



How water resources management can support climate-resilient development in Kenya



ABOUT THIS BRIEF

Water is a ‘climate connector’ – impacts of climate change on water will flow through all sectors of the economy and across national borders. This brief explains why integrated approaches to water management are essential for climate-resilient development, how Kenya has laid a solid foundation in that sense, and what needs to change if Kenya is to meet its commitments under the Paris Agreement and achieve the Sustainable Development Goals (SDGs).

SDG target 6.5, on integrated water resources management (IWRM), can make that climate connection. This brief looks at all four dimensions of IWRM, namely the enabling environment, institutions, management instruments, and financing.

RECOMMENDATIONS

Key stakeholder(s)	Recommendation
Climate Change Directorate (CCD), under the Ministry of Environment and Forestry (MoEF)	Water resources management considerations need to be incorporated further into climate resilience and disaster risk management.
National Drought Management Authority (NDMA)	<ol style="list-style-type: none"> The WRA and the MWSI need to participate actively in the coordination structures for climate resilience and disaster risk management.
Ministry of Water, Sanitation, and Irrigation (MWSI)	
The Water Resources Authority (WRA)	
As above + Ministry of Agriculture, Livestock and Fisheries (MoALF)	<p>The National Water Master Plan (NWMP) can inform and guide the contribution of water to climate resilience (as per the Nationally Determined Contribution), but further coordination is required to achieve policy coherence.</p> <ol style="list-style-type: none"> The NWMP should be reviewed and updated to align with the National Climate Change Action Plan (NCCAP), the Disaster Risk Management Policy, and the Climate Smart Agriculture Strategy.

RECOMMENDATIONS CONTINUED...

Key stakeholder(s)	Recommendation
Climate Change Directorate (CCD) under MoEF	The climate and water communities' efforts to strengthen information and management tools and systems could result in duplication unless care is taken.
Kenya Meteorological Department WRA, under MWSI	<p>3 The climate information services priority actions, under the NCCAP, should include engagement between MWSI and MoEF about what information and management tools and systems are used to support water-related climate actions.</p>
National Treasury National Environment Management Authority WRA, under MWSI	<p>Kenya has made strong progress in laying the foundation of a solid policy architecture for climate finance, but there is much scope for attracting further climate finance.</p> <p>4 Designated authorities and accredited entities for the multilateral climate funds should work with water sector representatives to develop fundable proposals, using integrated water resources management as a basis to achieve synergies and ensure value for money.</p> <p>5 The County Climate Change Funds should be scaled up beyond the five counties where they have initially been established, with synergies and links forged between the county and the national climate finance systems.</p>
SDGs Coordination Directorate The SDGs Inter-Agency Technical Working Group State Department of Planning, under the National Treasury and Planning	<p>The Sustainable Development Goals (SDGs) can be used as a coordination mechanism for water-related climate action and adaptation.</p> <p>6 SDG coordination mechanisms, like the SDG Inter-Agency Technical Working Group, should be used to review the cross-sectoral integration of water-related climate change adaptation, with the aim of achieving coherence across and between the SDGs; where possible, aiming to achieve synergies and co-benefits and avoid trade-offs and sectoral conflicts.</p>

THE CHALLENGE

Kenya's economy is highly susceptible to climate variability, climate change, and extreme weather events.



Drought caused over US\$12 billion in losses and damage between 2008 and 2011. By 2030, climate and economic models project losses equivalent to 2.6% of GDP per year from climate variability and extremes. Projected changes by the 2050s include:

- a likely increase in severity but decrease in duration of dry spells
- an average temperature increase of 1.2–2.2°C
- increased rainfall variability from season-to-season
- increased frequency and intensity of heavy rainfall events.



A 16–42 cm rise in sea-level, relative to 1995, is projected to occur between 2025 and 2050. Sea-level rise will result in saltwater intrusion into coastal aquifers, negatively impacting the water supply for more than 3 million people and decreasing water security.



Dry weather conditions in 2017 resulted in reduced production of most agricultural commodities and record high food prices for basic commodities – like maize, sugar, rice, and milk – further increasing the cost of living and food insecurity. Households in rural areas already spend, on average, more than 60% of their income on food, making them sensitive to further price increases as a result of required climate change adaptations and high food prices.

Recurring droughts have forced 30% of livestock owners out of pastoralism in the past 20 years; a combination of declining water resource availability and increasing temperatures are forecast to reduce livestock numbers even further.

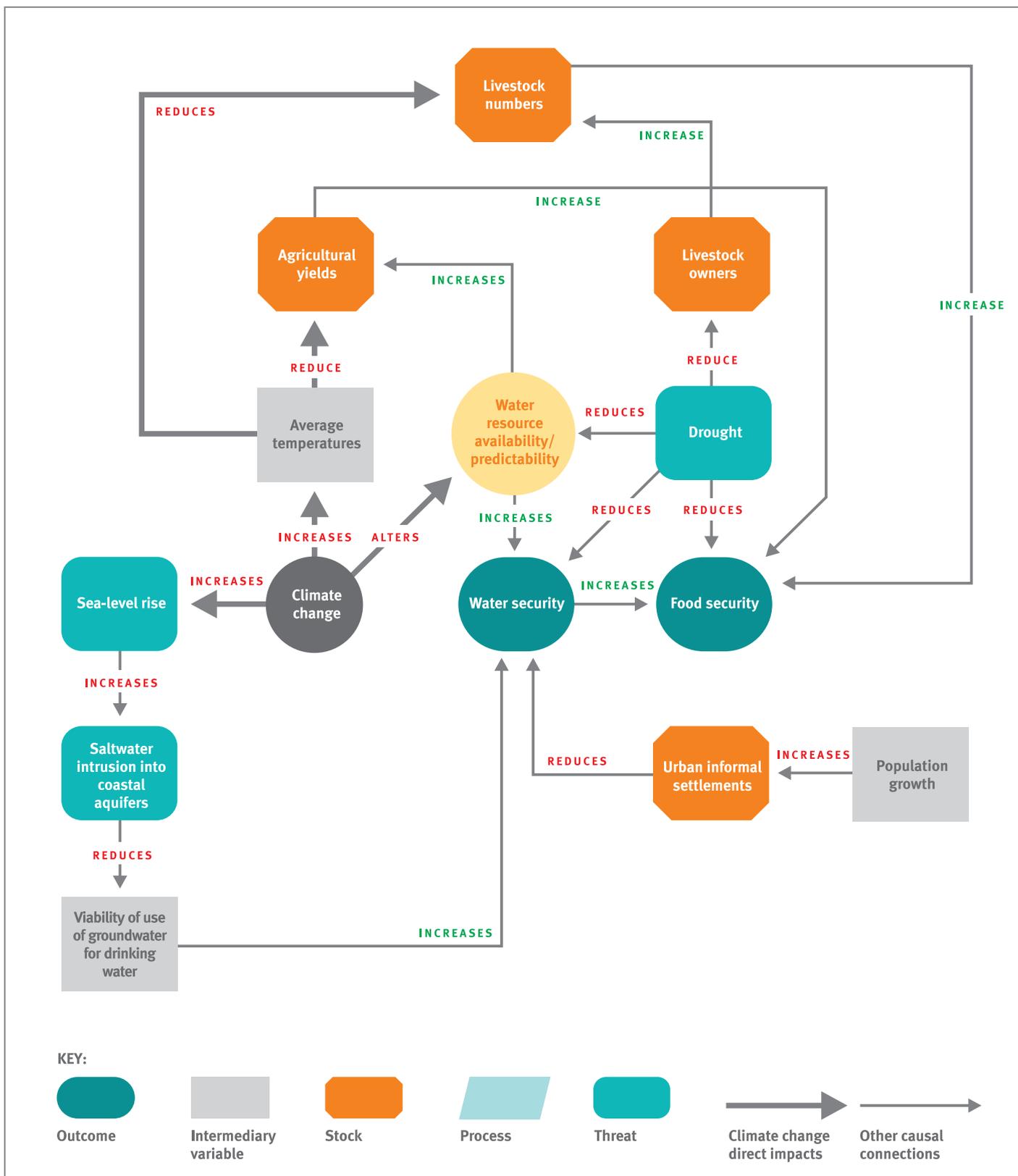
Between late 2017 and early 2018, drought left 3.4 million people severely food insecure and 500,000 people without access to water.



Urban informal settlements, where residents are often vulnerable to water scarcity and floods, are expanding due to population growth.

As with the water–energy–food nexus, climate resilience and sustainable development are interconnected. The diagram below maps the relationships between some of the key climate challenges that Kenya faces, showing why coordinated, integrated, and cross-sectoral responses are required to adapt to the impacts of climate change.

THE INTERCONNECTED NATURE OF THE WATER-RELATED CLIMATE CHALLENGES IN KENYA



The interconnected nature of these challenges

As with the water–energy–food nexus, climate resilience and sustainable development are interconnected. The diagram maps the relationships between some of the key climate challenges facing Kenya, showing why coordinated, integrated, and cross-sectoral responses are required to adapt to the impacts of climate change.

At the centre of the diagram is water resource availability/predictability, which is impacted both by climate change and by recurring droughts (as shown by the words written on the arrows between the variables). The complex relationship between climate change and water availability/predictability is not shown here for reasons of space. The word ‘alters’ is used to describe the fact that climate change can affect water resources via multiple vectors, including via changes in temperature and precipitation, and impact on availability

in multiple ways, including via seasonality, changing frequency and intensity of rainfall events, and fluctuating water quality.

In order to facilitate the accurate reading of this diagram, the following description will describe two causal chains. Climate change alters water resource availability/predictability and, in doing so, impacts water security (under the logic that water resource availability/predictability increasing will lead to an increase in water security, and vice versa). In Kenya’s case, climate change is increasing the variability of rainfall from season-to-season and increasing the frequency and intensity of heavy rainfall events (as noted in the challenges listed above), which will likely impact upon water security negatively. Climate change also increases average temperatures, which reduces livestock numbers. Given that an increase in livestock numbers would add to food security, a reduction in livestock numbers will decrease food security. The remainder of the diagram can be read in the same way.

ENABLING ENVIRONMENT

What do key policy statements say about integration of water, climate, and other Sustainable Development Goal agendas?

WATER RESOURCES MANAGEMENT IN KENYA

The key policy statements in Kenya generally recognise the importance of water resources management for achieving climate and sustainable development objectives. The Kenyan Nationally Determined Contribution (NDC), National Adaptation Plan (NAP), and National Climate Change Action Plan (NCCAP) all aim to improve water resources management among their identified measures in response to climate change – as do relevant agriculture and disaster risk management plans. The National Water Master Plan (NWMP) is based on detailed consideration of climate change impacts. However, across these plans, the requirement for institutional strengthening and an integrated approach is not always clearly expressed. The potential for collaboration with neighbouring countries on transboundary water resources is at least acknowledged in some of the strategies but could be given more emphasis.

Vision 2030 is Kenya’s flagship cross-sectoral long-term strategy, described as being aimed at ‘transforming the country into a newly industrialising, middle-income country providing a high quality of life to all its citizens by 2030 in a clean and secure environment’. Launched in 2008, Vision 2030 mandates five-year Medium Term Plans (MTP). Climate change, disaster risk management, agriculture, and water all feature prominently in Kenya’s Third Medium Term Plan (MTP III, 2018–2022). Improving water resources management and governance is not explicitly identified as part of the needed response to the threats posed by climate change (see **Recommendation 1**). The specific measures outlined for the water sector focus primarily on infrastructure development, rather than water resources governance and management. The MTP III does identify a need to address transboundary water resources management challenges but does not make the link to climate change.

The National Climate Change Framework Policy (2016) guides carbon-resilient development in Kenya, with strategies and action plans providing more detail. One of the priority climate adaptation strategies identified in the NDC (2015) was the mainstreaming of climate change adaptation in the water sector by implementing the NWMP (see **Recommendation 2**). The NAP (2015) details multiple water-related measures including strengthening water resources monitoring and assessment for early warning and planning, promoting water efficiency, and enhancing collaboration on transboundary water resources management. The second phase of the NCCAP (2018–2022), under its objective for disasters, includes measures that apply an integrated approach to water resources management (for example, implementation of integrated flood management plans). However, this is less clearly the case under the objective for food and nutrition. Here, while irrigation development is mentioned, the required water allocation arrangements are not. Various institutional measures are identified as enabling actions under the NCCAP’s water objective, including development of policies for water harvesting and pricing of recycled water.

Turning to water, water resources management and water efficiency are recognised as a high priority across Kenya’s water policy landscape, although a climate lens is not always very visible (for example, the framework legislation, the National Water Act of 2016, only mentions climate change once). The NWMP, developed in 2014, takes climate change into consideration in assessing the availability and vulnerability of water resources to 2050. As noted, under the NDC, implementation of the NWMP is intended to mainstream climate change in the water sector (see **Recommendation 2**).

POLICY STATEMENTS

SECTOR	KEY POLICY STATEMENTS (INCLUDING LAWS, STRATEGIES, AND PLANS)
Cross-sectoral	<ul style="list-style-type: none"> ■ Vision 2030 (launched in 2008) ■ Third Medium Term Plan (2018–2022)
Climate change	<ul style="list-style-type: none"> ■ National Climate Change Framework Policy (2016) ■ The National Adaptation Plan (2015) ■ The National Climate Change Action Plan (2018–2022)
Water	<ul style="list-style-type: none"> ■ The National Water Act (2016) ■ The National Water Master Plan (2014) ■ Strategic Plan (2018–2022)
Agriculture	<ul style="list-style-type: none"> ■ The Agriculture Development Strategy (2010–2020)
Disaster risk management	<ul style="list-style-type: none"> ■ The Disaster Risk Management Policy (2018)

Kenya’s Agriculture Development Strategy (2010–2020) has separate sections on integrated river basin development and climate change but does not draw a link between the two. The Kenya Climate Smart Agriculture Strategy (2017–2026) identifies addressing unsustainable water and land management as a key component of climate change adaptation. The specific sub-strategy on water refers to the promotion of effective and efficient water use, as well as water harvesting and irrigation infrastructure, but does not include much detail on the institutional and management mechanisms this entails.

The Disaster Risk Management Policy (2018), along with associated plans and legislation, provides the enabling environment for drought and flood risk management. Under the previous MTP (MTP II, 2013–2017), a Sector Plan for Drought Risk Management was prepared, with water resources management strategies at catchment and transboundary levels among its identified interventions. No update appears to have been released for MTP III (see **Recommendation 1**).

INSTITUTIONS

Are Kenya's institutions ready to manage the impacts of climate change on water resources and on other water-related sectors in an integrated way?

KENYA'S INSTITUTIONAL ARCHITECTURE

The institutional architecture in Kenya is sophisticated and continues to change. On paper, there is a strong system for multi-sector, multi-stakeholder, and multi-level coordination on climate change, but operationalisation appears to be limited. Mechanisms for inclusive coordination on other cross-cutting issues including disaster risk and water resources appear to be missing, though there are ongoing developments in both cases. Kenya's devolution process and regular reconfigurations of ministerial responsibilities represent overarching challenges, leading to uncertainty, and increasing competition between sectoral stakeholders.

Leadership and coordination on climate, disasters, and water resources

Kenya has an impressive, but complicated, institutional architecture for climate change, water, and disaster risk management. As well as horizontal coordination across sectors, vertical coordination is also vital given Kenya's rapid and far-reaching devolution process (i.e. between national-level entities, the counties, and other devolved authorities). On both counts, coordination across the climate, water, and disaster risk management agendas has been a challenge (see **Recommendation 1**).

For climate change, the MoEF provides guidance for climate change governance, with the MoEF's Climate Change Directorate as the main agency delivering and coordinating national climate change plans and actions. The high-level National Climate Change Council (NCCC) – chaired by the President and established as part of the National Climate Change Policy Framework of 2016 – is intended to play an overarching coordination and advisory role. However, as of October 2020, the NCCC has not yet met.

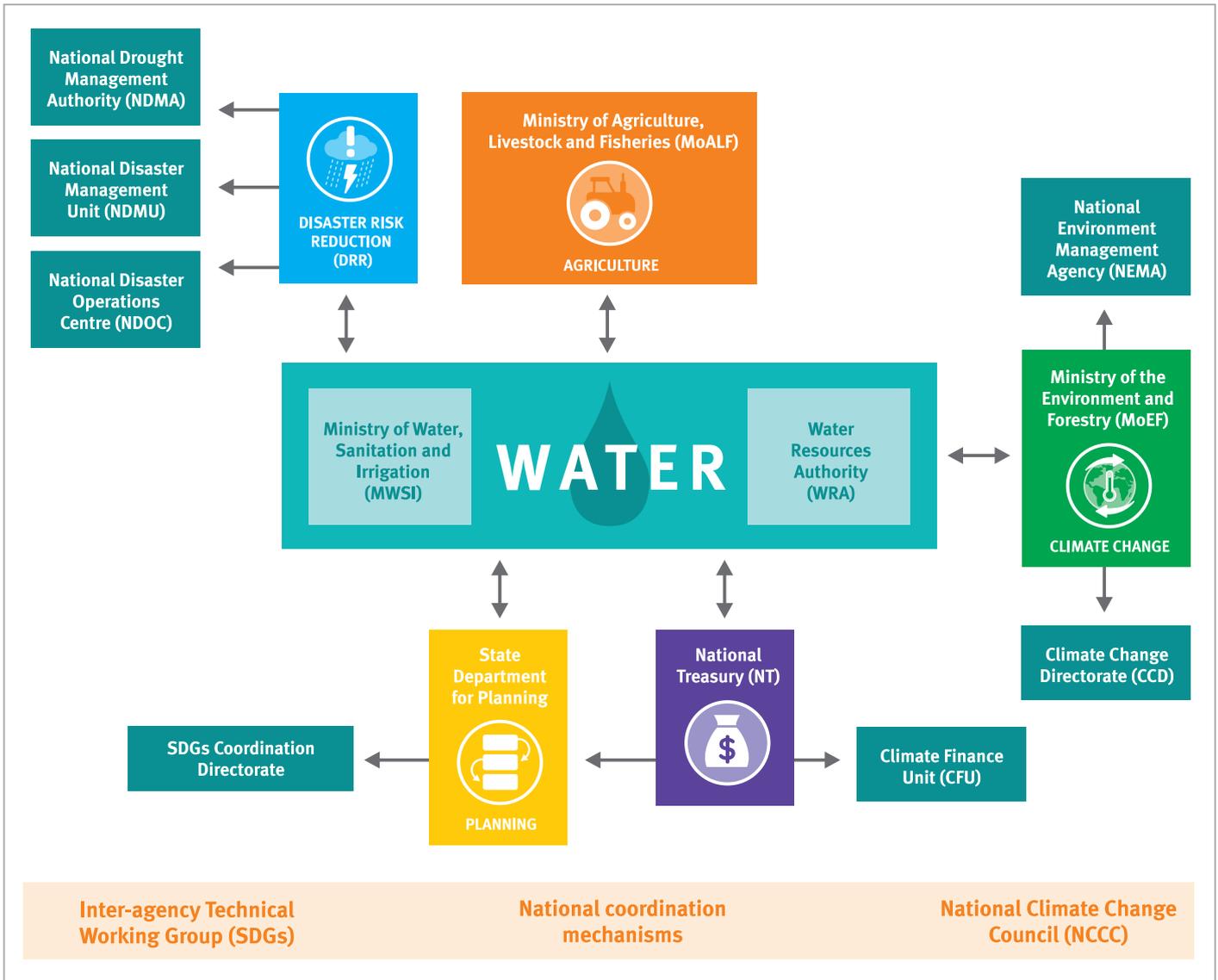
For disaster risk management, there are a number of institutions including the National Disaster Operations Centre (NDOC), the National Disaster Management Unit (NDMU), and the National Drought Management Authority (NDMA). Drought preparedness, which is coordinated by the NDMA, has been identified as being better coordinated than flood preparedness. An overarching National Disaster Risk Management Authority has been proposed in a bill but has yet to be debated by the National Assembly.

The Ministry of Water, Sanitation and Irrigation (MWSI) oversees the Water Resources Authority (WRA), a state corporation established under the National Water Act of 2016. The WRA is mandated to ensure proper regulation of the management and use of water resources. No dedicated cross-sector coordination platform exists for water resources management in Kenya at this point (see **Recommendations 1 and 6**). Improving coordination and governance for water is a recognised priority for MWSI.

The management of Kenya's many transboundary lakes, rivers, and aquifers requires collaboration and coordination on all transboundary water-climate challenges. Kenya shares over half of its water resources with its neighbours (mainly surface water bodies, including lakes and rivers, but also some aquifers). It has agreed upon a number of transboundary water resources management instruments with its neighbouring countries, which are in the process of ratification. The MWSI's Strategic Plan (2018–2022) identifies transboundary water resources management as a key area for attention and identifies a need to increase its technical capacity in this area.

A number of underlying barriers exist at the institutional level. A key challenge has been catching up with the institutional reconfigurations under Kenya's 2010 Constitution, which mandated far-reaching devolution of power. For water, for example, the NWMP did not fully account for the new multi-level governance arrangements stipulated in the constitution. Even at a national level, the institutional architecture for climate, agriculture, disasters, and water has been, and continues to be, in a state of flux. Responsibilities are transferred regularly between ministries, and new entities are established (for example, the overarching National Disaster Risk Management Authority). The fact that the wider institutional context has been, and continues to be,

KENYA'S INSTITUTIONS



significantly reshaped, has kept different functions of government working inside silos and made it difficult to clarify roles and responsibilities between the different entities. This fragmented and changing institutional landscape negatively incentivises each entity to jockey for greater power and resources as the landscape repeatedly shifts.

Kenya’s performance against the Sustainable Development Goals (SDGs) is tracked via the SDGs Coordination Directorate, which is under the State Department for Planning within the Ministry of National Treasury and Planning. An Inter-Agency Technical Working Group, which acts as the operational arm for the SDGs Coordination Directorate, provides an ideal opportunity for using the SDGs to help coordinate water-related climate action and adaptation (see **Recommendation 6**).

MANAGEMENT INSTRUMENTS

Are management decisions in water and other Sustainable Development Goals being guided by evidence on climate change?

INFORMATION MANAGEMENT

Kenya has made successive efforts to improve the availability and quality of its climate and water data, to ensure this is processed into useful information, and to integrate this evidence into decision-making processes, systems, and tools. ‘Foundational’ water management instruments such as river basin plans are in place for the first time, but further investigation is needed as to how these address climate change. There are ongoing technical, human resource, and institutional challenges affecting data collection and information management and use – and there is a need to improve integration between the relevant systems for climate change, water resources, and disasters.

On the water side, some data collection systems have been recently upgraded, with 140 hydro-meteorological stations rehabilitated and/or installed across the six main river basins in Kenya. Priorities in the 2018–2022 period for the MWSI include:

- establish a digital information system
- further increase hydrological monitoring stations for transboundary water resources.

Progress

Some examples of progress that has been made with Kenya’s management instruments include a system of permitting for water abstraction and effluent discharge managed by the WRA and the fact that basin/catchment management arrangements have been initiated. As of October 2019, river basin plans for all the major river basins in Kenya have been developed, with reportedly high levels of stakeholder engagement and the use of state-of-the-art decision support tools. The NCCAP recognises that there are many climate tools and systems that need strengthening in order to better support climate-smart decision-making. Two key examples are:

- climate information services for farmers (linking to the agriculture/food security domains)
- flood and drought early warning systems (linking to the disaster risk management domain).

Data and information systems

As the lead agency of the Kenyan government on national climate change plans and actions, the Climate Change Directorate (CCD) has established a National Climate Change Resource Centre (NCCRC), with an online portal – the Kenya Climate Change Knowledge Portal – which is envisioned to be a ‘one-stop’ repository of climate change-related information.

MANAGEMENT BARRIERS

Underlying barriers for management instruments and information

Associated actions

Doubts about the quality of water and climate data



Strengthen fundamental data collection and information processing and management systems (e.g. MWSI’s currently paper-based methods of data management could be digitised)

Inadequate technical capacity (especially at sub-national levels) to analyse and interpret climate and water information



Focus on building climate change capacity in county governments

Capacity for implementing catchment management plans



Build on the World Bank-funded Kenya Water Security and Climate Resilience Project in order to further the capacity for effectively implementing catchment management plans

FINANCES

How ready is Kenya to finance water-related climate action?

CLIMATE FINANCE POLICY FRAMEWORK

Kenya has an advanced policy framework for climate finance, embedded within the National Treasury, and is working to scale equivalent structures at county level. Water appears to be well-featured in climate-related spending priorities both at national level (at least for Kenya's development partners) and for the existing County Climate Change Funds. At least some of the development partners' allocations appear to be intended to improve water resources governance and management, as well as building infrastructure. To operationalise the climate finance policy framework, there appears to be a need for further strengthening of engagement between National Treasury and sectoral stakeholders, and further strengthening capacity for developing fundable project proposals. A number of agriculture and disaster risk management projects in the pipeline for the Green Climate Fund could provide an opportunity to build integrated approaches to managing water resources into these as part of the solution.

Kenya has made strong progress in laying the foundation of a solid policy architecture for climate finance. Initial successes include:

- a dedicated Climate Finance Unit (CFU) within the National Treasury (which collaborates across agriculture, environment, and water). The National Treasury's CFU has also developed a Disaster Risk Financing Strategy
- a National Climate Finance Policy
- a system for tracking climate funds
- accreditation of the National Environment Management Agency (NEMA) by the Green Climate Fund (GCF), allowing NEMA to receive and manage grants from the GCF
- climate change funds developed at the sub-national level for five counties to date, with climate change adaptation investments a primary focus.



Between 2012–2017, the water sector attracted US\$701 million of development finance, equivalent to 14% of the total development finance going to Kenya. Only a fraction of this water sector financing went to water resources governance, institutions, and management instruments that could be used to increase water-related climate resilience (the bulk of the financing was infrastructure-related).



Kenya has a national system for tracking climate funds, which, along with the broader Climate Finance Unit, should help support coordinated and impactful investment.



Only a fraction (around 2%) of the national water sector budget is dedicated to water resources management (the majority of domestic funds are used for other water sector priorities, such as drinking water and access to sanitation).



Coordination between the entities responsible for managing funding for water, agriculture, and climate already exists (including MWSI, MoAF, MoEF and NT), which provides the basis for further coordination efforts.

PROJECTS IN THE GREEN CLIMATE FUND (GCF) PIPELINE

Project	Indicative value	Lead executing agency
Reduction of impacts of climate change in slums and informal settlements	US\$308 million	State Department of Housing
Enhancing the resilience of smallholder farmers in Kenya by promoting Climate Smart Agriculture (CSA) along value chains in targeted counties	US\$10 million	Water Resources Agency, under MWSI
Transforming landscapes of livelihoods in Kenya through a water–agriculture–energy nexus approach	US\$250 million	Ministry of Agriculture, Livestock and Fisheries

Underlying barriers to sustainable financing of climate action in Kenya

Given Kenya's progress in developing the policy framework, many of the barriers appear to lie with its implementation – especially ensuring that it functions effectively both across sectors and between stakeholders at different levels. A 2019 report by the International Institute for Environment and Development (IIED) acknowledges signs of engagement between the entities responsible for water, climate, and agriculture, yet the same report identifies a need for the National Treasury to strengthen how it collaborates with other government entities on climate finance, as well as with non-state actors (see **Recommendation 1**). Other identified needs include:

- technical capacity building to ensure that the various climate-related policies and systems can be operationalised; the NCCAP and MTP targets can be met; and the number of fundable projects can increase (see **Recommendation 4**)
- scaling up the County Climate Change Funds beyond the five counties where they have initially been established (see **Recommendation 5**)
- improving the linkages between the county systems and the national climate finance systems (see **Recommendation 5**).

Note that the IWRM Action Plan, supported by the Global Water Partnership and current as of November 2020, points to many of the same barriers, issues, and challenges contained in this brief, with additional recommendations made as to how Kenyan stakeholders can move forward.

There are several projects in the GCF pipeline with agricultural and/or disaster risk focuses for which integrated approaches to water resources management are likely to be helpful (see table).

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ABOUT THIS PUBLICATION

This Country Brief is one of a series of 15 publications that explores how integrated water resources management at a country level contributes to climate resilience and sustainable development, as well as meeting the commitments under the Paris Agreement and achieving the Sustainable Development Goals (SDGs).

The full synthesis report, *The Untold Story of Water in Climate Adaptation. Part II. 15 Countries Speak*, of the work undertaken in all 15 countries is available at www.gwp.org.

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| 2 | Cameroon | 10 | Kazakhstan |
| 3 | Chile | 11 | Kenya |
| 4 | China | 12 | Mauritania |
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| 7 | Guatemala | 15 | Ukraine |
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