifer must rely on external water sources, which are frequently inadequate. These areas don't benefit from regular 'Robin Hood' deliveries of free water, and in times of severe shortage, residents must resort to more desperate means.*

*At the heart of this system lies a rusted metal box, holding the key to a valve that directs water flow to each neighbourhood in turn. Officially, an engineer stationed at a distant office has calculated precise timings for each area, aiming to ensure equitable distribution. However, these centrally determined schedules often overlook the complex, lived realities of local politics. Here in Bhopal, close to the Union Carbide site where groundwater is irreversibly poisoned, this system takes on a distinctly informal twist.*

*In an unofficial yet widely accepted practice, the municipal supervisor has handed over control of the valve to the local champion, a political representative familiar with the needs of these marginalised communities. This quiet transfer of authority sidesteps formal processes, with the supervisor trusting the local champion's knowledge to make more context-sensitive decisions. Though technically unauthorised, this informal arrangement has become the de facto norm, allowing the champion to adjust the water flow according to immediate needs, rather than rigid, distant schedules. In the photograph, we see him turning the valve, an act of localised power that directly determines who receives water and when.*



What's striking is the complete absence of oversight or formalised checks on water quality, and there are no official complaints about this shift in authority. This photograph captures the nuanced and deregulated dynamics that drive water distribution in the community. The local regulators defend this unofficial system as a more practical approach to equity, arguing that it better addresses the immediate needs of residents than a detached administrative process could. In this way, informal authority fills a crucial void, delivering water through flexible, unofficial mechanisms that stand in stark contrast to the detached calculations of centralised planners. The photograph encapsulates how informal power dynamics operate in a deeply unequal landscape, providing essential services where formal systems fall short, and allowing water to reach those left behind by official allocations.

### 7.3. Final reflections and key takeaways

The study demonstrated whether and to what extent informality can enable reparation towards water sensitivity. Informality mobilises a hybrid governance approach, providing the flexibility to develop and iterate reparative strategies. When the rigidity of formal systems hinders adaptation, the flexibility of informality acts as the necessary grease to address the resistance to change embedded in formal governance structures. It also contextualises governance mechanisms to better align with local needs and conditions. However, for this reparative potential to be fully realised, it is essential to recognise the *alternative mechanisms and dismissed practices* put forth by informality—not to formalise informality itself, but to ensure these innovative approaches are validated, sustained, and synchronised into governance arrangements. Without synchronisation, these alternatives risk being forgotten, leaving the governance landscape to revert to its rigid, technocratic defaults.

Additionally, in absence of regulatory support, the reparative gains of informality can easily be undermined by political instability. As Kösters et al. (2020) note, new governance approaches risk being eroded by political shifts if they are not backed by robust regulatory frameworks. This was evident in Bhopal, where informal governance practices faced challenges due to the lack of institutional support, and similar risks could threaten Bhuj if efforts to normalise these practices were not strengthened.

In concluding this dissertation, I highlight three significant insights that have emerged from my research. These pertain to 1) the role of governance capacities in shaping how reparation manifests in urban water governance, 2) the practical approaches to operationalising decolonisation within water governance frameworks, and 3) the extent to which reparative efforts contribute to advancing water sensitivity. Together, these insights underscore the importance of contextually embedded, inclusive, and adaptive strategies for addressing historical injustices and fostering sustainable water governance practices.

#### 7.3.1. Insights from the capacities framework for reparative urban water governance

The development of the capacities' framework has yielded five insights into my research on reparative water governance. The insights build on the findings generated by Hölscher's (2019) capacities framework for transformative climate governance. Firstly, the reparative capacities framework facilitates an *intergenerational perspective* on reparative water governance. The intersecting literature on informality and reparation provides a comprehensive and intergenerational viewpoint, as outlined in chapters 01, 03, and Interlude A. This literature review reveals how an understanding of urban water governance extends beyond periodic, sectoral, and disciplinary confines. The literature introduces an intergenerational dimension to urban water governance by incorporating non-experts, and indigenous practices and addressing historical injustices. The principle of restorative justice serves as a normative foundation, illuminating synergies and exposing trade-offs among competing sectoral and disciplinary objectives (McCauley & Heffron, 2018).

Secondly, the governance capacities perspective offers an *agency-based understanding*, highlighting the actors and processes through which urban water governance is enacted. This perspective is enriched by the informality literature, which underscores the role of intrinsic motivation (Misra, 2014) —which Bruno Latour (2007) describes as agency extending beyond mere intentionality. The framework aids in understanding the logical reasoning behind the enactment of urban water governance and the subconscious aspects of repair, acknowledging the complexity and multifaceted nature of repair processes. This approach humanises capacities and supports a pluralised application, respecting contextual subtleties and affirming indigenous beliefs and practices previously marginalised by conventional and colonial resource management strategies (Balazs & Lubell, 2014). This unintended attribute of agency stemming from subconscious motivations also connects to intrinsic values of water that go beyond physical consumption, concurring with the sensitivity values highlighted by Wong & Brown (2009).

Thirdly, the framework serves as a tool for *recognising and validating* conditions stemming from *informality*, encouraging a governance approach that works with these informal dynamics rather than against them. By embracing informality, the framework offers a fresh perspective, countering the common critique that informality leads only to adverse, unequal outcomes (Ahlers et al., 2014). This tendency to reject informality also has roots in colonial legacies (Olajide, 2023). It advocates for a decolonisation process characterised by unlearning, undoing, and relearning (Asadullah, 2021). Highlighting indigenous methods and embracing informality, the framework critiques and transcends traditional institutionalised practices, thereby decolonising the operationalisation of agency and capacities literature with nuanced terminologies reflective of India's cultural logic. For instance, by using nuanced terminologies such as 'pragmatic' mediation, veering, and *jugaad*, the framework situates the capacities within the cultural logic of India, helping to operationalise informality through capacities more effectively.

Fourthly, the framework elucidates the *interconnected nature of consolidative and jugaadu capacities*, demonstrating their cumulative reparative potential. *Jugaadu* capacity, characterised by opportunistic ingenuity, facilitates institutional and material reformulation, serving as a mechanism for social reparation. It informs consolidative capacity, enabling reassessment of coalitions and realignment with long-term perspectives, thereby ensuring restorative justice. Conversely, the coalitions empowered by consolidative capacity also provide capital and aid in pluralising and offering multiple perspectives to the *jugaadu* capacity, thus providing a contextual reference. This interplay between consolidative and *jugaadu* capacities underscores the framework's goal towards reparation.

Finally, the *identification of capacity gaps* enables the assessment of whether efforts are genuinely reparative or merely reactive, shedding light on the cultural relevance and feasibility of reparative initiatives. These gaps also reveal how organisational priorities can either help or hinder these efforts, affecting whether they support or challenge the current situation.

<i>Insights</i>	<i>Description</i>	<i>Examples from the case studies</i>
<b>Intergenerational understanding</b>	The reparative informality capacities framework engenders a comprehensive view of water governance, transcending sectoral boundaries and incorporating intergenerational and non-expert knowledge.	In Bhopal, there is ongoing contestation regarding the recognition of water issues, particularly when these issues are framed by victims consuming contaminated groundwater resulting from the Union Carbide spill. Similarly, in Bhuj, CSO and NGO actors employ ancient water conservation practices to revive communal groundwater restoration.
<b>Agency-based Understanding</b>	The framework accentuates the roles and processes of actors in urban water governance, highlighting the importance of subconscious motivations in governance enactment.	Activities such as water walks, local governance strengthening initiatives, pilot projects, and annual protest marches establish fundamental conditions for developing reparative urban water governance capacities.
<b>Recognition of informality</b>	Informality is validated as a means to confront and challenge colonial legacies, advocating for a decolonisation process that embraces indigenous methods and critiques institutionalised practices.	Routinising activities such as water walks and developing councils, even where it is not yet constitutionally mandated (as in Bhuj) or highlighting the importance of acknowledging diverse types of knowledge—beyond just academic publications or government documents—in decision-making. These ‘othered’ means of making decisions are crucial for reparative urban water governance.
<b>Interrelations between capacities</b>	The framework clarifies the dynamic interplay between consolidative and <i>jugaadu</i> capacities, emphasising their combined potential for reparation.	To disseminate knowledge and sensitise the public on water-sensitive practices, involving teachers in Bhuj showcases the adeptness of <i>jugaadu</i> capacity. This approach provides new perspectives that influence and enhance consolidative efforts.
<b>Capacity gaps</b>	Identifies and assesses the capacity gaps in governance efforts, distinguishing between reparative and reactive approaches and highlighting the influence of institutional contexts.	Using the framework to critically assess the situation allowed for the identification of barriers to including mediators and stewards who do not fit the conventional role of water experts. These individuals are crucial for implementing local governance arrangements that can facilitate repair.

*Table 10: Insights generated by the capacities framework and their application in examining the governance processes in Bhopal and Bhuj cities.*

### 7.3.2. Operationalising decolonisation in water governance

The literature on decolonisation reveals that water is not merely a resource but an entity interwoven with culture, nature, and the everyday lived experiences of people. Recognising this multifaceted nature aligns with the inherently Indian understanding of water as sacred and relational, rather than commodified. This perspective is critical for achieving water sensitive governance goals without reinforcing exclusionary practices such as casteism, patriarchy, and

technocratic elitism, which often marginalise communities. Decolonisation in urban water governance, as demonstrated in this research, involves reclaiming spaces for alternative and dismissed practices, resisting hegemonic knowledge framings, and nurturing reparative rituals of care. These elements challenge entrenched colonial legacies and reframed urban water governance as a collective, inclusive process rooted in local realities.

A key contribution of this work is its focus on reparation as an everyday transformative practice, rather than an abstract policy ideal confined to institutional discourse. By engaging with transformative water governance at the scale of everyday struggles, by underpinning restorative justice, this research illuminates how local actors actively negotiate and address inequities through informal, context-sensitive actions to enable reparation. For example, in Bhuj and Bhopal, informal networks emerged as vital mechanisms for addressing water scarcity and contamination. These networks fostered collective problem-solving and leveraged local knowledge, embodying a form of transformative water governance capable of navigating and challenging the rigidity of formal systems—a continuation of colonial modes of governance. This alternative approach was both flexible and culturally resonant. Reparation, therefore, becomes rooted in the lived realities of communities, addressing immediate needs while laying the foundation for longer-term systemic change.

Moreover, the lens of decolonisation has enabled this study to centre small acts of care and resistance as powerful tools for transformative governance. Drawing from scholars such as Ghosh et al. (2021) and Sultana (2022, 2023), the research highlights how rituals of care—such as collective maintenance of water infrastructure or community-led education on water conservation—serve as acts of resistance against systemic neglect and exploitation. These practices not only sustain essential water services but also reclaim the dignity and agency of marginalised communities. They challenge the technocratic knowledge dominance that often characterises formal water governance by privileging relational, community-based approaches that are deeply rooted in place and culture.

In operationalising decolonisation, this research also seeks to reclaim decision-making spaces traditionally dominated by formal and elite actors. By creating transformative spaces that acknowledges previously dismissed voices — such as women, indigenous groups, and non-experts— this research highlights the critical importance of inclusivity in urban water governance. These platforms provide space for diverse perspectives and lived experiences to actively inform decision-making processes, challenging entrenched hierarchies and fostering more equitable and contextually relevant governance practices. In Bhuj, for instance, women’s groups leveraged their local knowledge and social networks to advocate for the restoration of traditional water bodies, bridging the gap between formal policies and everyday realities. Similarly, in Bhopal, human rights actors brought forth health angle of water challenges, which was earlier considered less urgent and significant by traditional governance platforms.



Through these insights, this study contributes to a deeper understanding of decolonisation in water governance, advocating for a shift from rigid, technocratic solutions to contextually embedded, relational, and inclusive practices. By centring everyday struggles and emphasising the agency of local actors, this work aims to inspire further reflection and action towards decolonial governance models in diverse contexts.

### **7.3.3. Advancing water sensitivity through reparation**

Reparation fosters a synergistic approach to water governance, emphasising coexistence and collective action over the rigid consolidation often associated with top-down integration. While ‘integration’ typically implies a structured, hierarchical merging of elements into a unified whole, ‘synergy’ captures the collaborative interplay of diverse actors, practices, and systems, allowing them to retain their distinctiveness. This concept aligns with the ethos of reparative governance, which values coexistence, mutual reinforcement, and the adaptability of diverse contributions rather than enforcing uniformity.

Addressing critiques that integrated water management approaches are overly unrealistic or top-down (Denby et al., 2016; Giordano & Shah, 2014; Shah & van Koppen, 2016), this research highlights how informal collaborations between institutions and marginalised communities can support coexistence and collective action within feasible means, shaping urban water governance goals like sensitivity. The research also critiques the formation for new governance entities like RBOs or WUAs as advocated by conventional integrated water management approach (Giordano & Shah, 2014; Mguni et al., 2015). These models frequently impose standardised structures that fail to address the unique socio-political and ecological contexts of specific regions. Instead, reparation focuses on repurposing and adapting existing governance mechanisms, such as *Ward Samitis* (Ward Committees) and *Mohalla Samitis* (neighbourhood groups), to incorporate water sensitivity objectives alongside their traditional roles. This approach avoids the resource intensiveness of creating new institutions, instead leveraging local knowledge, cultural practices, and grassroots leadership to integrate critical issues like sanitation, housing, and gender empowerment into water governance.

Reparation, as explored in this study, emerges as an iterative and adaptive process marked by incremental, nonlinear progress, akin to a two-steps-forward, one-step-back dynamic (Bhan, 2019). It involves acknowledging and addressing historical injustices while continuously recalibrating strategies to meet emerging challenges (Durbach, 2016). Fieldwork and workshops have illuminated how reparation takes on different meanings in different contexts, even among secondary cities with similar governance challenges.

For instance, in Bhopal, reparation involves recognising and addressing historical and ongoing water contamination to restore reliance on local water sources such as lakes, reducing dependence on the River Narmada. This effort includes not only experts but also citizens, especially those affected by past water contamination. Conversely, in Bhuj, reparation was highlighted through institutionalising water conservation efforts by non-mainstream actors

and preserving historical knowledge of water management to enhance resilience against scarcity and salinity ingress. This approach, though slower, offers long-term benefits compared to the quick fixes favoured by mainstream actors.

The linguistic nuances of the Hindi language further enrich these examples, capturing the diversity of reparative practices. In Bhuj, efforts are described as *rafu karna* (bolstering the old with the new), symbolising the integration of traditional practices with innovative solutions. In Bhopal, *sudharana* (seeking betterment for the future) and *dosh rahit* (emphasising faultless repair) reflect the city's dual focus on immediate remediation and long-term improvement. These terms highlight the cultural specificity of reparation, urging academics and practitioners to adopt a pluralistic approach that respects local traditions and knowledge systems.

#### 7.4. Future research directions

Future research should explore how informality can encourage transformation or reparation by undoing existing institutional frameworks and fostering reparative governance that remains flexible, context-sensitive, and inclusive. Rather than fully institutionalising informality, the focus should be on preserving space for informal practices that adapt to local needs while challenging rigid, hierarchical structures. While informality supports formal governance by introducing much-needed flexibility, it also runs the risk of perpetuating existing power hierarchies unless integrated thoughtfully into broader governance structures. To ensure informality contributes to lasting systemic change, it must be supported by institutional mechanisms that challenge, rather than reinforce, power imbalances. This research further prompts a critical inquiry: how can future governance frameworks effectively recognise and synchronise informality while safeguarding their inclusivity and resilience in the face of political shifts?

Additionally, further research should expand the concept of reparation across varied geographical contexts, integrating it with diverse justice principles. This expansion involves adapting the concept to different socio-political landscapes and intertwining it with different forms of justice. By doing so, reparation can address a broader spectrum of historical and contemporary injustices, offering tailored solutions that resonate with local realities. Researchers and practitioners are encouraged to delve deeper into how reparation can be pluralised and contextualised, ensuring that different communities' unique needs and challenges are met with appropriate and effective strategies.

Moreover, it is essential to adopt a proactive approach to understanding transformative and reparative informality, particularly recognising its various manifestations and degrees within the geographies of the Global North. Informality is often viewed through a narrow lens with a negative connotation, predominantly associated with the Global South. Doing so overlooks the humane and subconscious rationale for governance processes and structures prevalent in all kinds of geographies. Acknowledging and studying the informal processes and practices in the Global North can provide valuable insights into alternative governance and management

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models. This broader understanding can reveal the hidden dynamics of urban resilience, resource management, and community engagement, fostering more inclusive and adaptable governance frameworks that accommodate diverse societal needs and practices.

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## Chapter 7

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# A

Appendices

## Appendix: Interview and observation guides

### A. Semi-structured interview guiding template

<b>Background</b>	
Type of Stakeholder:	Government (G)   Civil Society/Advisory (CS)  Academic (A)  Private Service Provider (P)  User (U)   Others (O)
Interview No.:	I_L/CS/A/P/U/O_01
Date and Day:	
Start and End Time:	
Is this Interview in relation to any observation? Is yes, then state the Observation No.	O_L/S_01
Interviewee Name:	
Description of the Interviewee	
Relation between interviewer and interviewee	<i>How was the interviewee introduced to the interviewer?</i> <i>How was the meeting followed up?</i>
Anything interesting about the day:	Friday...weekend starts... Monday...start of the weekday. Work pressure March...year ending...pressure to finish work Rainy days/Drought days Night... In an enclosed office, with no one to pry Daytime...husband not home...safe to discuss
Place of conducting interview:	
Thick description of the place:	<i>Physical description:</i> <i>(Value)How does the place influence the interview, what is the value addition:</i>
How is the observer feeling?	<i>Pressured? Intimidated? Safe? Trustworthy?</i>
How is the interviewee feeling? Through observational signs.	<i>Hesitation, comfortable, rowdy, overconfident</i>
Is the interviewee alone? If not, then who else is present?	
Reason of the interviewing them	
How does it relate to transformative informality - consolidative/ <i>jugaadu</i> capacity	

<b>Interview</b>	
<p>These are generic questions. For appropriated questions as per the stakeholder, refer excel.</p> <p><b>Introductory Questions:</b></p> <p>What was the different projects you are currently involved with? Could you explain your role in those projects? How long are you involved in them?</p> <p><b>Research Specific Questions:</b></p> <ol style="list-style-type: none"> <li>1) <i>Who are the key stakeholders for your projects?</i></li> <li>2) <i>How does their role at a state + city level mediate in this collaboration and coordination?</i></li> <li>3) <i>What encourages actors from within and beyond sectors and department to consolidate; and align their sectoral goals to larger mission?</i></li> <li>4) <i>How are different and potentially conflicting goals accommodated? How are conflicting goals of different sector prioritized, resolved, and aligned to water goals?</i></li> <li>5) <i>Who mediates the different interests, positions, and motivations of actors in regard to disaster management? How?</i></li> <li>6) <i>What makes this collaboration sustain?</i></li> <li>7) <i>What are the spaces and ways to assess opportunities, gaps, and challenges around the challenges that hinders the collaboration?</i></li> <li>8) <i>How do you aid in translation the goal of this larger objective to each of the actor's individual goals? Do you have specific case-based examples?</i></li> <li>9) <i>How does institutional / social landscape support of hinder this adaptation and translation?</i></li> <li>10) <i>How do you facilitate and officiate innovative solutions during complex situations? Could you state some examples of difficult complex situations? and the solutions facilitated?</i></li> </ol>	
Photographs:	
<b>Post Interview notes</b>	
Follow up	



**B. Observation template**

<b>Background</b>	
Type of Observation:	Short (Day/Meeting)   Long
Observation No.:	O_L/S_01
Date and Day:	
Start and End Time:	
Is this observation in relation to any interview? Is yes, then state the Interview No.	I_L/CS/A/P/U/O_01
Anything interesting about the day:	<p><i>Friday...weekend starts...</i></p> <p><i>Monday...start of the weekday. Work pressure</i></p> <p><i>March...year ending...pressure to finish work</i></p> <p><i>Rainy days/Drought days</i></p> <p><i>Night...</i></p> <p><i>In an enclosed office, with no one to pry</i></p> <p><i>Daytime...husband not home...safe to discuss</i></p>
Place:	
Thick description of the place:	<p><i>Physical description:</i></p> <p><i>(Value) How does the place influence the observation, what is the value addition:</i></p>
Observational Event: <i>What is under observation?</i>	<p>Meeting (L) – One of many episodes. Episode No -</p> <p>Meeting (S) – Exclusively one</p> <p>Practice (L) – Consistently covering a practice</p> <p>Practice (S) – Exclusively one</p>
What is the role of the observer: Reason:	<p><input type="checkbox"/> Complete participant</p> <p><i>Facilitate a workshop with the objective to enable consolidation/ jugaad and then reflect on your actions.</i></p> <p><input type="checkbox"/> Participant as observer</p> <p><i>I facilitate few introductions and then accompany an actor to a meeting to observe how they are leading. Convene focussed group meetings + workshops and observe what the actors frame as water challenges and their suggestive measures and reasons behind challenges in first place.</i></p> <p><i>Observe how the user negotiates, while disclosing you are from the user side.</i></p>

	<p><input type="checkbox"/> Observer as participant</p> <p><i>Accompany the consortium actors or to a meeting/workshops/daily spaces of practice to observe how the rest of the actors are able to perform consolidation/jugaadu.</i></p> <p><input type="checkbox"/> Marginal Participant/Complete observer</p> <p><i>Shadowing the last mile actors, to document their everyday. Map the mandates in relation to the activities undertaken to achieve their daily goals. Observe when the meetings happen, who leads and why? And who doesn't? What are everyone's position and roles in the meeting.</i></p>
How is the observer feeling?	Pressured? Intimidated? Safe? Trustworthy?
Who is (are) the participant(s)	<p>Name 1: Description 1:</p> <p>Name 2: Description 2:</p>
Reason of observing them/their practice/meeting?	
How does it relate to transformative informality - consolidative/jugaadu capacity	
<b>OBSERVATIONS</b>	
<i>Textual Observation:</i>	
<i>Quick Sketch: How are people seated in the meeting? How is the practice maneuvered in the space?</i>	
<i>Photographs:</i>	
<b>Post Observation Notes</b>	
Follow up	

A

## Summary

Indian cities, particularly secondary cities, face persistent water governance challenges shaped by rapid urbanisation, infrastructural deficits, and socio-political inequities. These challenges manifest in water scarcity, contamination, and flooding, exacerbated by governance structures favouring top-down, technocratic, and compartmentalised approaches. Despite the proliferation of policy frameworks advocating integrated water management, urban governance remains largely entrenched in a legacy of rigid, hierarchical structures prioritising infrastructural fixes over systemic, inclusive transformation. The result is a constant disjuncture between policy aspirations and on-the-ground realities, particularly in cities with limited governance capacity and financial resources.

This thesis investigates the potential of reparative governance as a transformative approach to addressing these governance challenges. I conceptualise reparative governance as transformative governance that explicitly confronts historical injustices and socio-political inequities embedded in colonial-era infrastructures and institutions. These injustices continue to shape access to water resources, reinforcing vulnerabilities that conventional governance approaches fail to address. By integrating principles of restorative justice, reparative governance seeks to rectify these historical disparities while fostering equitable, inclusive, and context-sensitive transformations in urban water governance. Without such an approach, water-sensitive governance risks being superficial, perpetuating the status quo through new exclusionary structures rather than genuinely addressing socio-political inequities.

This research examines how the capacities of reparative governance can be used to analyse the role of informality in shaping water governance in Indian secondary cities. In many urban contexts, informal governance arrangements emerged in response to formal governance deficits, operating as a pragmatic mechanism for service delivery, resource mobilisation, and negotiation of authority. Informality does not exist in isolation but instead interacts with formal governance structures, forming a hybrid system of governance that shapes access to water and decision-making processes.

This thesis was guided by the central question: **To what extent and in what ways could informality contribute to the development of governance capacities that facilitated reparation to achieve water sensitivity in secondary Indian cities?** This overarching inquiry was broken down into three sub-questions:

1. How could capacities for reparative urban water governance, supported by informality, be conceptualised?
2. How were capacities for reparative urban water governance mobilised through informality in secondary Indian cities?

3. What methods facilitated the identification and nurturing of governance capacities to enable reparation?

The study was anchored in a comparative analysis of Bhuj and Bhopal, two Indian secondary cities with distinct water governance challenges. Bhuj, grappling with water scarcity and salination, and Bhopal, contending with water contamination and unequal access, presented contrasting yet interrelated governance dilemmas. By examining how informal actors, networks, and practices shaped governance capacities in these cities, this research sought to uncover the mechanisms through which informality fostered adaptive, inclusive, and reparative governance outcomes.

A key contribution of this research is the conceptualisation of reparative governance capacities emerging from informality. These capacities illustrate how governance actors navigate formal-informal intersections, mobilise resources, and challenge entrenched power structures to advance water-sensitive governance. Through an agency-focused perspective, this thesis examines how actors within informal governance arrangements facilitated participation in decision-making, drive knowledge co-production, and negotiate governance outcomes in ways that aligned with reparative objectives.

Ultimately, this thesis contributes to broader debates on transformative urban water governance by situating informality as a critical, yet often overlooked, component in enabling reparative governance. It challenges conventional assumptions that framed informality as a barrier to effective governance, instead demonstrating its potential as an organising logic that fosters governance adaptability and resilience in resource-constrained urban contexts. By shedding light on the interplay between informality and reparative governance capacities, this research advances a more nuanced understanding of how Indian secondary cities could navigate the transition towards water sensitivity.

### **Reparative governance: A transformative perspective on urban water governance**

To situate the reparative potential of informality, this study conceptualises reparative governance as a distinct yet complementary mode of transformative governance. Transformative governance frameworks focus on institutional and structural shifts that facilitate sustainability transitions. However, in contexts shaped by colonial legacies, caste hierarchies, and socio-economic stratification, transitions must engage with the deeper social and political injustices that continue to shape governance processes and power relations.

This study therefore employed a decolonial lens to water governance, critically interrogating the Eurocentric, technocratic, and depoliticised governance models that continue to shape urban water governance. The lens further aided in reframing water governance by examining water-human relations beyond technocratic framings. The postcolonial legacy of governance in India, particularly in urban planning and water management, has led to the entrenchment of top-down

bureaucratic structures that often overlook, marginalise, or dismiss local and Indigenous water knowledge systems. Decolonisation in this context is not merely a critique of historical injustices but an active effort to dismantle dominant epistemologies that marginalise informality and alternative governance practices. By foregrounding informality as an organising logic, this study challenged mainstream governance paradigms that position non-state governance as deficient, instead framing it as a reparative mechanism within urban governance landscapes.

By centring around restorative justice, I advance the approach of reparative governance that foregrounded the need to address historical and systemic injustices, restore agency to marginalised actors, and cultivate more inclusive, flexible, and context-sensitive transformative governance practices. Without such an approach, governance transitions risked perpetuating exclusionary structures, reinforcing entrenched inequalities under the guise of sustainability.

Reparative governance calls for iterative processes explicitly acknowledging past harms, prioritising historically marginalised voices, and facilitating pluralistic decision-making attuned to local socio-political dynamics. It emphasises reconfiguring governance arrangements to create institutional space for actors and knowledge systems that have been traditionally sidelined.

Furthermore, informality is crucial in enabling reparative governance, especially in postcolonial Global South context, serving as an organising logic through which alternative governance arrangements emerge. Informal governance practices often provide avenues for marginalised communities to exercise agency, negotiate access to resources, and build resilience in ways that formal governance structures fail to accommodate. Informality fosters social trust, sustains alternative knowledge systems, and enables adaptive governance responses that are more reflective of lived realities. However, informality is not inherently reparative—its transformative potential depends on the ways in which it is mobilised and the extent to which it disrupts rather than reinforces existing power asymmetries.

This thesis contributes to critical debates on justice and the politics of urban water transformation by situating reparative governance within broader discussions on transformative governance. It challenges dominant paradigms that frame transformative governance in purely technocratic terms and instead advocate for a reparative approach that is historically informed, socially embedded, and attuned to the complexities of urban governance in the Global South.

### **A governance capacity lens: Understanding informality as a reparative mechanism**

To explain how reparative governance was enabled, this research adopted a governance capacity perspective. Governance capacity refers to the ability of governance actors — state and non-state—to mobilise resources, foster networks, and create institutional conditions that support reparation. This study identifies two key capacities: consolidative capacity and *jugaadu* capacity, which emerge from informality.

**Consolidative Capacity:** *Consolidative capacity* reflects the ability of actors to strengthen or develop conditions that facilitate the self-organisation of diverse groups. It facilitates social cohesion, trust-mending, and the alignment of diverse interests towards a shared vision. Drawing on Hölscher et al.'s (2019) concept of orchestrating capacity, consolidative capacity in the Global South extends beyond coordination, emphasising healing and voluntary and temporary collaboration. By fostering networks of trust and shared responsibility, governance actors can bridge institutional gaps and reconfigure decision-making spaces to be more inclusive.

**Jugaadu Capacity:** *Jugaadu* capacity reflects the ability to improvise through contextually appropriate methods, ideologies, and organisational structures, dismantling colonial legacies while fostering inclusivity in resource-constrained environments. It challenges rigid bureaucratic norms, promotes localised decision-making, and seeks to repurpose existing knowledge and practices to address historical injustices. Rooted in frugality and local ingenuity, *jugaadu* capacity enables actors to experiment with governance practices that prioritise participation and flexibility, ensuring governance remains responsive to shifting socio-political realities.

Together, these capacities highlight the potential of informality to drive reparative governance, enabling more context-sensitive, inclusive, and adaptive governance approaches in Indian secondary cities.

## **Methods - Visual ethnography and action research to study reparation**

To examine reparative governance, this research integrates analytical and action research components. The analytical component employs visual ethnography to document the lived experiences of communities engaging with water infrastructures. Photography, annotations, and participatory mapping serve as tools to capture the socio-political, material, and affective dimensions of governance, enabling a richer understanding of informal governance practices that cannot be fully articulated through text-based methodologies alone. These visual methods enabled the documentation of tacit, sensory, and spatial dimensions of governance, amplifying subaltern perspectives that challenge dominant narratives. By integrating (visual) ethnographic inquiry, this study advanced a more situated, participatory, and embodied understanding of reparative governance in urban India.

The action research component engages with local actors to co-produce knowledge and experiment with governance interventions. This study facilitates governance experiments through interactive workshops, allowing real-time learning and adaptation. These participatory methods enabled through transformative 'safe-enough' spaces enabled a reflexive approach to governance. The action research component fosters horizontal knowledge exchange and iterative governance innovations by engaging with actors across different scales—community members, government officials, and civil society groups.

This methodological approach ensured that reparative governance leveraged through informality is theoretically conceptualised and empirically illustrated.

## **Empirical insights: Comparative case studies - Bhuj and Bhopal**

To empirically examine the role of informality in reparative water governance, this study focuses on Bhuj and Bhopal—two secondary Indian cities that exhibit distinct governance challenges while also sharing common structural constraints.

- **Bhuj:** Located in a semi-arid region, Bhuj has long relied on traditional water management practices, including community-managed reservoirs and rainwater harvesting systems. However, increasing dependence on large-scale infrastructure projects, such as the Narmada Canal, has altered governance arrangements, reducing local autonomy over water resources. This research investigated how state and non-state actors, including grassroots organisations and civil society groups, have mobilised consolidative and *jugaadu* capacities to restore community engagement in water governance.
- **Bhopal:** As a centrally governed state capital, Bhopal faces challenges related to bureaucratic control, fragmented governance responsibilities, and severe groundwater contamination issues linked to a historic industrial accident. Despite the dominance of state-led planning processes, informal governance mechanisms have emerged in response to persistent governance failures. This study examined how actors, including NGOs and community-led initiatives, navigated governance constraints to facilitate more inclusive decision-making and adaptive governance practices.

By comparing these two cases, this research highlighted how informality interacts with formal governance structures, enabling reparation through social networks, local knowledge, and improvisations.

## **Analysis, discussion and future directions**

This study found that informality enabled reparative governance by fostering four key processes: (1) recognising water governance as a multifaceted issue, (2) dismantling traditional power hierarchies to include unconventional actors, (3) cultivating governance networks of care, and (4) synchronising improvisations for adaptive governance. Informal governance practices proved instrumental in enabling historically marginalised communities to participate in decision-making processes and negotiate power within rigid governance structures to an extent. However, these processes were not without limitations.

Recognising water governance as a multifaceted issue required shifting away from reductionist, technocratic approaches that framed water management as a purely infrastructural or technical problem. Informality provided a lens through which governance challenges could be

viewed holistically, allowing for more nuanced and context-sensitive interventions. However, recognising complexity did not necessarily lead to resolution— as while informality facilitated the identification of diverse perspectives, the actors were often not equipped to address these variations due to their limited agency.

Challenging traditional power hierarchies to include unconventional actors was crucial in advancing reparative governance. This study illustrated the potential for reshaping traditional water governance by challenging engineering hegemony and centralised power structures to include marginalised voices. However, the cases examined did not demonstrate sustained efforts to continue challenging traditional power hierarchies beyond initial interventions.

Cultivating governance networks of care highlighted the importance of trust, reciprocity, and long-term relationship-building in governance processes. These networks extended beyond traditional institutional mechanisms, offering an alternative form of governance that was relational rather than bureaucratic. However, governance networks based on social trust were also fragile and susceptible to shifts in financial constraints. Without structural support, these networks struggled to sustain long-term transformations, particularly when actors lacked the resources or recognition needed to institutionalise their initiatives in ways that resisted co-optation.

Synchronising improvisations for adaptive governance underscored the role of informality in fostering governance approaches that were dynamic, flexible, and responsive to local needs. Actors relied on adaptive strategies that combined local ingenuity, collective learning, and iterative experimentation to address governance challenges. By synchronising fragmented governance improvisations, actors created coherence within existing governance processes, ensuring that small-scale innovations were connected and sustained over time. However, existing rigid platforms and hegemonic terminologies were inadequate to address systemic injustices, and the improvisations were often normalised as stop-gap measures that substituted rather than challenged state inaction.

While these findings highlighted the potential of informality in enabling reparative governance, they also exposed critical tensions and failures. Informality was not inherently just or transformative—its capacity for reparation depended on how it was mobilised, by whom, and for what ends. Additionally, while informality provided space for experimentation and adaptation, its lack of synchronisation meant that many promising governance practices remained vulnerable to shifts in political priorities or funding cycles.



## **Future directions**

Future research should explore how informal governance structures can be expanded to address intergenerational and ecological justice concerns, ensuring that reparative governance addresses past injustices and builds resilience for the future. Additionally, research should investigate how reparative governance could be scaled and adapted to different urban contexts, particularly in cities facing intersecting environmental and socio-political crises. Understanding how informal governance networks interacted with global governance trends, climate adaptation policies, and transnational advocacy efforts would be critical for advancing more just and sustainable urban water governance models.

By positioning and reflecting on informality as a mechanism that can shape the mobilisation of reparative governance, this research contributed to broader conversations on urban governance, justice, and sustainability transitions. It challenged conventional governance paradigms that prioritised formality and technical expertise, advocating instead for governance approaches that were historically aware, socially embedded, and responsive to local complexities.



## Samenvatting

Indiase steden, met name secundaire steden, kampen met persistente uitdagingen in waterbeheer, die worden gevormd door snelle verstedelijking, infrastructurele tekorten en sociaal-politieke ongelijkheden. Deze uitdagingen uiten zich in waterschaarste, vervuiling en overstromingen en worden verergerd door beheerstructuren die top-down, technocratische en gesegmenteerde benaderingen bevoordelen. Ondanks de opkomst van beleidskaders die pleiten voor geïntegreerd waterbeheer, blijft stedelijk bestuur grotendeels verankerd in een erfenis van rigide, hiërarchische structuren die infrastructurele oplossingen verkiezen boven systemische en inclusieve transformatie. Dit leidt tot een voortdurende kloof tussen beleidsambities en de praktijk, met name in steden met beperkte bestuurlijke capaciteit en financiële middelen.

Deze thesis onderzoekt het potentieel van reparatieve *governance* als een transformatieve benadering om deze uitdagingen in waterbeheer te adresseren.<sup>43</sup> Ik conceptualiseerde reparatieve *governance* als een vorm van transformatieve *governance* die expliciet werkt aan historische onrechtvaardigheden en sociaal-politieke ongelijkheden, zoals ingebed in infrastructuur en instituties uit de koloniale periode. Deze onrechtvaardigheden blijven de toegang tot waterbronnen beïnvloeden, waardoor kwetsbaarheden worden versterkt die conventionele bestuursbenaderingen niet weten te adresseren. Door principes van rechtvaardigheid door herstel te integreren, streeft reparatieve *governance* naar het corrigeren van deze historische ongelijkheden, terwijl het gelijktijdig bijdraagt aan rechtvaardige, inclusieve en contextgevoelige transformaties in stedelijk waterbeheer. Zonder een dergelijke aanpak riskeert water-sensitieve *governance* oppervlakkig te blijven, waarbij het bestaande systeem in stand wordt gehouden door nieuwe uitsluitingsmechanismen te creëren in plaats van sociaal-politieke ongelijkheden daadwerkelijk te bestrijden.

Dit onderzoek onderzoekt hoe de capaciteiten van reparatieve *governance* kunnen worden gebruikt om de rol van informaliteit in de vormgeving van waterbeheer in secundaire steden in India te analyseren. In veel stedelijke contexten ontstonden informele *governance*-arrangementen als reactie op tekortkomingen in formeel bestuur, waarbij deze functioneerden als een pragmatisch mechanisme voor dienstverlening, middelenmobilisatie en machtsbemiddeling. Informaliteit bestond niet op zichzelf, maar werkte samen met formele bestuursstructuren, waardoor een hybride systeem ontstond dat toegang tot water en besluitvormingsprocessen vormgaf.

Deze thesis werd geleid door de centrale vraag:

**In welke mate en op welke manieren kan informaliteit bijdragen aan de ontwikkeling van *governance*-capaciteiten die repareren mogelijk maken om water sensitief beheer in secundaire Indiase steden te realiseren?**

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43 Governance is een lastig te vertalen term die raakt aan Nederlandse termen als bestuur en beheer.

Deze overkoepelende vraag werd verder opgesplitst in drie deelvragen:

1. Hoe kunnen capaciteiten voor reparatieve stedelijke water *governance*, ondersteund door informaliteit, worden geconceptualiseerd?
2. Hoe werden capaciteiten voor reparatieve stedelijke water *governance* gemobiliseerd via informaliteit in secundaire Indiase steden?
3. Welke methoden faciliteerden de identificatie en versterking van *governance*-capaciteiten om repareren mogelijk te maken?

Het onderzoek was gebaseerd op een vergelijkende analyse van Bhuj en Bhopal, twee secundaire Indiase steden met uiteenlopende uitdagingen in water *governance*. Bhuj, dat kampt met waterschaarste en verzilting, en Bhopal, dat te maken heeft met waterverontreiniging en ongelijke toegang, boden contrasterende maar onderling verbonden *governance*-dilemma's. Door te onderzoeken hoe informele actoren, netwerken en praktijken *governance*-capaciteiten in deze steden vormgaven, beoogde dit onderzoek de mechanismen bloot te leggen waarmee informaliteit bijdroeg aan adaptieve, inclusieve en reparatieve *governance*-uitkomsten.

Een belangrijke bijdrage van dit onderzoek was de conceptualisering van reparatieve *governance*-capaciteiten die voortkomen uit informaliteit. Deze capaciteiten illustreerden hoe *governance*-actoren formeel-informele interacties navigeerden, middelen mobiliseerden en gevestigde machtsstructuren uitdaagden om water-sensitieve *governance* te bevorderen. Vanuit een agency-perspectief onderzocht deze thesis hoe actoren binnen informele *governance*-arrangementen participatie in besluitvorming faciliteerden, kennis co-creëerden en *governance*-uitkomsten onderhandelden op manieren die aansloten bij reparatieve doelstellingen.

Deze thesis droeg bij aan bredere debatten over transformatieve stedelijke water *governance* door informaliteit te positioneren als een cruciale, maar vaak over het hoofd geziene factor in het mogelijk maken van reparatieve *governance*. Het onderzoek daagde conventionele aannames uit die informaliteit beschouwen als een belemmering voor effectief beheer, en toonde in plaats daarvan aan dat het een organiserende logica kan zijn die aanpassingsvermogen en veerkracht van *governance* bevordert in contexten met beperkte middelen. Door het samenspel tussen informaliteit en reparatieve *governance*-capaciteiten te belichten, droeg dit onderzoek bij aan een genuanceerder begrip van hoe secundaire Indiase steden de transitie naar water sensitief beheer kunnen navigeren.

## **Reparatieve governance: Een transformatief perspectief op stedelijk waterbeheer**

Om het reparatieve potentieel van informaliteit te duiden, conceptualiseert deze studie reparatieve *governance* als een onderscheidende maar complementaire vorm van transformatieve

*governance*. Kaders voor transformatieve *governance* richten zich op institutionele en structurele veranderingen die duurzaamheidstransities mogelijk maken. Echter, in contexten die gevormd zijn door koloniale erfenissen, kastehiërarchieën en sociaal-economische stratificatie, moeten transities ook de diepere sociale en politieke onrechtvaardigheden adresseren die *governance* processen en machtsverhoudingen blijven beïnvloeden.

Dit onderzoek hanteerde een decoloniale lens op water *governance*, waarbij het Eurocentrische, technocratische en gedepoliteerde bestuursmodellen die stedelijk waterbeheer blijven vormgeven kritisch bevroeg. Deze lens hielp daarnaast bij het herdefiniëren van waterbeheer door water-mensrelaties te bestuderen buiten technocratische kaders. De postkoloniale erfenis van bestuur in India, met name in stedelijke planning en waterbeheer, heeft geleid tot de institutionalisering van top-down bureaucratische structuren die vaak lokale en inheemse waterkennis marginaliseren, negeren of verwerpen. In deze context is decolonisatie niet slechts een kritiek op historische onrechtvaardigheden, maar een actieve poging om dominante epistemologieën die informaliteit en alternatieve praktijken van beheer marginaliseren te ontmantelen. Door informaliteit als organiserende logica naar de voorgrond te brengen, daagde dit onderzoek gangbare *governance*-paradigma's uit die niet-staatelijk beheer als inadequaat beschouwen, en kaderde dit in plaats daarvan als een reparatief mechanisme binnen stedelijke *governance*-dynamieken.

Door rechtvaardigheid door herstel als uitgangspunt te nemen, ontwikkelde ik een benadering van reparatieve *governance* die de noodzaak benadrukt om historische en systemische onrechtvaardigheden aan te pakken, de handelingsruimte van gemarginaliseerde actoren te herstellen en inclusieve, flexibele en contextgevoelige transformatieve *governance* praktijken te cultiveren. Zonder een dergelijke aanpak riskeren *governance*-transities nieuwe uitsluitingsmechanismen te creëren en bestaande ongelijkheden te bestendigen onder het mom van duurzaamheid.

Reparatieve *governance* vereist iteratieve processen die expliciet eerdere schade erkennen, historisch gemarginaliseerde stemmen prioriteren en pluralistische besluitvorming faciliteren, afgestemd op lokale sociaal-politieke dynamieken. Het richt zich op het herconfigureren van *governance*-arrangementen om institutionele ruimte te creëren voor actoren en kennissystemen die traditioneel zijn gemarginaliseerd.

Daarnaast speelt informaliteit een cruciale rol in het mogelijk maken van reparatieve *governance*, vooral in de postkoloniale context van de Global South, doordat het functioneert als een organiserende logica waarbinnen alternatieve vormen van beheer kunnen ontstaan. Informele *governance* praktijken kunnen wegen bieden voor gemarginaliseerde gemeenschappen om hun handelingsruimte te vergroten, toegang tot hulpbronnen te onderhandelen en veerkracht op te bouwen op manieren die formele beheerstructuren niet kunnen faciliteren. Informaliteit bevordert sociaal vertrouwen, ondersteunt alternatieve kennissystemen en maakt adaptieve *governance*-reacties mogelijk die beter aansluiten bij geleefde realiteiten. Echter, informaliteit

is niet inherent reparatief—het transformatief potentieel hangt af van de manier waarop het wordt gemobiliseerd en de mate waarin het bestaande machts-asymmetrieën doorbreekt in plaats van versterkt.

Deze thesis draagt bij aan kritische debatten over rechtvaardigheid en de politiek van stedelijke watertransformatie door reparatieve *governance* te positioneren binnen bredere discussies over transformatieve *governance*. Het daagt dominante paradigma's uit die transformatieve *governance* enkel in technocratische termen framen en pleit in plaats daarvan voor een reparatieve benadering die zich kenmerkt door historische onderbouwing, sociale inbedding en afstemming op de complexiteiten van stedelijke *governance* in de Global South.

## **Een governance-capaciteitlens: Het begrijpen van informaliteit als een reparatief mechanisme**

Om uit te leggen hoe reparatieve *governance* mogelijk werd gemaakt, hanteerde dit onderzoek een *governance*-capaciteitenperspectief. *Governance*-capaciteit verwijst naar het vermogen van *governance*-actoren—zowel statelijke als niet-statale—om middelen te mobiliseren, netwerken te versterken en institutionele voorwaarden te creëren die repareren ondersteunen. Deze studie identificeert twee kerncapaciteiten die voortkomen uit informaliteit: *consolidative* capaciteit en *jugaadu* capaciteit.

*Consolidative* capaciteit: *Consolidative* capaciteit weerspiegelt het vermogen van actoren om condities te versterken of te ontwikkelen die zelforganisatie van diverse groepen vergemakkelijken. Het bevordert sociale cohesie, het herstel van vertrouwen en de afstemming van uiteenlopende belangen op een gedeelde visie. Voortbouwend op het concept van orkestrerende capaciteit van Hölscher et al. (2019), gaat *consolidative* capaciteit in de Global South verder dan enkel coördinatie, en legt de nadruk op herstel, vrijwillige samenwerking en tijdelijke collectieve actie. Door netwerken van vertrouwen en gedeelde verantwoordelijkheid te cultiveren, kunnen *governance*-actoren institutionele leemtes overbruggen en besluitvormingsruimtes herconfigureren naar meer inclusieve structuren.

*Jugaadu* capaciteit: *Jugaadu* capaciteit weerspiegelt het vermogen om te improviseren via contextueel passende methoden, ideologieën en organisatievormen, waarbij koloniale erfenissen worden ontmanteld en inclusiviteit wordt bevorderd in omgevingen met beperkte middelen. Het daagt rigide bureaucratische normen uit, stimuleert gedecentraliseerde besluitvorming en benut bestaande kennis en praktijken om historische onrechtvaardigheden aan te pakken. Geworteld in zuinigheid en lokale vindingrijkheid stelt *jugaadu* capaciteit actoren in staat te experimenteren met *governance*-praktijken die participatie en flexibiliteit prioriteren, waardoor *governance* responsief blijft ten aanzien van veranderende sociaal-politieke realiteiten.

Gezamenlijk onderstrepen deze capaciteiten het potentieel van informaliteit om reparatieve *governance* te stimuleren, en zo meer contextgevoelige, inclusieve en adaptieve *governance*-benaderingen mogelijk te maken in secundaire Indiase steden.

## **Methoden – Visuele etnografie en actieonderzoek om reparatie te bestuderen.**

Om reparatieve *governance* te onderzoeken, combineerde dit onderzoek analytische en actiegerichte onderzoeksmethoden. De analytische component gebruikte visuele etnografie om de geleefde ervaringen van gemeenschappen die zich verhouden tot waterinfrastructuren te documenteren. Fotografie, annotaties en participatieve cartografie dienden als instrumenten om de sociaal-politieke, materiële en affectieve dimensies van *governance* vast te leggen. Deze methoden boden een rijkere interpretatie van informele *governance*-praktijken, die niet volledig kunnen worden uitgedrukt via tekstuele benaderingen. De visuele methoden maakten het mogelijk om impliciete, zintuiglijke en ruimtelijke dimensies van *governance* te documenteren, waarbij onderdrukte perspectieven werden versterkt die dominante narratieven uitdagen. Door (visuele) etnografische methoden te integreren, ontwikkelde deze studie een meer gesitueerd, participatief en belichaamd begrip van reparatieve *governance* in stedelijk India.

Het actieonderzoek werkte met lokale actoren bij het co-produceren van kennis en het experimenteren met *governance*-interventies. Dit onderzoek faciliteerde *governance*-experimenten door interactieve workshops, waardoor real-time leren en aanpassing mogelijk werden. Deze participatieve methoden, mogelijk gemaakt via transformatieve ‘voldoende veilige’ ruimtes, stelden een reflexieve benadering van *governance* centraal. Door actoren op verschillende bestuursniveaus—gemeenschapsleden, overheidsfunctionarissen en maatschappelijke organisaties—te betrekken, bevorderde het actieonderzoek horizontale kennisuitwisseling en iteratieve *governance*-innovaties.

Deze methodologische benadering zorgde ervoor dat reparatieve *governance* via informaliteit zowel theoretisch werd geconceptualiseerd als empirisch werd geïllustreerd.

## **Empirische inzichten: Vergelijkende casestudies – Bhuj en Bhopal**

Om de rol van informaliteit in reparatieve water *governance* empirisch te onderzoeken, richtte deze studie zich op Bhuj en Bhopal—twee secundaire Indiase steden met uiteenlopende *governance*-uitdagingen, maar ook gedeelde structurele beperkingen.

- **Bhuj:** Gelegen in een semi-aride regio, heeft Bhuj lange tijd vertrouwd op traditionele waterbeheerpraktijken, waaronder gemeenschapsbeheer van reservoirs en regenwateropvangsystemen. Echter, de toenemende afhankelijkheid van grootschalige infrastructuurprojecten, zoals het Narmada-kanaal, heeft *governance*-arrangementen veranderd en de lokale autonomie over waterbronnen verkleind. Dit onderzoek

analyseerde hoe statelijke en niet-statale actoren, waaronder grassroots-organisaties en maatschappelijke groeperingen, consoliderende en *jugaadu* capaciteiten hebben gemobiliseerd om de betrokkenheid van de gemeenschap bij water *governance* te herstellen.

- **Bhopal:** Als centraal bestuurd deelstaathoofdstad kampt Bhopal met uitdagingen op het gebied van bureaucratische controle, gefragmenteerde *governance*-verantwoordelijkheden en ernstige grondwatervervuiling als gevolg van een historische industriële ramp. Ondanks de dominantie van door de staat geleide planningsprocessen zijn er informele *governance*-mechanismen ontstaan als reactie op persistente *governance*-falen. Dit onderzoek onderzocht hoe actoren, waaronder NGO's en door de gemeenschap geleide initiatieven, zich binnen *governance*-beperkingen bewogen om inclusievere besluitvorming en adaptieve *governance*-praktijken mogelijk te maken.

Door deze twee casestudies te vergelijken, toonde dit onderzoek aan hoe informaliteit en formele *governance*-structuren met elkaar interageren, en hoe sociale netwerken, lokale kennis en improvisatie bijdragen aan reparatie binnen stedelijk waterbeheer.

## Analyse, discussie en toekomstige richtingen

Dit onderzoek heeft aangetoond dat informaliteit reparatieve *governance* mogelijk maakte door vier sleutelprocessen te bevorderen: (1) erkennen dat water *governance* een meerledige uitdaging is, (2) doorbreken van traditionele machtsstructuren om niet-conventionele actoren te betrekken, (3) cultiveren van *governance*-netwerken van zorg en (4) synchroniseren van improvisaties voor adaptieve *governance*. Informele *governance*-praktijken bleken van essentieel belang om historisch gemarginaliseerde gemeenschappen in staat te stellen deel te nemen aan besluitvormingsprocessen en binnen rigide bestuursstructuren machtsverhoudingen te onderhandelen. Echter, deze processen waren niet zonder beperkingen.

Het erkennen van water *governance* als een meerledige uitdaging vereiste een verschuiving weg van reductionistische, technocratische benaderingen die waterbeheer enkel als infrastructureel of technisch probleem beschouwen. Informaliteit bood een lens om *governance*-uitdagingen holistisch te benaderen, waardoor meer genuanceerde en contextgevoelige interventies mogelijk werden. Echter, het erkennen van complexiteit leidde niet per definitie tot oplossingen. Hoewel informaliteit hielp bij het blootleggen van diverse perspectieven, waren de betrokken actoren vaak niet uitgerust om met deze diversiteit om te gaan vanwege hun beperkte handelingsruimte.

Het uitdagen van traditionele machtsstructuren en het betrekken van niet-conventionele actoren was cruciaal voor het bevorderen van reparatieve *governance*. Dit onderzoek toonde aan dat water *governance* getransformeerd kon worden door de hegemonie van ingenieursdisciplines en gecentraliseerde macht te doorbreken, zodat gemarginaliseerde stemmen werden gehoord. Echter, de casestudies lieten zien dat deze inspanningen vaak niet verder gingen dan de initiële



interventies en dat er weinig structurele mechanismen waren om deze machtsverhoudingen blijvend te herschikken.

Het belang van vertrouwen, reciprociteit en langdurige relatievorming in *governance*-processen werd benadrukt door het cultiveren van *governance*-netwerken van zorg. Deze netwerken functioneerden buiten traditionele institutionele mechanismen en boden een alternatieve vorm van *governance* die relationeel in plaats van bureaucratisch was. Echter, *governance*-netwerken gebaseerd op sociaal vertrouwen bleken ook kwetsbaar, met name door financiële beperkingen. Zonder structurele ondersteuning hadden deze netwerken moeite om langdurige transformaties te realiseren, vooral wanneer actoren niet beschikten over de middelen of erkenning om hun initiatieven te institutionaliseren op een manier die coöptatie tegengaat.

Het synchroniseren van improvisaties (improvisations) binnen adaptieve *governance* toonde aan hoe informaliteit *governance* benaderingen dynamischer, flexibeler en responsiever maakte ten aanzien van lokale behoeften. Actoren maakten gebruik van adaptieve strategieën die lokale vindrijkheid, collectief leren en iteratieve experimenten combineerden om *governance*-uitdagingen aan te pakken. Door gefragmenteerde *governance*-improvisaties te synchroniseren, creëerden actoren samenhang binnen bestaande *governance*-processen, waardoor kleinschalige innovaties werden verbonden en over tijd werden behouden. Echter, bestaande rigide platforms en hegemonische terminologieën bleken ontoereikend om structurele onrechtvaardigheden aan te pakken. Bovendien werden deze improvisaties vaak genormaliseerd als tijdelijke noodoplossingen die staatsfalen compenseerden in plaats van uitdaagden.

Hoewel deze bevindingen het potentieel van informaliteit voor reparatieve *governance* bevestigden, legden ze ook kritische spanningen en tekortkomingen bloot. Informaliteit was niet per definitie rechtvaardig of transformatief—het vermogen ervan om bij te dragen aan repareren hing af van hoe het werd gemobiliseerd, door wie en met welk doel. Daarnaast bood informaliteit weliswaar ruimte voor experimentatie en adaptatie, maar het gebrek aan synchronisatie betekende dat veelbelovende *governance*-praktijken kwetsbaar bleven voor verschuivende politieke prioriteiten en veranderende financieringsstructuren.

## Toekomstige richtingen

Toekomstig onderzoek zou moeten verkennen hoe informele *governance*-structuren kunnen worden uitgebreid om intergenerationele en ecologische rechtvaardigheidsvraagstukken te adresseren, zodat reparatieve *governance* niet alleen eerdere onrechtvaardigheden aanpakt, maar ook veerkracht opbouwt voor de toekomst. Daarnaast zou onderzoek zich moeten richten op hoe reparatieve *governance* kan worden opgeschaald en aangepast aan verschillende stedelijke contexten, met name in steden die te maken hebben met overlappende milieuproblemen en sociaal-politieke crises. Inzicht in hoe informele *governance*-netwerken *interacteren* met mondiale *governance*-trends, klimaatadaptatiebeleid en transnationale belangenbehartiging

is essentieel om rechtvaardigere en duurzamere stedelijke water *governance*-modellen te ontwikkelen.

Door informaliteit te positioneren en te reflecteren op hoe het als een mechanisme de mobilisatie van reparatieve *governance* kan beïnvloeden, droeg dit onderzoek bij aan bredere debatten over stedelijke *governance*, rechtvaardigheid en duurzaamheidstransities. Het daagde conventionele *governance*-paradigma's uit die formele structuren en technische expertise vooropstellen en pleitte in plaats daarvan voor *governance*-benaderingen die historisch bewust, sociaal ingebed en responsief zijn voor lokale complexiteiten.

## PhD Portfolio

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Research Gate	<a href="https://www.researchgate.net/profile/Neha-Mungekar">https://www.researchgate.net/profile/Neha-Mungekar</a>
PhD Project:	Water4Change (The Dutch Research Council (Nederlandse Organisatie voor Wetenschappelijk Onderzoek - NWO) under Grant W 07.7019.103 and the Indian Government Department of Science & Technology (DST) under Grant DST-1429-WRC.)
PhD period:	01/2020 – 03/2024

### PhD Courses

Duration	Title of the course	ECTS
28/09/2020-05/11/2020	Philosophy of the Humanities and social sciences	2.5
7/10/2020 – 7/10/2020	Searching and managing your literature	1.0
15/12/2020 – 15/12/2020	Shut up and write	1
29/04/2020 – 12/05/2021	STRN/NEST Methodology School 2021, Lund University	2
12/5/2021 – 12/05/2021	Professionalism and Integrity in Research	1.5
08/11/2021-08/1//2021	Qualitative coding with ATLAS.ti	1.5
07/03/2022-8/-5/2022	Academic Writing in English	2.5
13/04/2022 – 11/05/2022	Doing ethnography	2.5

### Publications

- Mungekar, N., Hölscher, K., Janssen, A., Loorbach, D. (forthcoming) Repairing urban water governance through informality: Comparing governance capacities for reparation in Indian cities, *Water Policy* [accepted]
- Mungekar, N., Hölscher, K., Janssen, A., Loorbach, D. (forthcoming) Nurturing Transformative Spaces: Leveraging Informality for Transitioning to Water-Sensitive Governance in Indian Cities, *Action Research Journal* [Under review]
- Mungekar, N (2024) Visualising informal repair: Exploring photographic ‘routines’ in ethnographic methodology. In Garner-Knapp, L., Mason, J., Mulherin, T. & Visser, L. (Eds.), *Threads of Informality in Policymaking*, Emerald Publishing. <https://doi.org/10.1108/978-1-83797-280-720241007>
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## Conference proceedings

- Mungekar, N., Janssen, A., Hölscher, K., & Loorbach, D. (2024). Nurturing reparative governance capacities through transformative spaces. *15th International Sustainability Transitions Conference at Oslo, Norway*. 16-19 June 2024.
- Mungekar, N., Janssen, A., Hölscher, K., & Loorbach, D. (2023). Decolonizing governance in Indian cities through reparative capacities. Case - Bhuj. *6th International Conference in Public Policy (ICPP6). Session - Decolonizing Climate Policy in the Global South: Structural Changes in Policy Making*. 27-29 June 2023.

## Manuals and reports

- Mungekar, N., Janssen, A., Mishra, G., van der Meulen, G., Tripathi, I. M., Trivedi, K., Navaneeth, A., Silva, R., Dave, R., Kumar, S., Doshi, S., Singh, S., Dwivedi, T., & Hölscher, K. (2025). *Transition manual: Workbook to design reparative participatory processes to achieve water sensitivity in secondary cities of India*. Water4Change [Under review].
- Mungekar, N., Noterman, I. & von Wirth, T. (2021) *An evaluation of the Actors of Urban Change (ACT) program: Empowerment, Social Learning and Translocal Diffusion*. DRIFT (Technical Report). Retrieved from [https://drift.eur.nl/app/uploads/2021/06/DRIFT-Evaluation-Actors-of-Urban-Change\\_Final.pdf](https://drift.eur.nl/app/uploads/2021/06/DRIFT-Evaluation-Actors-of-Urban-Change_Final.pdf) (Accessed on 9th December 2022)

## Online blogs

- Mungekar, N. (2024, December 12) *Beyond the Buzzwords: Centering Justice in Just Transitions [Blog]*. JUSTRA Cities Network Erasmus University Rotterdam Retrieved from: <https://www.eur.nl/en/news/beyond-buzzwords-centering-justice-just-transitions> (Accessed on 16th December 2024)

## Presentations and webinars

- Mungekar, N. (2025, January 21). Reparative water governance: Informality in Indian cities. [Seminar Presentation] Ashank Desai Centre for Policy Studies, IIT Bombay
- Mungekar, N. (2024, October 11). Reparative water governance: Informality in Indian cities [Audio podcast episode]. In *Friday Waters Theses Club, WforW Foundation*. YouTube. Retrieved November 30, 2024, from <https://www.youtube.com/watch?v=-rJnkf5lp4g>
- Mungekar, N., Janssen, A., Hölscher, K., & Loorbach, D. (2024, June 17). Nurturing reparative governance capacities through transformative spaces. [Conference Presentation] *15th International Sustainability Transitions Conference* at Oslo, Norway. 16-19 June 2024.
- Mungekar, N. (2024, June 10). Reparative urban water governance leveraged through informality [Seminar Presentation] *Reimagining international cooperation for urban water transitions*, Faculty of Architecture and the Built Environment, TU Delft. 10 June 2024
- Mungekar, N., Janssen, A., Hölscher, K., & Loorbach, D. (2023, August 30). Comparing governance capacities of repair in secondary cities of India – Bhuj and Bhopal. [Conference Presentation] *14th International Sustainability Transitions (IST) Conference 2023*, Utrecht, The Netherlands. 30 July-1 Aug 2023

## Appendices

- Mungekar, N., (2023, December 13). Decolonizing Transition Governance to Achieve Water Sensitivity in India. [Seminar] *Helix, Utrecht University*, The Netherlands.
- Mungekar, N., Janssen, A., Hölscher, K., Loorbach, D. (2022, November 11). *Reparative experimental governance for postcolonial geographies. Towards water sensitivity through informal capacities in the secondary cities of India* [Conference Presentation] 2022 RSA Winter Conference, London.
- Vora, S., Mungekar, N., Heinecke, S., Mathur, V. (2022, July 28) *Urban Living Labs: Innovation for Resilience* [Webinar] Transitions Research. Retrieved from <https://www.youtube.com/watch?v=BcLGrvC0C24&list=PLdLDjBT8ONwcy9O-GmQUbHUysxhwVjI8&index=6&t=2815s> (Accessed on 1<sup>st</sup> December 2022)
- Mungekar, N., Janssen, A., Hölscher, K., Loorbach, D. (2022, June 24). *Enabling reparative informality for water sensitive secondary Indian cities* [Webinar] GNHRE-UNEP, Online
- Mungekar, N. (2022, May 18) *Van Wie is het Water? (Who Owns the Water?)*. Sumter, D (Host) *Uit de Ivoren Toren*, Season 4, Episode 7 Centre for Sustainability [Podcast] Retrieved from <https://ivorentoren.buzzsprout.com/260462/10628287-van-wie-is-het-water-who-owns-the-water> (Accessed on 1<sup>st</sup> December 2022)
- Mungekar, N. (2022, March 16) *Architect to Enabler* [Webinar] Vastukul School of Innovation. Retrieved from <https://www.youtube.com/watch?v=RrlgukT9mK0&list=PLdLDjBT8ONwcy9O-GmQUbHUysxhwVjI8&index=7&t=26s> (Accessed on 1<sup>st</sup> December 2022)
- Mungekar, N., Hölscher, K., Loorbach, D. (2021, June 17). *Towards transformative informality for water sensitive secondary Indian cities* [Conference Presentation] Transformation Conference 2021, Online/Barcelona
- Mungekar, N., Hölscher, K., Loorbach, D. (2021, April 9). *Towards transformative informality for water sensitive secondary Indian cities* [Conference Presentation] 6<sup>th</sup> Network for Early career researchers in Sustainability Transitions (NEST) Conference 2021, Online/Sofia
- Mungekar, N., Hölscher, K., Loorbach, D. (2020, August 20). [Panelist] Vinke-de Kruijf, J., Dobre, C. & Hölscher, K (Hosts) Session - *A transition studies lens on the challenge of adapting to a changing climate*. 11<sup>th</sup> International Sustainability Transitions (IST) Conference 2020, Online/AIT Austria
- Mungekar, N., Hölscher, K., Loorbach, D. (2020, August 19). *Assessing the role of informality in urban water transformations in India* [Conference Presentation] 11<sup>th</sup> International Sustainability Transitions (IST) Conference 2020, Online/AIT Austria

## Designing and orchestrating workshops

**Water4Change Upscaling Learnings Workshop (Jan 2025)** – Co-led the design of the workshop in Kozhikode, guiding participants in identifying pathways to scale their learnings towards water sensitivity using the Compass tool.

**Water4Change Detailing Pathways Workshop (Mar 2023)** – Led the design of the workshops in Bhopal, Bhuji, and Kozhikode to help participants map out pathways towards water sensitivity in urban planning.

**Water4Change Repairing Pathways Workshop (Feb 2023)** – Developed and organized a unique workshop in Delhi, using a food-fair format to encourage open dialogue on governance challenges, with the goal of nurturing reparative pathways for water sensitivity.

**Water4Change Repairing Visions Workshop (Jun 2022)** – Led the design of the workshops in Bhopal, Bhuj, and Kozhikode, guiding participants to reflect on existing programs and create a cohesive vision for water-sensitive urban governance.

**Water4Change Problem Framing Workshop (Feb 2022)** – Co-organized the workshops to help stakeholders in Bhopal, Bhuj, and Kozhikode identify key water governance challenges in their cities.

**EU Shared Green Deal (Oct 2022)** – Facilitated and organized group discussions within the Mobility group to collaboratively develop pathways for sustainable transport solutions.

**ACT Berlin Eye-Opening Workshop (Jan-Mar 2021)** – Co-designed and contributed to designing of the workshop focused on fostering ownership and clarifying participant roles in broader urban change missions.

## Appendices

## About the author

Neha Mungekar (b. 1986) works at the intersection of urban water governance and justice. My (formal) journey into water governance began at IHE Delft, where we studied water as a vital, finite, and fugitive resource—yes, *fugitive*. That word stayed with me. Working on governance challenges for a resource that refuses to be contained, while bringing a justice lens to the discussion, has since become a personal commitment. This dissertation is but one small yet meaningful chapter in that ongoing pursuit.

Before joining the Dutch Research Institute for Transitions (DRIFT), I worked across disciplines—trained as an architect and urban designer, I taught urban planning, practised environmental photojournalism, and searched for purpose in my work. Some days felt like an endless blur of AutoCAD commands, disconnected from the larger questions I wanted to explore. Seeking something more, I spent six years at the World Resources Institute (WRI) India, facilitating dialogues between actors with competing perspectives, building consensus in complex governance settings. I honed these skills in India, Zambia, the Netherlands, Germany, and Ecuador—unaware at the time that they would all eventually converge in this research.

My academic transition has been anything but linear—shifting from a quantitative planner designing solutions to a qualitative researcher using visual inquiry at Erasmus School of Social and Behavioural Sciences. Moving between spatial thinking, journalistic storytelling, and academic research, I have come to realise that there is still so much to learn—about governance, about justice, and about this ever-elusive, fugitive resource we call water.