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Enhancing Urban Water Resilience through National Adaptation Plans and Strategies

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Summary

Urban water resilience is an essential aspect of climate adaptation, particularly as cities increasingly face risks from flooding, drought, and water pollution due to climate change. National Adaptation Plans (NAPs) and National Adaptation Strategies (NASs) offer critical frameworks for integrating water resilience into national policies. However, their implementation often remains fragmented due to weak coordination across different governance levels. While some countries have developed detailed urban water management strategies, others provide only limited references, reflecting gaps in policy alignment and governance structures. Research shows that only 36 percent of countries have established vertical coordination mechanisms, and just 32 percent have developed subnational adaptation plans, revealing a significant disconnect between national policies and local adaptation efforts. Effective urban water resilience requires a more robust multilevel governance system, stronger engagement with diverse stakeholders—including private sector entities, civil society organizations, and local communities—and increased financial and technical support for municipalities and regional governments.

This study employs a qualitative research approach to examine how urban water resilience is integrated into NAPs and NASs. The analysis is based on an extensive review of policy documents, academic literature, and case studies, complemented by insights from key stakeholders. By evaluating these policy documents across different national contexts, the research investigates how these frameworks address water-related challenges, particularly in urban settings, and assesses the role of governance mechanisms in strengthening resilience at multiple levels. A key focus of the study is understanding the extent to which local water management is incorporated into national adaptation strategies, the alignment between national policies and local adaptation actions, and the degree of involvement of local stakeholders in policy formulation and implementation.

Case studies from Colombia, Egypt, and Indonesia are explored, each offering unique perspectives on water resilience strategies. Colombia has developed a well-structured approach through the National Plan for Adaptation to Climate Change (PNACC) and the National Development Plan (PND), which emphasize integrating adaptation into national and regional planning. Colombia also employs sectoral and territorial climate management plans to strengthen water resilience through a multilevel governance approach. Egypt, on the other hand, has prioritized large-scale national frameworks, such as the National Climate Change Strategy (NCCS) 2050 and the National Water Resources Plan (NWRP 2037), while integrating localized measures, such as Alexandria's flood prevention initiatives and participatory planning efforts in Greater Cairo. However, challenges remain in ensuring effective coordination between national and local adaptation efforts, particularly regarding financial resources and institutional capacity. Finally, Indonesia presents a comprehensive climate adaptation framework that aligns national policies with local strategies. The country has also introduced pilot projects, regulatory guidelines, and targeted funding mechanisms, such as the Special Allocation Fund (DAK), to support local adaptation efforts. However, disparities persist in resource distribution, with wealthier regions better positioned to implement adaptation measures, while resource-constrained areas struggle with financial and technical limitations.

The findings of this research highlight the importance of strengthening multilevel governance, aligning financial mechanisms, and fostering inclusive policymaking processes to bridge the gap between national adaptation frameworks and local implementation. To improve urban water resilience, countries must prioritize improved stakeholder collaboration, increased investment in capacity-building initiatives, and better integration of water management

strategies into urban planning. These steps will not only strengthen the ability of cities to withstand climate risks but also contribute to more adaptive water governance across local levels.

Contents

Acronyms

APBD	Regional budget (Anggaran Pendapatan dan Belanja Daerah, Indonesia)
APBN	State Budget (Anggaran Pendapatan dan Belanja Negara, Indonesia)
BAPPENAS	Ministry of National Development Planning (Indonesia)
CAPMAS	Central Agency for Public Mobilization and Statistics (Egypt)
DAK	Special Allocation Fund (Dana Alokasi Khusus, Indonesia)
DRM	Disaster risk management
EEAA	Egyptian Environment Affairs Agency
FAO	Food and Agriculture Organization
GCF	Green Climate Fund
GI	Green Infrastructure
GIZ	German Corporation for International Cooperation (Deutsche Gesellschaft Für Internationale Zusammenarbeit)
IDSC	Information and Decision Support Center (Egypt)
IPDC	International Panel on Deltas and Coastal Areas
IRFF	Insurance and Risk Finance Facility
MVCT	Ministry of Housing, City and Territory (Ministerio de Vivienda, Ciudad y Territorio, Colombia)
MWRI	Ministry of Water Resources and Irrigation (Egypt)
NAP	National Adaptation Plan
NAS	National Adaptation Strategy
NCCS	National Climate Change Strategy (Egypt)
NDC	Nationally Determined Contributions
NGO	Non-governmental organization
PIGCCS	Comprehensive Sectoral Climate Change Management Plans (Planes Integrales de Gestión del Cambio Climático Sectoriales, Colombia)
PIGCCT	Comprehensive Territorial Climate Change Management Plans (Planes Integrales de Gestión del Cambio Climático Territorial, Colombia)
PMAA	Plan for Environmental Management of Aquifers (Planes de Manejo Ambiental de acuíferos, Colombia)
PNACC	Colombia's National Plan for Adaptation to Climate Change (Plan Nacional de Adaptación al cambio climático)
PND	National Development Plan (Plan Nacional de Desarrollo, Colombia)
PNGIRH	National Policy for Integrated Management of Water Resources (Política Nacional para la Gestión Integral del Recurso Hídrico, Colombia)
PNGR	National Plan for Disaster Risk Management (Plan Nacional Gestión Riesgo de Desastres, Colombia)
POMCA	Hydrographic Basin Management and Planning Plan (Planes de Ordenación y Manejo de Cuencas Hidrográficas, Colombia)
PORH	Water Resource Management Plan (Plan de Ordenamiento del Recurso Hídrico, Colombia)
POT	Territorial Ordering Plan (Planes de Ordenamiento Territorial, Colombia)
ProKlim	Climate Village Program (*Program Kampung Iklim, Indonesia)*
RAD-API	Regional Action Plan for Climate Change Adaptation (Rencana Aksi Daerah - Adaptasi Perubahan Iklim, Indonesia)
RAN-API	National Action Plan for Climate Change Adaptation (Rencana Aksi Nasional - Adaptasi Perubahan Iklim, Indonesia)
RAN-GRK	National Action Plan for Greenhouse Gas Emission Reduction (Rencana Aksi Nasional – Penurunan Emisi Gas Rumah Kaca, Indonesia)
RPJMD	Regional Medium Term Development Plan (Rencana Pembangunan Jangka Menengah Daerah, Indonesia)
RPJMN	National Medium-Term Development Plan (Rencana Pembangunan Jangka Menengah Nasional, Indonesia)

RPJPD	Regional Long Term Development Plan (Rencana Pembangunan Jangka Panjang Daerah, Indonesia)
SCALA	Scaling up Climate Ambition on Land Use and Agriculture
SGP	General Participation System (Sistema General de Participaciones, Colombia)
SISCLIMA	The National Climate Change System (Sistema Nacional de Cambio Climático, Colombia)
SNGRD	National Disaster Risk Management System (Sistema Nacional para la Gestión del Riesgo de Desastres, Colombia)
WRM	Water resources management

1 Introduction

Cities world-wide are facing increasing water-related challenges as a result of growing climate change impacts. Rising temperatures and changing rainfall patterns, leading to the increasing frequency of extreme weather events such as floods and droughts, are threatening populations' livelihoods. Cities, which are hubs of population growth, economic activity, and critical infrastructure, are particularly vulnerable to water stress, which can have far-reaching social, economic, and environmental consequences. Urban water resilience - the capacity of cities to anticipate, absorb, and recover from water-related shocks while maintaining essential functions - has thus emerged as a critical goal for urban governance and planning. Local communities and governments are actively addressing climate change impacts by implementing diverse solutions to enhance urban water resilience. Examples include nature-based rainwater harvesting and wastewater treatment in Chennai, India, and urban river regeneration for flood risk reduction in Nairobi, Kenya.[1,2]

In response to the increasing climate and water challenges, National Adaptation Plans (NAPs) or National Adaptation Strategies (NASs) have become a key tool for countries to structure their climate adaptation efforts. NAPs provide a national framework for addressing climate change impacts across multiple sectors. The NAP process aims to identify medium- and long-term adaptation needs and develop a strategy to address these. NAPs have two overarching objectives; (i) to help countries reduce vulnerability to the impacts of climate change by building adaptive capacity and resilience; and (ii) to facilitate the integration of climate change adaptation – in a coherent manner - into new and existing policies, programs and activities, across sectors and government levels (UNEP, 2024).

For NAPs to be truly effective in building water resilience in urban areas, there must be a strong alignment between national policies and local water management strategies. The need for multilevel governance—where national, regional, and local authorities collaborate effectively—has become increasingly fundamental as a means to ensure that adaptation strategies are both comprehensive and locally relevant.

The relevance of examining NAPs through the lens of urban water resilience lies in the unique challenges faced by cities. Cities must manage growing populations, aging infrastructure, and competing demands for water, all while dealing with the heightened risks brought about by climate change. Ensuring that national adaptation frameworks are sensitive to these local complexities is essential for building resilient urban water systems. This research, therefore, aims to explore the interconnectedness between NAPs and urban water strategies, focusing on how these plans can foster stronger urban resilience to climate change impacts, by learning from countries' experiences.

1.1 About this paper

This paper is structured to provide a comprehensive analysis of the formulation of NAPs and their relationship with urban water resilience, with a particular focus on multilevel governance. The first section offers an overview of the state-of-the-art literature related to the localization of adaptation plans, with a specific focus on urban water management. This literature review highlights the growing recognition of the importance of localizing national adaptation efforts to meet the distinct challenges cities face in managing water resources under climate change.

[1] https://www.worldwateratlas.org/narratives/water-as-leverage/water-as-leverage-in-chennai#metropolis
[2] https://unhabitat.org/news/14-jul-2021/restoration-of-the-nairobi-river-system-to-kick-start-citywide-regeneration

Following the literature review, the paper presents three case studies—Colombia, Egypt, and Indonesia—representing countries that face varying degrees of water challenges and climate adaptation gaps and that are in different stages in the development of their NAPs. These case studies have been selected to provide a diverse perspective on how NAPs have been formulated in different contexts and how they align with or diverge from local urban water strategies. Through these case studies, best practices and lessons learned in terms of integrating urban water management into national adaptation frameworks are examined.

The core of the research is structured around four key questions, which guide the analysis:

1. How have local water management strategies in urban areas been integrated (or not) into NAPs?
2. How have NAPs informed (or not informed) local water resilience strategies in cities?
3. To what extent have cities and local governments contributed to the formulation of NAPs?
4. How well are national and local adaptation policies aligned, particularly with regard to water resilience?

In addressing these questions, the paper undertakes a detailed analysis of the degree of interconnectedness between national adaptation policies and local water resilience strategies in each case study. The findings of this research aim to shed light on the critical role of multilevel governance in enhancing urban water resilience and offer recommendations for better integration of national and local adaptation efforts.

Finally, the paper concludes by discussing the implications of the findings for future policy development, with an emphasis on fostering closer collaboration between national and local governments to build resilient urban water systems in the face of climate change.

2 Urban Water Resilience in NAPs

Urban water resilience is increasingly recognized as a foundation of climate adaptation. As cities face pressures such as rapid urbanization, growing demands for complex infrastructure to address climate change impacts, and escalating water-related risks—including flooding, drought, and pollution—building water-resilient cities has become a top priority for policymakers, planners, and researchers. However, achieving resilience requires not only technical solutions, but also effective governance frameworks that integrate national and local adaptation efforts. Policy instruments, like Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs) or National Adaptation Strategies (NASs) present an opportunity to develop a whole-of-government and whole-of-society effort to climate adaptation. Furthermore, embedding “water” as the cross-cutting element, that can not only help in breaking silos across sectors but also through geographical landscapes and scopes, is a unique opportunity to materialize a multi-level policy alignment.

These frameworks are designed to guide countries in addressing climate vulnerabilities while aligning with international climate commitments. However, the integration of urban water management within these frameworks remains fragmented, raising critical questions about the role of multilevel governance in bridging this gap. This chapter provides a synthesis of the state-of-the-art literature on urban water resilience and its governance within the context of NAPs. It examines the empirical findings, and practical challenges of integrating urban water resilience into national adaptation frameworks, with a specific focus on the interconnection between vertical and horizontal coordination.

In the context of urban water management, resilience refers to the ability of urban water systems to withstand, adapt to, and recover from climate-related shocks and stresses. This requires not only robust physical infrastructure but also adaptive governance structures that can anticipate and respond to changing conditions. Hence, urban water resilience is inherently multidisciplinary, intersecting fields such as hydrology, urban planning, climate science, and governance.

2.1 Integration of Urban Water Resilience in National Adaptation Plans

NAPs are designed to provide a strategic framework for medium- and long-term adaptation planning, offering a structured approach to addressing climate vulnerabilities. While NAPs emphasize the importance of local-level actions, their implementation often reveals gaps in the integration of local needs, strategies, and plans. Studies show that many NAPs fail to explicitly address the unique challenges and opportunities associated with urban water management, such as the need for flexible infrastructure and adaptive governance (Dazé, Price-Kelly, & Rass, 2016).

2.2 The role of governance in Urban Water Resilience

Governance is a central theme in the literature on urban water resilience. Effective governance frameworks must navigate the inherent complexities of urban systems, including overlapping jurisdictions, competing priorities, and resource constraints (Dazé, Price-Kelly, & Rass, 2016). Table 1 presents an overview of the key concepts of vertical coordination (across government levels, or multilevel governance), horizontal coordination (breaking siloes or fostering a whole-of-government approach) and the role of non-state actors (to facilitate a whole-of-society process).

Table 1. Vertical and horizontal coordination and the role of non-state actors.

Vertical coordination involves aligning policies, plans, and implementation efforts across different levels of government. This is critical for urban water resilience, as national governments often provide the financial resources, technical expertise, and policy frameworks necessary to support local adaptation efforts. The literature underscores the need for mechanisms that enable two-way information exchange, ensuring that local insights inform national strategies and vice versa.
Horizontal coordination addresses the interdependencies among local governments and sectors. Urban water challenges, such as watershed management or flood control, often transcend administrative boundaries, necessitating collaboration among municipalities and across sectors such as urban planning, transportation, and public health. Mechanisms such as inter-municipal agreements and regional planning bodies are highlighted as key tools for fostering coherence and integration**.**
Non-state actors, including the private sector, civil society organizations, and academic institutions, play a critical role in urban water resilience. The literature highlights the importance of public-private partnerships, community-based adaptation initiatives, and knowledge-sharing networks in enhancing local capacity and innovation.

Vertical coordination (see Figure 1) across different government levels in adaptation planning is limited. Only 36 percent of countries show evidence of having vertical coordination mechanisms[3], and only 32 percent of countries have developed subnational adaptation plans (UNEP, 2023). These numbers illustrate the need to advance multilevel governance in adaptation planning, to better incorporate local perspectives into national priorities while national priorities enable adaptation at the local level, and to take a “whole of society” approach (Dazé, Price-Kelly, & Rass, 2016; UNEP, 2023; UN-Habitat, 2024).

Research also highlights the disparity in how urban systems are incorporated into NAPs across countries. While some nations have developed detailed strategies for urban water resilience within their NAPs, others provide only cursory references. This unevenness reflects broader challenges in multilevel governance, including limited institutional capacity at the local level and insufficient mechanisms for stakeholder engagement.

[3] Coordination mechanisms, such as councils or platforms, can support strategic connections between national and local adaptation actors.

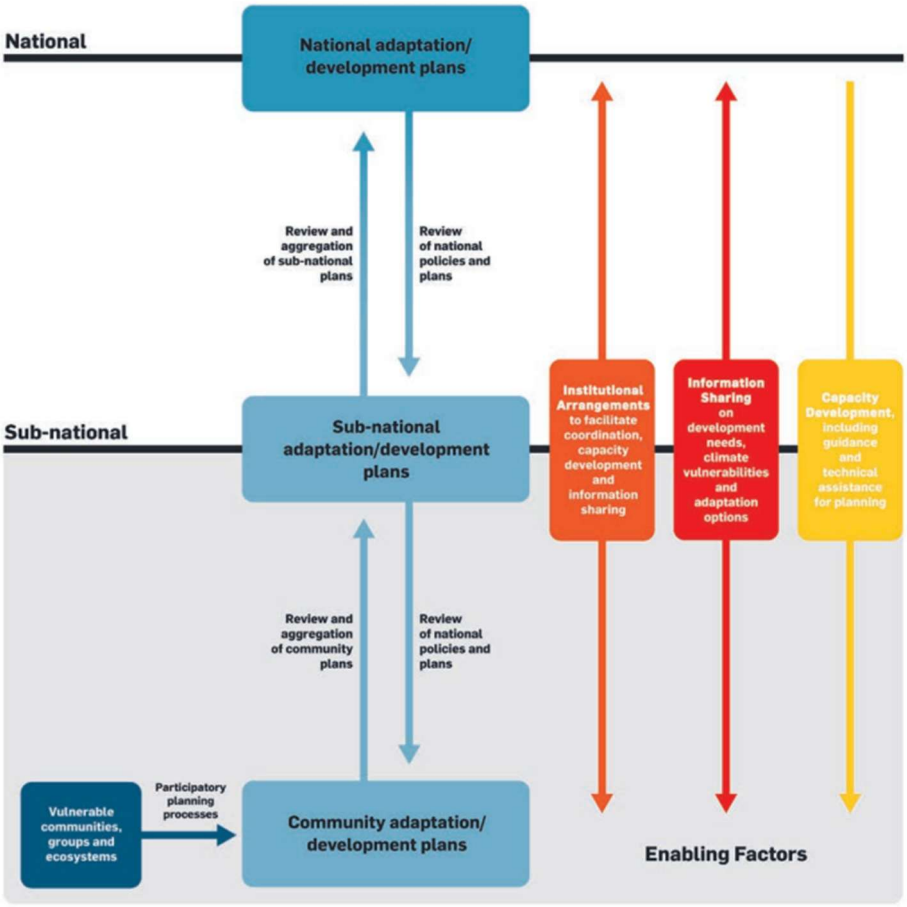

Figure 1. Vertical integration in planning (Dazé, Price-Kelly, & Rass, 2016, p. 13).

2.3 Relevance and gaps in literature

Urban water resilience has been widely recognized as an essential component of climate adaptation due to the escalating impacts of climate change on urban water systems, such as increased flooding, drought, and water pollution. Literature that examined urban water resilience highlights its critical role in climate adaptation. However, key gaps persist that limit the effective integration of urban water strategies into national and local frameworks. This section identifies the relevance of current research and outlines the critical areas requiring further exploration, in relation with this report's analytical framework.

- **Comprehensive adaptation planning**. Lessons learned highlight the need to integrate climate, social, and economic indicators to better understand vulnerability and design targeted adaptation actions (United Nations Environment Programme, 2023). Despite these efforts, gaps remain in translating complex climate risk data into actionable formats, such as decision-maker-oriented storylines and scenarios, which limits its practical applicability. Furthermore, evidence shows a need for resources to generate and access sub-national climate change data.
- **Inclusive stakeholder engagement.** Studies highlight the importance of participatory, gender-sensitive, and transparent stakeholder engagement strategies in the formulation and implementation of NAPs. However, the extent to which these processes include vulnerable groups and traditional knowledge systems is often inconsistent, weakening the representativeness and inclusiveness of adaptation efforts (United Nations Environment Programme, 2023).

- **Implementation and financial mechanisms.** Research indicates that NAPs benefit significantly when led by senior government officials and supported by decentralized governance structures, which foster coordination and resource allocation. However, persistent barriers, including ambiguous roles for local governments, insufficient capacity, and inadequate access to finance, hinder effective implementation (United Nations Environment Programme, 2023)

All in all, despite significant advancements, national-level strategies are at the lead, with insufficient attention to how these plans and strategies translate to local contexts. This also illustrates the existent fragmentation of governance structures, and the limited coordination, especially vertical coordination remains unexplored.

3 Methodology

This research adopts a qualitative approach, primarily based on a comprehensive desk review of published documentation and case studies, complemented by input from key stakeholders, including national and local policymakers, as well as international organizations such as UN-Habitat. The methodology is designed to critically analyse NAPs and explore their alignment with urban water resilience strategies, with particular attention to multilevel governance and the role of local stakeholders.

3.1 Desk Review

The core of the research methodology involves an extensive desk review of existing literature, NAPs, and NASs from selected countries. These documents provide the foundation for understanding how national-level climate adaptation efforts incorporate water management strategies, especially in the context of urban areas.

The desk review is supplemented by direct input from stakeholders, including national and local policymakers who have contributed to the formulation and implementation of NAPs and NASs, as well as representatives from international organizations. This stakeholder engagement provides practical insights into the challenges and successes of integrating urban water resilience into national adaptation frameworks, adding depth and relevance to the document analysis.

3.2 Criteria for Documentation Analysis

The analysis of NAPs and NASs is guided by specific criteria that focus on water management and the extent to which local actions and strategies are considered. These criteria include: (i) content related to water resources management; (ii) connection between NAPs/NASs and local strategies/action, and (iii) involvement of local stakeholders (city level policy officers, community organizations, etc.) in the formulation of NAPs and NAS. These criteria seek to ensure a focus assessment on the critical intersections between national-local adaptation strategies and plans.

3.2.1 Content related to water resources management

The degree to which the NAPs/NASs explicitly address water-related issues, including urban water resilience, and how these issues are prioritized within the broader adaptation framework.

3.2.2 Connection to local actions

The extent to which NAPs reference local adaptation actions, particularly those related to urban water management. This includes the identification of specific cities or regions that face heightened water-related risks and whether local plans are incorporated into the national strategy.

3.2.3 Role of local stakeholders

The role assigned to local stakeholders, such as municipal governments, local water authorities, and community organizations, in the formulation and implementation of NAPs. This includes the degree of collaboration between national and local governments and the mechanisms in place to ensure that local water challenges are addressed.

3.3 Selection of Case Studies

The selection of cases was made to ensure geographical diversity and representation of various water-climate challenges. Furthermore, with the objective of reflecting on lessons learned and building recommendations for the next steps in this report, the selection of countries was purposely made to bring countries that had NAPs or NASs in place and cities that were at the forefront of urban water resilience. Colombia, Egypt, and Indonesia represent distinct geographical regions and offer diverse examples of how NAPs address local water resilience challenges.

This report is part of the Global Agendas and Water Cooperation Program, supported by the Ministry of Infrastructure and Water Management from the Netherlands, which aims to strengthen integrated approaches to water-climate adaptation through applied research and policy-relevant insights.

3.3.1 Geographical representation

The case studies are drawn from different regions to capture diverse climatic and socioeconomic contexts. Additionally, countries facing different types of climate risks, such as flooding, drought, or sea-level rise, are included to illustrate how NAPs and NASs address these risks through a multi-risk perspective.

3.3.2 Focus on urban water resilience

The selected case studies highlight cities and national governments that have made initial steps toward jointly identifying urban climate hazards, particularly water-related risks, and have begun adopting adaptation responses. These responses include a multi-risk approach to guide the identification and monitoring of appropriate urban adaptation strategies.

3.3.3 Connection to global initiatives

Preference has been given to countries that are part of international initiatives such as the International Panel on Deltas and Coastal Areas (IPDC) or where the "Water as Leverage" programme has been implemented.

About IPDC

The IPDC is an initiative by the Dutch Government as a key commitment to the Water Action Agenda. IPDC's objective is to accelerate actionable climate adaptation in deltas, coastal areas and islands. The IPDC positions itself as a knowledge network supporting evidence-based decision-making on water-related climate adaptation.

To achieve this, the IPDC applies a demand-driven approach in its member countries, including Colombia, Egypt, and Indonesia. In addition to country-specific support, the IPDC facilitates knowledge exchange among its members and the global climate adaptation community. Finally, it aims to bridge knowledge gaps to further strengthen evidence-based decision-making on climate adaptation.

About Water as Leverage

The Water as Leverage (WaL) approach is a project development methodology designed to create transformative and inclusive initiatives to strengthen urban water resilience. Drawing on the insights and lessons from the WaL programme, active since 2017, this approach tackles the complexity of urban water issues through a comprehensive and integrated framework. At the centre of the WaL approach are eight guiding principles, ranging from applying an integrated approach and ensuring early investments in project development, to making sure projects are bankable and inclusive from start to finish. Additionally, one of the principles focuses on linking local actions to global goals, recognizing the multilevel interdependencies and opportunities across all levels.

The Water as Leverage programme is currently being scaled up by the Dutch Ministry of Infrastructure and Water Management in collaboration with global partners like UN-Habitat, as part of the Water Action Agenda. The course for the expansion of the WaL approach focuses on three key components, including the WaL Factory – focusing on institutionalizing the WaL Multilevel Climate Action Programme, the WaL Academy – Building a dynamic WaL culture by strengthening capacity, nurturing innovation, and spreading knowledge, and City-Level WaL Initiatives – implementing targeted, on-the-ground actions aimed at improving urban resilience (Deltares; One Architecture; University of Groningen; Radboud University, 2024).

3.4 Analytical Framework

The analysis of the case studies is structured around four guiding research questions, which aim to provide a deeper understanding of how NAPs and urban water strategies are interconnected:

1 **Integration of local water management strategies in NAPs:** How have urban water management strategies at the local level been integrated into the national adaptation plans? This question explores the extent to which local water challenges are reflected in the national adaptation framework.

2 **NAPs informing local water resilience strategies:** How have NAPs influenced or shaped the development of water resilience strategies at the city level? This question assesses whether NAPs have effectively guided cities in addressing their specific water-related risks.

3 **Role of local governments in NAP formulation:** To what extent have local governments and stakeholders contributed to the formulation of NAPs? This question examines the level of involvement and influence that cities and local authorities have had in shaping national adaptation policies.

4 **Alignment between national and local adaptation policies:** How well are national and local adaptation policies aligned, particularly in terms of water management? This question seeks to evaluate the consistency and coherence between national and local adaptation efforts, with a focus on water resilience in urban areas.

4 Colombia

Colombia is a country of extraordinary ecological and cultural diversity, situated in the northwestern region of South America. Renowned as one of the world's most biodiverse nations, Colombia incorporates a vast array of ecosystems, from tropical rainforests and Andean Mountain ranges to extensive wetlands and coastal zones. With a population of approximately 51 million, the country is highly urbanized, with around 82 percent of its inhabitants residing in urban areas (World Bank, 2023). Major cities like Bogotá, Medellín, and Cali are hubs of economic activity but face significant challenges due to rapid and often unplanned urbanization, which has led to the spread of informal settlements and densely populated coastal zones (World Bank, 2021).

These dynamics, combined with the escalating impacts of climate change, have worsened the vulnerability of Colombia's urban populations to climate hazards such as flooding, droughts, and water scarcity. Recognizing the urgency of these challenges, Colombia has developed comprehensive national and territorial adaptation plans. These strategies aim to enhance urban resilience and integrate sustainable water management into broader climate adaptation efforts, offering valuable insights for addressing the complex interconnection of urbanization, biodiversity, and climate risks.

4.1 Colombia's water-related climate adaptation strategies

At the national level, Colombia has articulated several key plans to address water-related climate adaptation, forming a comprehensive framework to guide its efforts. These include the National Plan for Adaptation to Climate Change (PNACC, 2012), the National Development Plan (PND), the National Plan for Disaster Risk Management (PNGR), and the National Policy for Integrated Water Resource Management (PNGIRH). Collectively, these plans aim to provide strategic direction for reducing climate vulnerabilities while fostering resilience and sustainable development. This section will focus on the PNACC and the PND as these serve as the cornerstone for the development of the country's water-related climate adaptation strategies.

National Plan for Adaptation to Climate Change (PNACC)

The PNACC, launched in 2012, serves as Colombia's primary strategy for fostering climate-resilient and compatible development. Unlike a single, consolidated document, the PNACC is structured as a multi-document "Toolkit," which comprises several components designed to guide regional and sectoral adaptation efforts. Key elements of this toolkit include the *Conceptual Framework Document for Adaptation in Colombia* (2012), the *Roadmap for Formulating Regional and Sectoral Adaptation Plans* (2013), the *National Adaptation Plan for Adaptation to Climate Change – Priority Lines of Action* (2016), and the *Guide for Formulation and Implementation of the Comprehensive Territorial Climate Change Management Plans* (PIGCCT, 2022). Additionally, the PNACC incorporates two significant frameworks for practical implementation: the *Comprehensive Territorial Climate Change Management Plans (PIGCCT)* and the *Comprehensive Sectoral Climate Change Management Plans (PIGCCS)*. Together, these documents provide a robust foundation for addressing climate variability and promoting adaptive strategies across Colombia.

The primary goal of the PNACC is to reduce the risks and socioeconomic impacts associated with climate variability and change while guiding the design and implementation of adaptation strategies that enhance national resilience. Updated in 2016, the plan introduced priority action

lines that serve as strategic starting points for adaptation strategy formulation (DNP, Min Ambiente, IDEAM, and UNGRD, 2016; IPDC, 2024). These action lines are supported by three overarching objectives:

1. Manage knowledge about climate change and its potential impacts on communities, biodiversity, ecosystem services, and the county's economy
2. Incorporate adaptation into territorial and sectoral development planning
3. Promote the transformation development for adaptation to include criteria of competitiveness, sustainability, and equity

National Development Plan (PND)

The National Development Plan complements the PNACC by serving as a guiding document for national investments and actions. The PND highlights the critical role of water resources in Colombia's development and aligns with the country's international commitments under the Paris Agreement.

While the PND is comprehensive in scope, this report focuses specifically on Colombia's adaptation strategies, particularly as they relate to water management and resilience-building initiatives. These strategies represent the cornerstone of Colombia's efforts to address the multifaceted challenges posed by climate change.

4.2 Integration of local water management strategies in NAPs

The integration of local water management strategies into Colombia's National Adaptation Plan for Climate Change (PNACC) demonstrates a balance between national vision and localized implementation, though certain limitations persist. While there is no direct evidence of local water strategies explicitly shaping the structure of the PNACC, the plan acknowledges the importance of local contexts and incorporates a learning-based approach to adaptation. The development of the PNACC was initiated in 2012 with a focus on establishing conceptual foundations, creating a methodological toolbox, and supporting planning and implementation processes in various territories. This iterative learning process is highlighted as a cornerstone of the PNACC's evolution, as outlined in the 2016 revision:

> *"Colombia initiated its climate change adaptation strategy, known as the **National Climate Change Adaptation Plan (PNACC)**, in 2012. Since then, conceptual foundations have been forged at the technical level, a methodological toolbox has been developed, planning and implementation processes for adaptation have been supported in different territories, and support needs for formulating adaptation strategies for different productive sectors have been addressed. As a result of the above, learnings have been accumulated that make it possible to construct the present document..." (DNP, Min Ambiente, IDEAM, and UNGRD, 2016).*

The PNACC recognizes the critical role of local information and stakeholder involvement in shaping territorial planning processes and adaptation measures, and it emphasizes the importance of coordination among national, regional, and local governments. The national level defines a broad adaptation vision, synthesizing lessons learned from local experiences and providing guidelines to strengthen territorial adaptation plans. It also acknowledges that adaptation must be context-specific and grounded in the unique needs and priorities of individual territories, thereby emphasizing the alignment of national objectives with localized circumstances. Although the PNACC does not explicitly reference specific local water management strategies, it acknowledges the necessity of tailoring adaptation efforts to the unique priorities and conditions of individual territories. By aligning national objectives with

regional needs, the PNACC seeks to ensure that adaptation measures are both contextually appropriate and effectively implemented.

In addition to the PNACC, Colombia has implemented complementary efforts to integrate risk reduction and prospective interventions into environmental planning instruments. The Ministry of Environment has developed guidelines to incorporate risk considerations into instruments such as watershed management plans (*Planes de Ordenación y Manejo de Cuencas Hidrográficas,* POMCA), micro-watershed environmental management plans, and aquifer management plans. These efforts are supported by technical assistance from the Ministry to environmental authorities, ensuring that territorial planning instruments, such as municipal land-use plans (*Plan de Ordenamiento Territorial,* POT), are updated to include an environmental dimension (Ministerio de Ambiente, sd).

Furthermore, the Ministry of Environment, through its Directorate of Climate Change and Risk Management, collaborates with the Ministry of Housing, City, and Territory (*Ministerio de Vivienda, Ciudad y Territorio*, MVCT) to develop guidelines for managing and protecting unmitigable risk areas, as defined in Article 121 of Law 388 of 1997. This initiative aligns with the goals outlined in the National Disaster Risk Management Plan (*Plan Nacional de Gestión del Riesgo de Desastres,* PNGRD) 2015–2025. The guidelines are informed by contributions from entities within the National Environmental System (*Sistema Nacional Ambiental,* SINA) and the National Disaster Risk Management System (*Sistema Nacional para la Gestión del Riesgo de Desastres,* SNGRD) at local, regional, and national levels (Ministerio de Ambiente, sd).

These complementary efforts illustrate a growing recognition of the importance of integrating local and regional considerations into national climate adaptation and water management strategies. Despite these efforts, the integration of local water management strategies into the PNACC remains limited, reflecting a broader trend in which national policies often prioritize top-down approaches. This highlights an ongoing need to strengthen mechanisms for incorporating localized water management insights into national frameworks, ensuring that adaptation measures effectively address urban water challenges at all governance levels.

4.3 NAP Informing Local Water Resilience Strategies

Colombia’s PNACC has played a pivotal role in shaping the development of water resilience strategies at the regional and local level, providing both a strategic framework and operational tools to guide local adaptation. By emphasizing the importance of multilevel governance and the integration of climate adaptation into territorial planning, the PNACC establishes a foundation for connecting national objectives with local implementation. The plan recognizes that the success of adaptation efforts depends on the active participation of territorial actors in integrating climate considerations into their planning and budgeting processes.

The PNACC adopts an adaptive approach, incorporating new data and feedback to refine its strategies. To facilitate the alignment of national adaptation objectives with local realities, several strategic documents have been developed. Among these, the *Roadmap for the Formulation of Sectoral and Territorial Adaptation Plans* (2013) and the *Guide to Incorporate Climate Change into Colombia's Territorial and Environmental Planning* (2022) guide territories to formulate adaptation actions that are appropriate to their needs. The *Guide to Incorporate Climate Change into Colombia's Territorial and Environmental Planning* sets out the general structure and guidelines for the formulation and implementation of *Comprehensive Territorial Climate Change Management Pla*ns (PIGCCT) and *Comprehensive Sectoral Climate Change Management Plan* (PIGCCS) (Ministry of Environment and Sustainable Development; United Nations Development Programme, 2022). Colombia’s PND also includes several water resilience strategies related to water in territorial planning, multilevel water governance, strategies for improving water and sanitation services, and nature-based solutions.

Comprehensive Territorial Climate Change Management Plans (PIGCCTs)

The PIGCCTs serve as the primary instruments for implementing national adaptation goals at the regional and local levels. These plans translate the broad objectives of the PNACC into actionable measures, coordinating adaptation efforts across Colombia's diverse territories. Additionally, the plans enable the development of a territorial vision that recognizes the challenges and opportunities presented by climate change for the territory as a whole, its communities, its production model, and its natural resources. All in all, PIGCCTs are designed to reflect the unique challenges and opportunities of each region, taking into account local production models, community needs, and natural resource conditions. As of 2024, 31 PIGCCTs have been formulated, with 30 integrating adaptation, mitigation, and risk management components (Ministry of Environment and Sustainable Development, 2024).

Comprehensive Sectoral Climate Change Management Plan (PIGCCSs)

In addition to territorial plans, the PNACC framework includes the development of Comprehensive Sectoral Climate Change Management Plans (PIGCCSs), mandated by Law 1931 of 2018[4]. These sector-specific plans are tailored to address vulnerabilities within different ministries' areas of responsibility. For instance, the Ministry of Housing, Cities, and Territory developed a PIGCCS focusing on water and sanitation, which includes guidelines for watershed management, domestic wastewater treatment, and the reuse of treated wastewater (MVCT, 2020). These measures aim to reduce the sector's vulnerability to climate-related risks and improve water resource management. The implementation of PIGCCSs is overseen by municipal entities, supported by national resources such as the General Participation System (SGP) and managed through water and sanitation utilities.

The PIGCCS for Water and Sanitation, in its adaptation component, has the general objective of promoting and guiding the necessary mechanisms and instruments to reduce the sector's vulnerability to risks associated with climate change, and water resource management. Its strategic lines, goals, and measures include risk management for adaptation, watershed management for water supply, domestic wastewater treatment, and the reuse of treated domestic wastewater. Most of these components are implemented by municipal territorial entities within the framework of their competences, through the execution of resources from the general participation system for the general purpose of basic sanitation and drinking water, and through the management of water and sewerage utilities.

Other regional strategies

Beyond PIGCCTs and PIGCCSs, several regional water management instruments align with the PNACC's objectives. These include Hydrographic Basin Management and Planning Plans (POMCAs) for river basins, Plans for Environmental Management of Aquifers (PMAAs), and Water Resource Management Plans (PORHs). These instruments are complemented by Territorial Ordering Plans (POTs), which guide urban planning at the city level (Ministerio de Ambiente, sd). The Ministry of Environment provides technical assistance to local authorities to incorporate risk management into these plans, recognizing the interconnection between climate adaptation and risk reduction.

4.4 Role of local governments in NAP formulation

The formulation of Colombia's National Adaptation Plan (PNACC) reflects a deliberate effort to integrate local perspectives and foster collaboration between national and sub-national stakeholders. This participatory approach is embodied in the mechanisms and institutional

[4] Article 7 mandates that the ministries that are part of the SISCLIMA, within the scope of their competences, develop their respective PIGCCSs (Administrative Department of the Civil Service, 2018).

structures that facilitate the involvement of local governments and other stakeholders in the development of adaptation components, particularly within the PIGCCTs. As previously mentioned, PIGCCTs are an essential part of the implementation of Colombia's adaptation strategies. Local governments, municipalities, districts, environmental authorities, research institutes, non-governmental organizations, and public and private leaders are involved in the formulation of these territorial plans. The process is coordinated through *Regional Climate Change Nodes*, which operate under the framework of the National Climate Change System (SISCLIMA) (DNP; MinAmbiente, 2013). The origin of the *Regional Climate Change Nodes* occurred organically when three departments in the coffee region started to work together on adaptation planning (Dazé, Price-Kelly, & Rass, 2016). The value of this approach was recognized by the Ministry of Environment and Sustainable Development, which established nine regional nodes across the country. Established in 2016 through a formal decree (Ministerio de Ambiente, 2016), these nodes have become critical platforms for fostering knowledge-sharing and collaboration across nine administrative regions with shared characteristics and challenges.

The regional nodes serve as a bridge between national and sub-national governance levels. In them, departments in the same area and with similar characteristics work together. They create multistakeholder platforms for adaptation planning, enabling government representatives, private sector actors, academia, and civil society to collaborate effectively. These nodes are tasked with developing overarching adaptation frameworks at the department level and integrating climate change considerations into municipal development and land-use plans. This shift from a centralized approach to a participatory multilevel governance system represents a significant milestone in ensuring the inclusion of local voices in national adaptation policies (Dazé, Price-Kelly, & Rass, 2016).

Complementary to SISCLIMA, the National Disaster Risk Management System (SNGRD) further supports local participation through Departmental Risk Management Committees. These committees focus on assessing and addressing risk at the territorial level, providing a platform for local governments to contribute to national planning processes. Together, the SISCLIMA and SNGRD frameworks highlight the critical role of local governments in shaping adaptation strategies while addressing climate-related risks.

Despite these advances, challenges remain. Local governments often face constraints in securing adequate financing and building the technical capacity required for implementing adaptation measures. The *National Development Plan (PND)* highlights the importance of enhancing local governance capacities to enable effective decision-making in land management and climate adaptation. Article 299 of the PND, for example, highlights the government's commitment to co-financing strategic urban and regional development projects that incorporate disaster risk management and climate adaptation standards. Such initiatives aim to reduce regional inequalities, promote equitable development, and integrate water-centric territorial planning.

In conclusion, while Colombia's PNACC and associated frameworks have established mechanisms for local involvement in adaptation planning, the extent of influence by local governments depends on their capacity to engage effectively in these processes. Strengthening technical skills, improving access to financial resources, and fostering robust multistakeholder collaboration are essential to ensure that local perspectives continue to shape and enhance national adaptation policies.

4.5 Alignment between national and local adaptation policies

Colombia has made substantial progress in aligning national and local adaptation policies, particularly regarding water resilience. This alignment has primarily materialized through the

National Climate Change Adaptation Plan (PNACC) and the National Climate Change Policy (Law 1931 of 2018), as these strategies include elements within the Knowledge objective: “strengthening of climate and prospective information systems”. Similarly, Law 1931 of 2018, in its article 8, established that territorial entities must incorporate climate change management into their development plans every 4 years. This has allowed the development of actions ranging from the restoration of urban wetlands to the construction of green infrastructure to mitigate the impact of extreme events. Tools have also been developed for the development of resilient interventions that include adaptation to climate change, such as the Guide for aqueduct, sewerage and wastewater treatment projects. Furthermore, these frameworks mandate the integration of climate change management into territorial entities’ Development Plans, Land Use Plans (*Planes de Ordenamiento Territorial*, POTs), and Watershed Management Plans (*Planes de Ordenación y Manejo de Cuencas Hidrográficas*, POMCAs) as previously mentioned.

With a top-down approach, yet seeking broad stakeholder participation, Colombia shows progress in the alignment of national and local adaptation policies as wells as in vertical coordination mechanisms to facilitate this. The examples of POTs and POMCAs as vertical coordination policy tools, and national to local support in the form of technical assistance is discussed in the following sections.

Land Use Development Plans (POTs), an integrative tool for national to local coordination.

Local governments are required to incorporate climate adaptation measures into their municipal and departmental POTs. These plans include strategies for water management, such as flood mitigation, drought adaptation, and the conservation of critical water resources. By aligning local planning instruments with national goals, these frameworks ensure coherence in water-related climate adaptation efforts in a top-down manner.

Watershed Management Plans (POMCAS) as policy mechanisms for basin-scale planning of adaptation

Regional environmental authorities collaborate with local governments to develop POMCAs, which provide overarching frameworks for managing water resources. These plans emphasize the integration of local policies with regional and national water management objectives, ensuring consistent and sustainable approaches to water resilience.

Capacity development at the local level

The Ministry of Housing, Cities, and Territory supports local entities by providing tools and guidance for climate change management in water and sanitation sectors. Initiatives like *Community in Action for Climate and Water* foster participatory approaches to water resource protection and ensure alignment between local actions and national adaptation priorities.

Table 2. Success stories of Bogotá and Cartagena.

Several urban centres exemplify the successful integration of national policies into local strategies. Bogotá’s 2022 Land Use Plan incorporates disaster risk management and climate change adaptation measures, such as a Flood Protection System and wetland conservation efforts. Bogotá’s Public Services Policy (2023–2035) further supports sustainable water management by promoting circular water use, rainwater harvesting, and wastewater reuse, demonstrating strong alignment with national climate goals (Decreto 233 de 2023, 2023).
On the other hand, Cartagena, a coastal city, faces significant risks from sea-level rise and extreme rainfall. In alignment with Colombia’s NAP, the city developed its *Plan 4C: Cartagena Competitiva y Compatible con el Clima* to adapt to these risks. This plan focuses on strengthening drainage infrastructure, protecting mangroves, and improving water supply systems to reduce vulnerability to flooding and salinization of freshwater sources.

Cartagena has worked to diversify its water sources, including investing in desalination plants and enhancing water reuse programs. These initiatives are linked to national adaptation efforts aimed at improving water security, especially in cities along the Caribbean coast where climate change is exacerbating water scarcity.

Challenges

Despite these successes, significant disparities persist in the capacity of local governments to align their policies with national frameworks. Larger cities, such as Bogotá and Medellín, benefit from greater technical expertise and financial resources, enabling them to implement comprehensive adaptation strategies. In contrast, smaller and rural municipalities face considerable barriers, including:

- **Limited capacity at the local level**: Many local entities lack the expertise to design and implement climate adaptation measures effectively, particularly in poorer and rural communities.
- **Insufficient resources:** Financial constraints hinder the capacity of smaller municipalities to align with national policies, particularly in water and sanitation sectors.
- **Discontinuity in efforts**: Changes in local administrations often disrupt the continuity of adaptation planning and implementation.

All in all, Colombia's alignment of national and local adaptation policies provides a robust framework for water resilience. However, the effectiveness of this alignment depends on addressing the challenges faced by smaller and rural municipalities. Strengthening technical capacity, ensuring sustainable financing, and fostering long-term commitments to adaptation planning are crucial for achieving a cohesive and nationwide response to climate change.

5 Egypt

Egypt, the Arab Republic, located in the northeastern corner of the African continent, is home to approximately 104 million people, with an urban population that constituted 42.8 percent of the total in 2020 (CAPMAS, 2023)(IDSC, 2021). The country faces significant challenges related to water resources, as it critically depends on external water sources for over 97.7 percent of its water needs, reflecting its heavy reliance on transboundary water systems to sustain its population and economy (MWRI, 2017).

In 2023, Egypt's flood and drought risk management systems were evaluated using the EPIC Response methodology. This assessment provides an in-depth examination of the country's hydro-climatic risk management institutional frameworks, the evolution and current status of flood and drought programs, and the level of integration and collaboration between them. The findings highlight Egypt's substantial vulnerability to water-related risks, including limited water availability, pluvial flooding, coastal hazards, and the complex dynamics of transboundary water management.

The impacts of climate change are further intensifying these challenges, exacerbating existing vulnerabilities in Egypt's water sector. Rising temperatures, more frequent and severe heatwaves, and accelerating desertification are compounding water scarcity issues and threatening biodiversity (WBG, 2022). Furthermore, climate change poses significant risks to food security, with cascading effects on the country's socioeconomic stability (IPDC, 2024).

Urban water management in Egypt is particularly strained by rapid population growth, ongoing urbanization, and the effects of climate change. In this context, the alignment between Egypt's national adaptation strategies and urban water management plans is critical for building water resilience in cities such as Cairo and Alexandria.

5.1 Egypt's water-related adaptation strategies

Egypt has demonstrated a progressive approach to addressing climate change through a series of strategic frameworks and plans. In 2011, the country launched its first National Strategy for Climate Change Adaptation and Disaster Risk Reduction, laying the foundation for integrating climate considerations into national development. This was followed by the *Low Emission Development Strategy* (LEDS) in 2018, which aligned with Egypt's *Sustainable Development Strategy* (SDS) – Vision 2030. However, recognizing the need for a more unified approach, Egypt's National Council for Climate Change developed the *National Climate Change Strategy* (NCCS) 2050, emphasizing cross-sectoral collaboration and the critical role of NGOs in advancing climate action (Ministry of Environment, 2023).

Water management, a cornerstone of Egypt's adaptation strategies, is addressed through the *National Water Resources Plan* (NWRP 2037) introduced in 2017. This plan aims to tackle challenges arising from population growth, climate change, and transboundary water dependencies. It incorporates coastal protection measures and infrastructure resilience, while also acknowledging the potential for future revisions in response to evolving climate impacts (EU, 2017; Min. Env., 2023).

The World Bank Group's *Country Climate and Development Report (CCDR) for Egypt* (2022) further underscores the urgency of addressing water-related vulnerabilities. With Egypt's urban population projected to reach 41.4 million by 2050, the report highlights the increasing strain on water resources and urban services, particularly in vulnerable areas like the Nile Delta (WBG, 2022). Complementing these initiatives, the *Environmental and Climate Changes*

Research Institute (ECRI) has proposed adaptation strategies specific to the Nile Delta, including land-use modifications, coastal defence structures, and regulatory frameworks for shoreline conservation (ECRI, 2021).

This chapter explores the integration of local water management strategies with national plans, the role of Egyptian cities in shaping the *National Adaptation Plan* (NAP), and the broader implications for urban water resilience.

5.2 Integration of local water management strategies in NAPs

Egypt's NAP, currently under preparation, aims to establish a framework for strengthening urban water resilience. However, the direct integration of local water management strategies within the NAP is anticipated to remain limited. The approach primarily focuses on outlining broad national objectives, allowing local authorities the flexibility to tailor these goals to regional and municipal contexts. This decentralized model seeks to ensure that national adaptation goals can be implemented in a manner that reflects local priorities and conditions.

One example of local influence on national policy can be observed in Alexandria's flood prevention measures. These local strategies have likely informed broader national practices, demonstrating the value of community-driven adaptation solutions. The *National Climate Change Strategy* (NCCS) highlights the importance of enhancing local adaptation measures, such as wastewater treatment and recycling, to build resilience against climate change. This reflects Egypt's growing emphasis on leveraging successful local initiatives to inform and inspire national frameworks (Egypt Ministry of Environment, 2022).

Another example of participatory local adaptation planning in Egypt can be found in the Greater Cairo Region. Here, a participatory approach was applied to create ownership of the adaptation measures. For instance, residents of informal urban settlements around the Greater Cairo Region were actively involved in designing local adaptation plans. This project, called *Participatory Development Program in Urban Areas (2010–2018),* was specifically mentioned in Egypt's NAP proposal under relevant adaptation interventions, highlighting how this project informed the development of the NAP by demonstrating the value of community-driven planning in enhancing local water resilience strategies (see Table 3 for more information).

Table 3. Scaling up local green infrastructure strategies, lessons learned from New Cairo.

In New Cairo, a pilot project using Green Infrastructure (GI) strategies for stormwater management has been implemented as an adaptive solution in response to extreme rainfall events. New Cairo was one of the first Egyptian cities to adopt the concept of GI to improve urban water drainage systems. Since the adoption of new concepts can be highly complex, learning and exploring at a small scale were deemed as crucial, before attempting larger implementation. The pilot's successes, combined with people's fear of flooding and their awareness of the project, became a driver for repetition and upscaling. According to an expert survey, the environmental benefits and the cost of damages caused by flooding were the main drivers for the project. Both the involvement of planners with the right expertise and knowledge and the incorporation of sustainability concepts into national policies were found to be the most important enabling factors (Azouz & Salem, 2023). This indicates that incorporating urban water resilience aspects into Egypt's NAP could boost the implementation of similar local initiatives. Political and regulatory aspects such as legislation, codes and ordinances were identified as the main barriers. Addressing these barriers in national documents may help to overcome these challenges. Finally, the survey results found that media coverage and government support were key for upscaling and mainstreaming the pilot. Governmental decisions can encourage new developments to take steps towards GI at early stages instead of repairing damages (Azouz & Salem, 2023). Therefore, incorporating the identified enabling factors as guidelines in Egypt's NAP could help to scale up this successful project to other urban areas.

Egypt's advancements in water recycling—spanning domestic, industrial, and agricultural wastewater— also showcase the potential for integrating innovative local practices into national adaptation strategies. While the NAP is still under development, it represents an opportunity to deepen the alignment between local water management efforts and national objectives, ensuring that Egypt's urban areas remain resilient in the face of climate change challenges.

5.3 NCCS Informing Local Water Resilience Strategies

Since Egypt's NAP is under development, this section focuses on Egypt's *National Climate Change Strategy* (NCCS). The NCCS, first launched in 2013, provides a foundational framework for guiding adaptation measures across multiple scales, including urban and rural areas. A critical feature of the NCCS is its emphasis on integrating adaptation into Integrated Water Resources Management plans. This approach includes advocating for good governance, which involves transferring political authority, adequate budgets, and technical expertise to sub-national levels. These measures aim to empower local governments to implement tailored water resilience strategies effectively.

The NCCS's call for enhanced local governance has prompted some cities to develop localized water resilience measures. These include integrating flood management into urban planning, improving water storage capacity, and adopting water recycling technologies. Yet, the alignment of these efforts with national strategies varies widely, underscoring the need for the NAP to provide clearer guidance and stronger institutional linkages to local water resilience planning.

An aspect that is closely connected to urban water resilience is urban water supply. The management of urban water supply in Egypt is primarily coordinated by the Ministry of Housing, Utilities, and Urban Communities (MHUUC) in collaboration with the Ministry of Water Resources and Irrigation (MWRI). National plans influence city-level water strategies by mandating the integration of Water Supply Emergency Plans into broader urban water supply frameworks. These plans are designed to address water shortages during emergencies, reflecting a reactive rather than proactive approach to urban water resilience.

Despite these efforts, challenges remain in aligning national and local water resilience strategies. For example, the Operational Water Management Plans are developed by the National Water Resources Center (NWRC) and the Soil, Water, and Environment Research Institute (SWRI). However, their linkage to urban water and flood management plans at the local level is inconsistent. Additionally, regulatory frameworks and guidelines established at the national level often lack mechanisms for ensuring cohesive implementation across municipalities and governorates.

While the NAP is still under preparation, national frameworks like the NCCS have already influenced urban water resilience efforts, such as improved coordination during water scarcity events through mandated emergency water supply planning. However, the absence of a fully operational NAP limits the potential for a more comprehensive and anticipatory approach at the city level. To maximize the NAP's impact once finalized, Egypt could build on the NCCS by strengthening multilevel governance mechanisms to ensure consistent transfer of decision-making power and financial resources to sub-national governments, improve the integration of water-climate adaptation measures by aligning national water management plans with local flood and resilience strategies, and promote subnational capacity development through targeted training programs to better implement water resilience measures in line with national objectives.

5.4 Role of local governments in NAP formulation

To address climate change impacts in the medium- and long-term, catalyse investments for adaptation, and build on existing policy frameworks, the Government of Egypt began the process of developing its NAP in May 2015. To advance the development of their NAP, the Government of Egypt sought support from the Green Climate Fund (GCF). In various steps of the process to develop its NAP proposal for the GCF, Egypt has consulted local experts and stakeholders.

These consultations provided an opportunity for localized challenges and priorities to be reflected in the national framework. The process involved (i) a whole of government approach; (ii) the creation of an Advisory Board; and (iii) partnership with international organizations. Firstly, ministries, including those responsible for water, agriculture, and tourism, contributed sector-specific expertise. This ensured that localized climate challenges—such as water resource management in the Nile Delta—were integrated into national strategies[5]. Secondly, an advisory board supported the integration of climate adaptation measures across sectors and government levels. Thirdly, as a key partner, the UNDP, working closely with the Ministry of Environment and the GCF, facilitated stakeholder engagement, bringing international expertise to complement local contributions.

The national government has developed a theory of change that is built on a multi-stakeholder stocktaking exercise. During this exercise, a preliminary set of challenges and priority needs were identified. Additionally, the NAP proposal includes vertical planning across governmental levels to obtain a representative set of priority sectors and climatic zones. For the implementation of this aspect, Egypt will also build on the experience of the delivery partner, UNDP, in integrating adaptation across government levels (UNDP, 2018).

All in all, the formulation of Egypt's NAP reflects an effort to integrate local perspectives, expertise and a cross-sectoral approach, highlighting a multi-stakeholder, multi-ministerial, and multi-level approach. Local governments, alongside other stakeholders, have played a meaningful, though evolving, role in shaping national adaptation policies.

5.5 Alignment between national and local adaptation policies

Egypt has actively incorporated participatory methods in local adaptation planning, ensuring community involvement and ownership of the measures. These practices, previously described, highlight Egypt's recognition of local governments and communities as integral to the successful formulation and implementation of adaptation policies.

Despite significant progress, challenges remain in achieving full vertical integration of adaptation planning across government levels in Egypt. In an interview with Sabir Osman, Climate Change Adaptation Director at the Egyptian Environment Affairs Agency (EEAA), he highlighted key challenges in achieving vertical integration of adaptation efforts. He identified two primary obstacles: (i) varying perceptions of the impacts and risks of climate change across different levels of government, and (ii) disparities in technical and financial capacities (UNDP, 2018). Perception gaps are a key obstacle, with variations in understanding the impacts and urgency of climate change between local and national actors hindering cohesive and aligned planning efforts. Secondly, capacity disparities are obstructing vertical coordination, as local and sectoral budgets do not yet align funding needs to adaptation priorities, thereby limiting their ability to support national adaptation objectives. These financial constraints were raised

[5] The Ministry of Water Resources and Irrigation's efforts to protect Nile Delta lands from sea-level rise illustrate how local environmental challenges influence the NAP framework. Additionally, the SCALA program (Scaling up Climate Ambition on Land Use and Agriculture), in a collaboration between the Ministry of Agriculture and Food and Agriculture Organization (FAO), strengthens Egypt's adaptation in agriculture—an area particularly affected by climate change.

in Egypt's NAP proposal as a barrier to adaptation planning, along with limited institutional coordination and capacity to undertake advanced adaptation planning (UNDP, 2018).

To address these challenges and strengthen local involvement in NAP formulation and implementation, Egypt could adopt several measures. Firstly, developing capacity at the local level through technical training and financial support for local governments can aid in empowering them to contribute effectively to adaptation strategies. Secondly, formalizing coordination mechanisms by establishing clear structures for collaboration between national and local governments can help operationalize water-related climate adaptation policy frameworks more effectively. One notable example is the partnership between the EEAA and the German Corporation for International Cooperation (GIZ), which focuses on improving the livelihoods of residents in urban informal settlements through targeted adaptation initiatives. Thirdly, expanding participatory planning is crucial; building on successful initiatives, such as those in New Cairo, can help scale participatory approaches across urban and rural areas, ensuring that local perspectives and needs are better integrated into national policies.

6 Indonesia

Indonesia, the world's largest archipelagic state, is a Southeast Asian nation composed of more than 17,000 islands, including major ones like Sumatra, Java, Borneo (Kalimantan), Sulawesi, and Papua. The country's diverse geography comprises landscapes such as tropical rainforest, volcanic mountains, fertile plains, extensive coastlines, and coral reefs.

With a population exceeding 280 million as of 2024, Indonesia is the fourth-most populous country globally, with more than half of its population residing in urban areas (Worldometers, 2024). It has 12 major cities with populations over a million, and Jakarta is its most populous urban centre, housing 8.5 million residents. The country is also undertaking the monumental task of relocating its capital to Nusantara in Kalimantan to address the complex environmental and urban challenges facing Jakarta.

Extensive urban development has also led to excessive groundwater extraction, resulting in land subsidence and worsening pluvial and coastal flooding (Abidin et al., 2013; Hendarto & Standing, 2019). Additionally, sanitation is an important challenge in Indonesia, with only two percent of the population having access to sewage systems and 89 percent relying on on-site sanitation (World Bank, 2021).

6.1 Indonesia's water-related climate adaptation strategies

Indonesia has articulated several key plans to address water-related climate adaptation at the national level. These include the National Action plan for Climate Change Adaptation (RAN-API), the National Adaptation Strategy (NAS), and the Medium-Term Development Plan (RPJMN). These three strategies are described in detail below.

National Action Plan for Climate Change Adaptation (RAN-API)

In 2014, Indonesia's Ministry of National Development Planning (BAPPENAS) launched the *National Action Plan for Climate Change Adaptation* (RAN-API), aimed at providing national guidelines for integrating climate-resilient development at the national level (BAPPENAS, 2014). Although RAN-API is not a standalone document with its own legal power, it provides climate adaptation recommendations for the National Medium-Term Development Plan (RPJMN) and provides guidance to all ministries, institutions, and regional/local governments on adaptation plans.

In the water sector, the RAN-API specifically addresses the management of coastal areas and small islands vulnerable to climate change. The objectives related to urban water resilience include (i) enhancing the resilience of urban areas by integrating climate adaptation efforts into urban spatial planning, (ii) adjusting urban infrastructure and facilities to current climate threats, and (iii) improving the capacity of urban communities regarding climate change issues. Strategies also emphasize sustainable development through the creation of green cities, incorporating elements like green buildings, green water management, green waste systems, and the utilization of surface water.

National Adaptation Strategy (NAS)

Indonesia's climate adaptation strategies aim to address the diverse and complex challenges posed by climate change, particularly in water resource management. The *National Adaptation Strategy* (NAS), established in 2019, provides a comprehensive framework for enhancing resilience across national, regional, and local levels while aligning with international climate agreements. It emphasizes integrating climate adaptation into national development planning

to minimize risks and improve adaptive capacity across critical sectors, including agriculture, water resources, coastal zones, infrastructure, health, and disaster risk reduction.

The NAS advocates ecosystem-based adaptation to preserve biodiversity and natural resources while incorporating cross-cutting themes such as gender equality, social inclusion, indigenous knowledge, and community participation. Science, technology, and innovation play a central role in enhancing climate resilience, with a focus on data collection, monitoring, and early warning systems. Institutional arrangements and capacity-building initiatives are designed to strengthen governance structures, while mechanisms for mainstreaming climate adaptation into sectoral policies, plans, and budgets are critical to its implementation.

National Medium-Term Development Plan (RPJMN) 2020-2024

Indonesia's RPJMN (Rencana Pembangunan Jangka Menengah Nasional), or *National Medium-Term Development Plan 2020-2024* complements the NAS by integrating climate considerations into broader development priorities, including water resource management. The RPJMN focuses on integrated planning that recognizes the interdependence of water and soil systems, emphasizing infrastructure development to enhance connectivity and sustainability.

With much more focus set on integrated planning taking into account water and soil, the RPJMN (currently being developed for the period of 2025 – 2029) is an important cornerstone of the future developments of Indonesia (IPDC, 2024). It is expected to further strengthen water-related adaptation efforts, laying the foundation for future climate resilience initiatives.

6.2 Integration of local water management strategies in NAPs

The integration of local water management strategies into Indonesia’s RAN-API began with the identification of pilot projects, or "Quick Wins", aimed at raising awareness among local governments to incorporate climate adaptation into their local and regional development plans.

To identify pilot locations, several criteria were considered, including the completeness of vulnerability assessments, regional commitment to climate strategies, the presence of funding sources, and alignment with the RAN-API framework. These criteria indicate that local management strategies have supported national-level efforts by providing examples of implementing climate adaptation strategies in specific local contexts. These pilot projects have provided valuable insights into implementing climate adaptation strategies within local contexts, showcasing the potential for local water management practices to inform national plans.

However, disparities exist in the integration of local water management strategies into national plans. Wealthier regions with greater governance capacity and financial resources are better equipped to adopt diverse strategies, while resource-constrained areas face limitations. This imbalance is evident in the selection of pilot project sites for RAN-API activities, which are predominantly located in Java, leaving other high-risk regions underrepresented (see Figure 2).

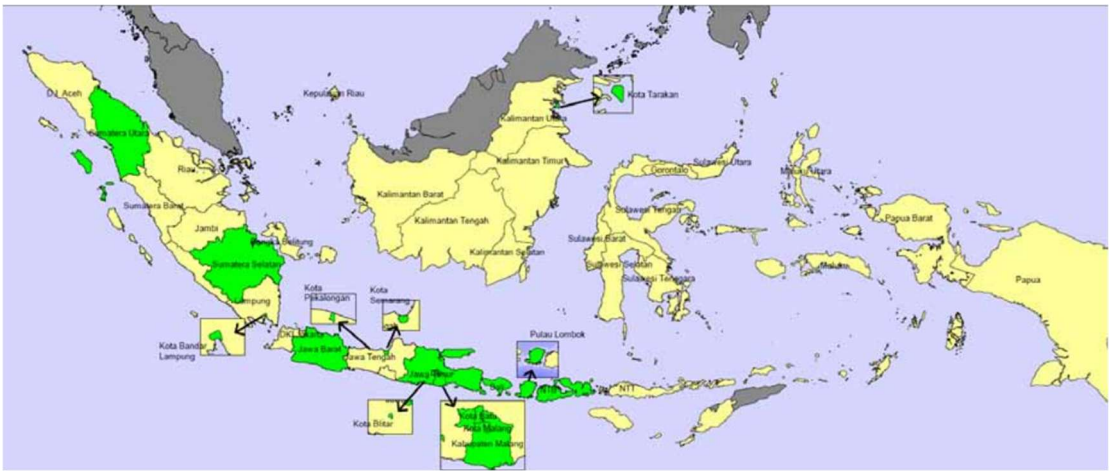

Figure 2. Pilot locations for RAN-API activities (selected pilot locations are indicated in green).

To address these gaps, strengthening support for underfunded regions and fostering equitable resource distribution are critical. Expanding the scope of adaptation activities to include all high-risk areas will ensure that local water management challenges are more comprehensively integrated into national adaptation planning.

6.3 NAS and RAN-API informing local water resilience strategies

Indonesia's NAS and RAN-API play a pivotal role in shaping local water resilience strategies by providing a framework that aligns national adaptation goals with regional and city-level needs. Through mechanisms like the RPJMD, local governments incorporate climate adaptation measures into their development strategies, ensuring consistency with national targets. The country's decentralized governance structure enables these local governments to tailor adaptation strategies to address specific water-related challenges, enhancing their capacity to mitigate risks while contributing to national climate objectives.

RAN-API serves as a critical reference for the preparation of Regional Action Plans for Climate Change Adaptation (RAD-API), which local governments use to address climate impacts specific to their regions. This alignment is facilitated by the Ministerial Regulation No. 33 of 2016, which provides guidelines for local climate adaptation actions (*Guidelines for Developing Climate Change Adaptation Actions*, Article 15). The regulation mandates capacity-building initiatives for local governments to help them formulate robust adaptation strategies and requires governors to report their RAD-API progress to both the Ministry of Home Affairs and the Ministry of National Development Planning (BAPPENAS). This reporting process ensures the integration of local actions into broader national adaptation efforts, fostering a cohesive approach to building water resilience.

At the city level, RAN-API influences strategies in several ways. It provides guidelines for integrating climate adaptation into urban spatial planning and adapting urban infrastructure to withstand current climate threats such as flooding and land subsidence. Local governments are also encouraged to improve public awareness of climate risks, enhancing community engagement in resilience-building efforts.

In coastal and small island regions, RAN-API emphasizes strengthening resilience through structural measures, such as coastal protection infrastructure, and non-structural measures, including ecosystem restoration and capacity building. These initiatives promote sustainable resource management, essential for supporting livelihoods and ensuring long-term resilience against climate change impacts.

Overall, Indonesia's NAS framework has effectively guided local governments in addressing water-related risks by fostering alignment, providing technical support, and emphasizing both structural and community-driven approaches. This integration strengthens the adaptive capacity of cities and regions, ensuring that localized water resilience strategies contribute meaningfully to national climate adaptation goals. An example of the national-to-local translation of adaptation goals is provided for the city of Semarang in Table 4.

Table 4. Application in Kota Semarang.

As the capital city of Central Java province and the fifth largest city in Indonesia, Semarang faces various challenges due to its coastal position, including tidal flooding, erosion, land subsidence, landslides, water shortages, and floods. To address these vulnerabilities and enhance the city's resilience, Semarang has developed several regional adaptation strategies. These strategies not only target local issues but also align with national adaptation plans, ensuring a comprehensive approach to mitigating climate change impacts and fostering long-term sustainability for the city. At the regional level, an example of the interpretation of the National Adaptation Plan for Climate Change (RAN-API) into the Regional Action Plan for Climate Change Adaptation (RAD-API, from 2020) is in the city of Semarang City. The RAD-API is aligned with national climate adaptation policies and is designed to integrate seamlessly into the Semarang City Medium and Long-Term Development Plans (RPJMD and RPJPD). This alignment ensures that climate adaptation is embedded within the city's broader development strategy, allowing for a cohesive approach to resilience. The plan outlines several strategies to enhance the city's resilience, such as strengthening local institutions, integrating climate adaptation into urban planning, and raising public awareness. It also provides detailed action plans at both the city and sub-district levels, emphasizing the importance of improving institutional capacity and community resilience through inclusive programs involving various stakeholders.

6.4 Role of local governments in RAN-API formulation

Indonesia's RAN-API 2014-2024 highlights the critical role of local governments and communities in addressing climate risks. Local governments play a crucial role in the effective formulation and implementation of the RAN-API ensuring that adaptation strategies reflect regional and local realities. They are vital for analysing the target areas and specific sectors impacted by climate change. The inclusion of local stakeholders, mandated by Regulation No. 33 of 2016 from the Ministry of Environment and Forestry, underscores the importance of bottom-up contributions. Local authorities, communities, and academic institutions are integral to the planning process, offering insights into climate vulnerabilities specific to their areas and sectors. This participatory approach enhances the relevance and applicability of national adaptation measures.

The Law No. 17 of 2019 further defines the responsibilities of provincial governments in managing water resources across districts and cities, creating a clear structure for local contributions to national water-related policies. Provincial governments develop policies, oversee water supply management and irrigation systems, and provide technical guidance. They also issue permits and mediate water-related conflicts between districts within their jurisdiction. At the district or city level, local governments coordinate water management, support village administrations, and ensure alignment with both provincial and national goals.

The central government, recognizing the critical role of local authorities, collaborates with or delegates authority to local governments in water resource management and climate adaptation. Article 63 of Law No. 17 highlights the necessity of public involvement, fostering an inclusive approach through consultations, partnerships, and platforms for community aspirations. This ensures that diverse perspectives, including those of vulnerable communities, are incorporated into national strategies.

The collaborative framework established by these laws and regulations demonstrates a strong commitment to integrating local expertise into the RAN-API. By involving local governments

and stakeholders in its formulation, Indonesia's RAN-API benefits from a deep understanding of regional conditions, helping to bridge the gap between national policies and local implementation needs. This alignment is vital for addressing the multifaceted challenges posed by climate change across the country's vast and diverse geography.

6.5 Alignment between national and local adaptation policies

The alignment between national and local adaptation policies in Indonesia demonstrates both achievements and ongoing challenges, particularly in water management and urban water resilience strategies. The coordination between policies and governance levels is further explored from the perspective of financing and through an example that illustrates how the national government influences regional water resilience via its approach to groundwater extraction.

A primary mechanism for alignment is the integration of local planning documents, such as the *Regional Medium-Term Development Plans* (RPJMD), with the *National Medium-Term Development Plan* (RPJMN). This alignment forms the foundation for funding adaptation and mitigation strategies from the national to the regional level. The financial alignment is evident in budget flows for flood risk reduction infrastructure, where two key funding mechanisms operate:

- **Structural Funds:** Allocated annually from the State Budget (APBN) and distributed to the Regional Budget (APBD) after parliamentary review. These funds primarily cover operational and maintenance costs for public organizations.
- **Special Allocation Fund (DAK):** A fiscal transfer from the APBN to regional and district governments, restricted to specific projects such as flood risk reduction or water management.

These funding mechanisms provide a pathway for local governments to access resources for implementing climate adaptation policies while maintaining alignment with national priorities. Figure 3 illustrates two types of budgets: (i) structural funds and (ii) the Special Allocation Fund (DAK). Structural funds are allocated annually from the State Budget (APBN), and after being reviewed by Parliament, a portion of these funds is transferred to the Regional Budget (APBD). This budget primarily finances public organizations to cover operational costs and maintenance activities. Another funding source is the DAK, also known as the Village Fund, which facilitates specific fiscal transfers from the APBN to regional and district governments. The DAK is restricted to funding designated projects.

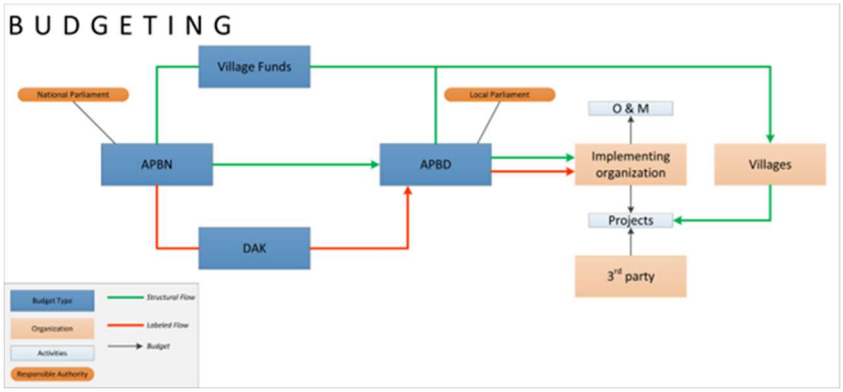

Figure 3. Overview of budget flows for flood risk reduction activities (Deltares, 2018).

The alignment between national planning and local strategies is also evident in the government's approach to regulating groundwater extraction. In response to the widespread occurrence of coastal flooding in major cities in Indonesia, including Jakarta and Semarang,

the national government issued the Decree of the Minister of Energy and Mineral Resources (ESDM) Number 443 of 2023, which sets standards for groundwater usage. This decree addresses groundwater over-abstraction, a key driver of significant land subsidence and one of the primary causes of coastal flooding alongside sea level rise. According to the decree, groundwater extraction exceeding 100,000 Liters per month requires a permit from the Ministry of ESDM. This alignment underscores the national government's control over regional water resilience.

Challenges

In general, the planning and coordination between the central government and regional authorities have been well-executed, with public consultation meetings, recommendations, and joint ventures involving local governments across different levels and sectors. However, challenges arise during the implementation phase, particularly in translating plans into sector-specific programs that do not always proceed as expected. For a plan to be successfully implemented at the regional level, each sector must execute its activities within the agreed timeline. If one sector fails to allocate the required funds for these activities in the regional budget (APBD), it can significantly impact the plan's implementation. This highlights budgeting as a key constraint, as only programs that are included in the regional budget are financed and implemented. Environmental initiatives, including water resilience strategies, typically receive minimal allocations within the Regional Medium-Term Development Plan (RPJMD), which limits the resources available for robust climate adaptation efforts. Political and technical challenges also play a role, as the level of awareness and prioritization of climate change varies widely across regions. Many local governments do not view climate change adaptation and environmental protection as strategic goals, making it difficult to align their objectives with national targets.

Another factor that can hinder the implementation of national strategies at the regional level is ineffective stakeholder consultation, despite the existence of public consultation mechanisms. In some cases, consultations may be largely procedural, and relevant stakeholders may not fully grasp the potential impacts of the policies being considered. This can lead to various obstacles later during the implementation phase.

Another important issue is the presence of regulatory overlaps. Strategy implementation may be delayed or hampered when activities involve sectors or areas under the authority of other agencies, which can lead to jurisdictional conflicts and further hinder a strategy's progress. For example, laws such as Law No. 23 of 2014 on Local Governments and Law No. 23 of 2009 on Environmental Protection and Management often lack clarity in defining authority divisions, creating confusion and inefficiencies in implementing climate policies.

In addition, technical expertise and public awareness remain relatively low in many regions, underscoring the need for public consultations to raise awareness and foster collaboration. Without broader community engagement and a stronger emphasis on capacity building, local governments may struggle to effectively integrate national adaptation priorities into their regional plans.

All in all, while Indonesia has made progress in aligning national and local adaptation policies, particularly in financing and stakeholder coordination, significant challenges remain. Addressing regulatory ambiguities, increasing funding allocations for environmental initiatives, and enhancing political and technical capacity at the regional level are critical to fostering coherence and consistency. Moreover, greater emphasis on public engagement and consultation will be essential to ensure that adaptation strategies are inclusive, context-specific, and effectively implemented. Strengthening these aspects will not only improve policy alignment but also enhance urban water resilience and broader climate adaptation efforts across the country.

7 Conclusions

This report highlights the importance of integrating urban water resilience into NAPs and NASs to address climate risks, such as flooding, drought and water pollution, and the challenges associated with their implementation. While some countries have made progress in incorporating urban water resilience into their national frameworks, implementation at the local level remains inconsistent due to governance and institutional complexities, which usually translates into inadequate financing, and weak coordination across levels of government. Strengthening multilevel governance, improving stakeholder engagement, and securing sustainable funding will be essential to bridging these gaps and ensuring that urban water resilience is effectively embedded in climate adaptation planning.

Strengthening coordination between national, regional, and local authorities can ensure that national policies are informed by local realities and knowledge, and that local adaptation efforts receive necessary institutional and financial support. Additionally, fostering collaboration between public agencies, private sector actors, and civil society organizations can enhance innovation and bring diverse expertise to water resilience planning. Expanding participatory approaches will further empower communities to take an active role in adaptation strategies, increasing their effectiveness and sustainability.

Findings from case studies in Colombia, Egypt, and Indonesia illustrate both the challenges and opportunities in integrating urban water resilience into national adaptation planning. Colombia's structured approach to climate adaptation, supported by mechanisms like the PNACC and Regional Climate Change Nodes, provides a promising model for aligning national and local policies. However, disparities in technical and financial capacities among municipalities present a significant hurdle. Egypt's national adaptation frameworks provide a strong foundation, but improved coordination between national and local governments, along with greater financial and institutional support, is needed to enhance water resilience. Indonesia has made notable progress through national adaptation frameworks such as RAN-API and NAS, but challenges remain in ensuring equitable resource distribution and overcoming regulatory fragmentation.

7.1 Main challenges

Despite the progress made in urban water resilience, several challenges remain that hinder effective integration into NAPs and NASs. These challenges need to be addressed to ensure that urban water resilience is comprehensively and effectively incorporated into adaptation strategies.

1 **Fragmented integration.** Urban water resilience is inconsistently addressed within NAPs. While some countries have developed detailed urban water strategies, others provide only cursory references, reflecting weak vertical and horizontal coordination mechanisms. This highlights a need for more systematic integration of urban water management within multilevel governance frameworks.

2 **Subnational data challenges**. There is limited research on addressing the lack of subnational climate data necessary for assessing the costs and benefits of adaptation interventions. This gap constrains the ability to design locally relevant and cost-effective solutions.

3 **Weak monitoring and evaluation mechanisms.** The development of context-specific M&E systems is acknowledged as critical but remains underexplored in terms of

harmonization with existing frameworks and national development plans. This limits the capacity to track the progress and efficacy of urban adaptation measures.

4 **Policy coherence challenges.** Research highlights significant challenges in mainstreaming climate adaptation across sectors and scales. However, insufficient attention has been given to how national adaptation laws or decrees can act as catalysts for integration, particularly concerning urban water resilience and ecosystem-based approaches.

5 **Inadequate focus on financing mechanisms.** While securing climate finance is recognized as essential, limited analysis exists on effective mechanisms for mobilizing local and national resources to support urban water resilience under NAP frameworks.

7.2 Emerging Opportunities

Addressing the gaps and challenges identified in this report present significant opportunities for enhancing the integration of urban water resilience into NAPs and NASs. These opportunities, if properly leveraged, can help build more effective, inclusive, and sustainable climate adaptation strategies.

6 **Strengthening multilevel governance.** Mechanisms to improve two-way information exchange between national and subnational levels can align priorities and ensure mutual reinforcement of urban and national adaptation goals. Establishing clear communication channels and coordination mechanisms across all governance levels will help to create a more cohesive approach to urban water resilience.

7 **Advancing inclusive engagement.** Expanding stakeholder engagement strategies to fully integrate vulnerable groups, traditional knowledge holders, and non-state actors can enhance equity and legitimacy in decision-making processes. Involving a wider array of stakeholders, including marginalized communities, will improve the inclusivity and effectiveness of water resilience efforts.

8 **Improving policy integration.** National adaptation laws and the mainstreaming of climate adaptation into sectoral and urban policies can provide a more cohesive framework for urban water resilience. Integrating water resilience into wider environmental, development, and urban planning policies will ensure that it receives the attention it needs across all relevant sectors.

9 **Innovative financing and capacity development**. Research is needed to explore strategies for mobilizing sustainable climate finance and enhancing local institutional capacity for implementation, monitoring, and evaluation. Developing new financing mechanisms, such as climate bonds or decentralized funding models, will ensure that local governments can access the resources required for effective water resilience strategies. Additionally, strengthening institutional capacity at the local level through training and technical support will improve the ability of cities and municipalities to implement and manage adaptation measures.

Table 5 Programs supporting multilevel governance and policy integration for urban water resilience.

The **Sustainable Urban Resilience for the next Generation** (SURGe) initiative is a COP27 Presidency Initiative dedicated to connecting the local, national, regional and global levels to accelerate local and urban climate action, contributing to achieving the Paris climate goals and SDGs. SURGe supports multi-level governance efforts with a focus on several sectoral tracks, including one track on urban water.
Water as Leverage Multilevel Climate Action Programme (WaL-MCAP) aims to enhance the institutional capacities of local governments while collaborating with national governments to integrate urban water management into national policies, such as NDCs and NAPs. By equipping local leaders with the necessary

knowledge, tools, and resources, WaL-MCAP empowers them to actively engage in national climate planning processes and participate in international climate and water policy dialogues.

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