Blending Water Management and Climate Change Adaptation Approaches

Key Messages

- Merging practices from climate change adaptation (CCA) and integrated water resources management (IWRM) is more urgent than ever and is essential to accelerate progress in both fields. It can also lead to more efficient use of limited financial resources.
- CCA initiatives can be fast-tracked by taking advantage of established and trusted IWRM frameworks. Building on multi-sector planning and implementation approaches developed over decades through the IWRM framework is an effective way of reducing water-related climate risk in a systemic way.
- IWRM can help planning for a future increasingly affected by water variability and weather extremes and should, therefore, be fully integrated as a hub in National Adaptation Plans (NAPs) and Nationally Determined Contributions (NDCs).
- Coordinated data management, decision support systems and financing are essential for greater impact and planning for uncertainty across sectors.
- Lessons learned during climate-related disasters, social movements, and influential stakeholders such as the insurance industry offer a unique opportunity for catalysing water-smart climate change adaptation.

2050

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Introduction

Water, ultimately underpinning every aspect of society past or present, in large part determines the path of civilizations, their rise and fall. And predictions for the future of water for our global civilization are bleak. Approximately 6 billion people will face (clean) water scarcity by 2050 due to increasing demand from population growth and changing consumption patterns, rising pollution levels, and, most importantly, reduced or unpredictable water availability as a result of more severe climate impacts. These overlapping and compounding risks could cost some regions up to 6 per cent of their GDP and even spark mass migration and conflict.

However, the fact that water is this ultimate connector and perhaps primary foundation of human prosperity, flowing (literally at times) across and linking most aspects of society and economic sectors, means that humanity can pinpoint where to focus its efforts and resources to avoid or reduce the worst impacts of this amalgam of threats facing global civilization. If identifying crucial water-related issues and areas for action is the first step, what follows?

Blending Integrated Water Resources Management (IWRM) and Climate Change Adaptation (CCA) is one key vehicle to facilitate taking real action to reduce climate impacts on water and avoid the worst of potential consequences for human health, economic growth, and even international relations. This report thus discusses how IWRM can and is serving as an adaptation solution to reduce vulnerability to climate change, and, conversely, how CCA processes such as National Adaptation Plans (NAPs) and Nationally Determined Contributions (NDCs) can accelerate, and already are accelerating, IWRM implementation.

Indeed, about 90 per cent of countries already prioritize action on water for adaptation in their NDCs and nearly all NAPs highlight water and sanitation as a priority sector. And, increasingly, managers responsible for ensuring safe and reliable water supplies for drinking, agriculture, energy production, and other uses, base their decision-making on climate projections in addition to other factors. Why then, if IWRM and CCA are incorporating one another's approaches, is this report necessary?

While both fields happen to incorporate one another's principles and approaches, that alignment is not always necessarily intentional, and could benefit greatly from being much more coordinated and systematic. Also, quite often, practitioners in both fields do not communicate with one another or do not use each other's respective "language" in terms of approaches and principles, although each field's concepts and methods overlap in many cases. In practice, this means valuable opportunities for cooperation to reach mutual objectives crucial to both fields are forgone, and thus scarce financial resources, time, labour, and perhaps even political will, are not used as effectively as possible.

And, in times of increasingly severe climate impacts, more frequent and destructive droughts and flooding, in addition to ever-growing demand for water and rising levels of pollution, lost opportunities for IWRM-CCA cooperation can translate into economic damage and loss of life. For that reason, this report aims to identify and enhance synergies between IWRM and CCA, detailing four cross-cutting dimensions through which both fields of practice can better cooperate and thus align their efforts:

Governance: Applying a systemic-risk lens to address mutual IWRM-CCA objectives while breaking silos separating ministries, NGOs, communities, and economic sectors.

Tools and data: Coordinated data management and the application of decision-support tools for guiding climate-informed water management planning and addressing climate-water uncertainties across sectors.

Finance: Accessing and better managing conventional (e.g. grants and aid) sources of funding while identifying opportunities and structuring the enabling environment for innovative finance approaches to tap into growing international funding flows emphasizing water and climate resilience.

Catalysing conditions: Unique areas in which to build momentum or promote a shift to a new paradigm, including (1) the widespread sense of urgency due to growing climate impacts and threats to water supplies, (2) key windows of opportunity following dramatic events or crucial technological and policy developments, (3) broad-based social movements, and (4) highly influential economic actors and stakeholders.

With these four dimensions as a common language and interface, IWRM and CCA practitioners can join forces to :

(1) accelerate and enhance the implementation of water related climate risk management measures and interventions, (2) engage with and mobilize resources and investments from a broader spectrum of water and climate related actors at the international, national and local levels, and (3) mainstream systems and multi-sectoral approaches in policy and legal frameworks to ensure adequate coordination for the large-scale resilience-building needed to thwart the combined effects of climate change, surging demand for water, and growing pollution levels.

To demonstrate how IWRM-CCA cooperation across these four dimensions has led to tangible benefits on the ground (or in the water) in a variety of contexts,

this report is accompanied by several case studies.

Governance

Governance, in the context of IWRM and CCA, comprises the basic legal and regulatory frameworks guiding water management and climate change initiatives. The goal of a water law, including elements of a regulatory framework for water resources management, is to guide policymakers, managers, and users' water-related behaviours. However, contradictions and unclear institutional mandates plague water legal and regulatory frameworks in most countries, due to the fact that water managers must constantly deal with the drastic differences in hydrological areas and administrative jurisdictions (watersheds and political boundaries rarely overlap). Fortunately, those challenges can be overcome by improved water governance resulting from the blending of IWRM and CCA lenses and principles, including the following:

- Broad stakeholder participation in planning and policymaking

"The World Meteorological Organization's World Water Data Initiative promotes broad data sharing."

- Supportive policies and regulations for IWRM measures that foster ecosystems-based adaptation and vice versa.
- Improved, independent and transparent management of funding for IWRM and CCA.
- Transparency, communication, and dissemination to inform stakeholders about water management arrangements and priority investments in adaptation.
- A nested and supportive institutional arrangement at the local, sub-basin, national and transboundary level, along with a set of guiding frameworks.
- Intensified cross-sectoral and inter-agency coordination and alignment of goals and targets with corresponding policies recognizing water-related climate impacts to generate greater opportunities for IWRM-CCA cooperation.
- Strong leadership to bridge both fields and inspire action on the above points.

In some areas, this blending is already taking place. For example, results from the analysis of NDCs from 80 countries around the globe show that, of the individual water actions planned for adaptation, more than 70 per cent specifically involve some form of management instrument and governance.

A unique opportunity to accelerate that convergence of CCA and IWRM lies in viewing threats in terms of systemic risk, recognizing that climate impacts seldom remain exclusive to one aspect or sector of society (food, energy, transportation, ecosystems) and instead "cascade" from one to another. And, as that term implies, water is quite often the linking element.

Tools and Data

Gaps in information, data and monitoring practices must be addressed effectively for water managers and adaptation practitioners to plan effectively against a backdrop of growing climate-related hydrological variability and resulting trade-offs across, for instance, flood control, agricultural irrigation, household water needs, and hydropower production.

These practitioners need to know how the probability of water scarcity, drought, or flooding, and "mapping" of possible short and mid-term water forecasts can be assisted by water supply and water demand estimates, as well as more targeted (fit-for-purpose) and innovative data collection, processing, management, and sharing that facilitates mutual understanding. Where are those data most useful?

NAPs and associated water management plans for different sectors enable water and adaptation practitioners to access and analyse diverse data, e.g., from agriculture, energy, and the environment, to carefully assess the implications of future water supply and demand and devise climate risk management strategies.

Those plans, along with subnational variants, also allow water managers to factor in wider variables in their planning, e.g., the hydrological effects of land use change and soil erosion in key water catchments; or the mid- to long-term impacts of the declining health of forests, freshwater ecosystems and mangroves on groundwater resources needed for food

security or tourism. Finally, water managers may use "water budgets" or water balances for evaluating the availability and sustainability of water supply under different climate scenarios and to support the NAP process.

Tracking hydrological trends associated with climate variability and climate change, including the monitoring of groundwater, enables planning for enhanced flood control, irrigation, and hydropower production. Insufficient locally generated data should not limit these efforts, as developing countries may tap into web-based global climate and water databases, even though the information found there may be coarser than could otherwise be found in more localized data sources.

In terms of increasing access to climate and water information, the World Meteorological Organization's World Water Data Initiative promotes broad data sharing. Policies for sharing data generate benefits such as improved efficiency of public services, new business models, improved transparency and accountability, and enhanced citizen participation.

Open access data or data-sharing policies benefit the learning processes of both water managers and adaptation planners, and enhance the effectiveness of their planning tools, budgets, and policymaking processes.

Finance

Water as a sector and water management for agriculture, energy, biodiversity, and disaster risk reduction are being prioritized in NDCs and NAPs, meaning that, increasingly, domestic budgets can play a key role by diversifying and becoming more innovative.

And, of course, as each country's NDC and NAP becomes mainstreamed into government spending plans, domestic expenditures by national governments may be a growing source of climate finance for water-related investments (UN, 2020).

Meanwhile, climate finance from developed countries for developing countries rose from $52.2 billion in 2013 to $78.9 billion in 2018 (OECD, 2020), and many development finance institutions have set dedicated climate targets for their investments.

For instance, the European Investment Bank committed, by 2025, to earmark over half of its overall lending activity to adaptation and the environment. This will help to leverage one trillion euros of investment.

The UNFCCC is a good example of where that finance is being channeled to support water-related projects with a strong climate rationale. In particular, the Green Climate Fund (GCF) is one of the key sources of funding for adaptation with a portfolio encompassing a large number of climate mitigation and adaptation projects, including ecosystems-based adaptation projects, almost half of which relate to water and ecosystem resilience.

Other key sources of funding include the World Bank Pilot Program for Climate Resilience of the Strategic Climate Fund and the Adaptation Fund, as well as domestic budgets, private sector grants, impact investment funds, bilateral donors, and multilateral institutions. The World Bank has committed to doubling its climate investments to $200 billion between 2021 and 2025 (World Bank, 2018).

Regarding the private sector, non-public climate finance rose over the last decade from $217 billion in 2010-11 to almost $280 billion in 2018. However, leveraging private sector finance to transition to climate and water-smart development pathways and practices requires blended finance approaches, public-private partnerships, and innovative finance mechanisms (e.g., water funds, debt conversions, water markets, etc.).

Use-of-proceeds bonds linked to climate change and resilience (climate awareness bonds, sustainability awareness bonds, environmental impact bonds, catastrophe bonds or resilience bonds) have also emerged, drawing more and more private investment. For example, the issuance of green bonds grew by 51 per cent between 2018 and 2019, reaching $258 billion.

Another financial tool is carbon offsets which allow companies, governments, and other actors to take near-term action to meet carbon reduction goals during their transition to low-carbon practices.

Despite these growing and emerging sources of finance, more is not necessarily better. In this regard, a report tracking SDG 6.5.1 shows that improving financing for IWRM is not only about countries accessing more funds but also improving their management skills and investing in strengthening their advocacy and coordination capacities.

Legal and regulatory frameworks are also needed to support budget allocation, revenue raising and distribution of financing for IWRM.

And the capacity of institutions to absorb, manage, allocate and disburse the funds once they become available needs to be enhanced.

Catalysing conditions

The latest IPCC report lists four conditions that catalyse climate adaptation, and which can operate together or separately: urgency, windows of opportunity, litigation, and catalysing agents. These catalysers also apply to effective water resources management, given water's prominence in most adaptation initiatives.

Urgency is based on an increased awareness of the need to respond now to climate change risks to avoid the higher costs of delayed adaptation action.

This awareness may lead actors to speed up their adaptation decision-making and financing processes, expand current adaptation actions and adopt new adaptation practices. Intelligent communication strategies are key for conveying urgency.

For instance, "when the messages are repeated, perceived as trustworthy and linked to concrete suggestions for action" communicating drought with a moderate level of urgency may lead to water conservation.

Urgency also relates to high-level political engagement, financial support, and resolute action on IWRM and CCA, for instance, to highlight the pressing need to address water-related risk as a systemic risk capable of affecting all sectors of the economy.

Windows of opportunity consist of "time-bound periods during which advancing or accelerating climate adaptation strategies (and finance!) is possible but after which they are more difficult or impossible."

These windows may open in the wake of extreme weather events, new policies, laws, and regulations, or with advances in knowledge and technology. Windows may also close "after the initial causes recede and become less efficacious".

Catalysing agents in water governance may be individuals or non-governmental actors from multiple sectors engaging with and influencing the governing process.

In climate adaptation, the role of these agents is to advance action by, for instance, communicating the urgency of climate action and expanding coalitions engaged in water management initiatives.

Social movements may catalyse action on adaptation by promoting strategies to manage climate-related risks, particularly when they are able to build alliances with other public sector and community groups.

[1]Finally, actors such as the insurance industry, responding to growing climate risks and damage, will influence investments in development projects in disaster-prone areas.

Litigation stemming from water resource disputes has a long history, and as climate change triggers extreme weather and creates greater pressure on shared water resources, water-related litigation (between States and among actors within States) may become more common.

However, more than just a consequence of growing water demand and climate impacts, litigation over water and adaptation issues, including loss and damage, can serve as a tool to open new lines of action, for example, by forcing governments to implement adaptation measures per their commitments to the Paris Agreement, other treaties, Human Rights, and national legislation. Without effective and legitimate fora for litigating disputes, water conflicts may emerge, as is the case between herder and farmer groups in the Sahel region.

It is, therefore, necessary to improve dispute-resolution mechanisms and cooperation regarding shared water resources while aligning statutory legislation, self-regulatory instruments, and customary norms.

Recommendations

- Access, generate and circulate all data on water, climate and ecosystems affecting livelihoods and water-dependent economic sectors, and motivate water and adaptation practitioners to work together at guiding decision-makers to prioritize water management for CCA.

- Make use of climate-resilient IWRM as an adaptation solution to enable planners to better access and use financing, and to mainstream watershed and systems approaches (ridge-to-reef, source-to sea, etc.) to deal effectively with water-related climate risks and the trade-offs of complex adaptation decisions.

- Water and climate practitioners, experts and decision-makers from different sectors should align policies and planning processes while updating water regulations and CCA planning in NAPs and NDCs. They should (i) explore the nexus between Water-Energy-Food-Ecosystems and Climate risk and (ii) find a common language and common metrics to understand each other. This report offers a potential framework to build on.

- To advance climate-resilient IWRM there is a need to (i) improve water and climate data-sharing mechanisms (ii) generate decision-relevant data for water management and climate adaptation and (iii) foster cross-sectoral cooperation in long-term programme planning, strategies, and budgets.

- Make the accountability, transparency and efficiency adjustments needed for properly managing the large volumes of funding reaching countries for investing in IWRM as part of CCA initiatives at national and subnational levels. Improved financing for IWRM requires – besides accessing more funds – countries to enhance their management skills and strengthen their institutional and operational capacities to address climate risk using a systemic approach and thus make better use of limited financial resources.

- In addition to accessing more financial resources and better managing them, water managers and adaptation practitioners can engage with a wider range of water-related stakeholders (bottlers, hydroelectric facilities, and farmers, among many others) to build unconventional partnerships for generating innovative sources of finance for improved water -management

1.An example of understanding: When countries track progress on the Clean Water and Sanitation SDG, IWRM is expressed as a single number (from 0-100) in terms of degree of implementation. The truth is that this is a complex, collaborative, multi-stakeholder metric that encapsulates a wealth of data and information.

and climate adaptation outcomes.

- Turn political leaders and recognized national "influencers" into IWRM and CCA champions to get political support from the highest levels of government to: (i) influence national and subnational planning processes and instruments such as NAPs, NDCs; (ii) influence Water Management Plans for merging IWRM and CCA agendas and (iii) assist at prioritizing IWRM and CCA in national development planning.

- Accelerate the decision-making processes leading to enhanced adaptation actions against water-related climate risks by opening new lines of action for reducing the impacts of climate change on water resources availability and access.

For example: investing in built and natural water infrastructure such as wetland restoration; advancing governance frameworks such as water pricing, enforcing innovative regulations and economic incentives; and strengthening research, information-sharing and decision-support systems, such as early warning systems for flood and drought.

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