



Global Water
Partnership

Water, Climate and Development Programme

10 STORIES OF IMPACT

OUR CLIMATE
IS CHANGING
WHY AREN'T WE?

About the Global Water Partnership

The Global Water Partnership (GWP) vision is for a water secure world.

Our mission is to advance governance and management of water resources for sustainable and equitable development.

GWP is an international network that was created in 1996 to foster the application of integrated water resources management: the coordinated development and management of water, land, and related resources in order to maximise economic and social welfare without compromising the sustainability of ecosystems and the environment.

The GWP Network is open to all organisations that recognise the principles of integrated water resources management endorsed by the Network. It includes states, government institutions at all levels, nongovernmental organisations, academic and research institutions, private companies, and service providers in the public sector. GWP's diverse and inclusive network is a platform for policy dialogue and bottom-up development of action plans and programmes, providing a voice for communities on water management.

At the end of 2018, the Network had 13 Regional Water Partnerships, 65 Country Water Partnerships, and more than 3,000 Partners located in 183 countries.

Acknowledging our supporting partners

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This is a sneak preview, currently being reviewed with the WACDEP funding partners.

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Foreword

Why is more not happening – not faster, not broader – to address the terrifying impacts of climate change? Why don't we manage floods better? Warn earlier of coming droughts? Protect the water we need to drink, to provide for crops and livestock, from pollution that comes with climatic pressures on water levels and pathways? The solutions are so often known – why do they not make it into what our governments and communities end up doing?

The answer to these questions is often chillingly simple: Our water managers and institutions are, in many places, not well connected into national or regional planning processes, in the decision structures on climate change, or into key sector-specific policy-making. The approaches that need to be taken to address water challenges – for example, working along the geographic areas that catch rainfall and distribute it into rivers, streams, and other watercourses – do not necessarily coincide with administrative districts or national boundaries. And so it happens that readily available solutions do not make it into national decisions, investments, and improvements.

To put it simply: The right people do not talk and work with the right people to address the impacts of climate change, certainly not where water is the conduit of these impacts.

This is changeable, however. In 2011, the Global Water Partnership (GWP) launched, together with visionary Financing Partners, one of its most ambitious initiatives: the Water, Climate and Development Programme (WACDEP). This was a global effort that, on the African

continent, even became a formal programme of the African Union's African Ministers' Council on Water (AMCOW). The goals: to ensure that water is a key part of regional and national development, and to contribute to climate change adaptation for economic growth and human security.

Since then hundreds and hundreds of water managers, from mandated institutions through to civil society organisations, have come together with their key counterparts who run national, regional, or district-level decision-making and urban planning processes. Together they have learned, built programmes, run pilots, and set out investment plans; they have applied for financing, convinced stakeholders, and they overcame shared obstacles.

The impact? We collected the data, of course, and this is reported in the GWP water and climate resilience outcomes 2011–2019 at the end of this brochure. But the real impact, as described here in an indicative collection of stories from ten countries, is in the people who manage and contribute to keeping our waters safe, who are instigating changes at all levels to improve climate resilience – paving the way to protect hundreds of thousands of people from climate-change-induced damage and destruction.

GWP is releasing these stories at the time of the UN Climate Summit in New York in September 2019. We want to remind world leaders that preventing water-related disasters means taking action on managing water resources now. Such action needs water specialists, organisations,

and users to work together with all ministries and agencies in their country and region; together they need to address the links between water and health, water and agriculture, water and pollution, and so on. Only with all voices heard can political will turn into effective action. This approach is in GWP's DNA: an action network of over 3,000 partner organisations, more than 65 Country Water Partnerships, as well as regional and global teams – all connected through long-standing relationships with mandated institutions at all levels.

There is *hope* – we *can* address the impacts of climatic change together. We need to get out of our past institutional boxes, learn from each other, and work with each other. It is not easy, but it is doable. The stories collected here tell of some of the ways it can get done.

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Introduction

The global water community has made it crystal clear in the last few years: “The global climate change crisis is increasing variability in the water cycle, thus reducing the predictability of water availability and demand, affecting water quality, exacerbating water scarcity and threatening sustainable development worldwide.”¹

What does this mean in practice? It means that floods and droughts are becoming more frequent and severe. Rainfall patterns are growing more erratic and sea levels are rising. These changes threaten the livelihoods of people, particularly the poorest and most vulnerable; they threaten ecosystems and their ability to restore and sustain us; and they make investing in and growing our economies much harder.

It is critical, then, that water security and climate resilience are incorporated as key factors in regional and national development. But in most cases they are not.

The Global Water Partnership (GWP) and its Financing Partners saw this gap emerging in the early 2000s, and by the end of the decade they began designing the Water, Climate and Development Programme (WACDEP). Launched in 2011, the programme aim was to enhance economic growth and human security by integrating water and climate adaptation into development planning and investments. To achieve this, GWP through WACDEP has been working with national governments, river basin organisations, and other stakeholders to transform the systems and institutions that govern development. Ensuring that these mandated actors have the capacity, incentive, and necessary tools to adopt policies, develop

plans, and invest in climate-resilient infrastructure was viewed as the most effective pathway to foster such change – sustainably, and at scale.

For the African continent, WACDEP was developed as a response to a request from the African Ministers’ Council on Water for GWP to support the African Union’s agenda on water and sanitation. By 2014, WACDEP and the accompanying Integrated Drought Management Programme (IDMP) had achieved global reach and were being implemented in more than 60 countries worldwide. From the outset the programme was anchored with government-led national adaptation planning processes, project preparation, investment planning, and innovation, and it was thus fully embedded in the domestic agendas and development priorities of targeted countries and river basins.

Since its inception, the results from WACDEP and IDMP have been substantial as reflected in the positive conclusions from external evaluations of both programmes conducted in 2017. Some of these results, and the activities behind their achievement, are described in the ten stories presented in this publication. Many more examples exist, and a flavour of these is provided in the GWP water and climate resilience outcomes 2011–2019 at the end of this brochure: the complete record of tangible governance outcomes attributable to WACDEP since the programme began. These results will be further documented in a detailed programme report due to be launched in December 2019 at the 25th session of the Conference of the Parties (COP 25) to the United Nations Framework Convention on Climate Change.

¹ *Climate Change and Water: UN-Water Policy Brief*, September 2019.

RESULTS

Facilitating the **incorporation of water and climate** into **20 formally approved** national, regional, and river basin **development plans and strategies**

Mobilising **€25 million** for **water and climate resilience projects**

Influencing **more than 15 investment plans** at different levels, **supporting infrastructure programmes worth more than €1 billion**

Implementing more than **30 demonstration projects**

1

Adapting for health: controlling fluorosis in northern Cameroon

Through WACDEP, the Global Water Partnership Cameroon worked with partners to reduce climate change impacts on public health in northern Cameroon by identifying and reducing toxic levels of fluoride in groundwater. Linking a local problem to national adaptation policy both empowered communities and provided practical motivation for government decision-makers to confront climate change challenges.

A tainted source

Cameroon's far north is a dry region that is rapidly becoming drier. Climate change is reducing the quantities of flow in the rivers that cross the region. These rivers used to fill Lake Chad and other water bodies, supporting rural farmers and herders and sustaining a diversity of plants and animals. Not any more. The Mayo Tsanaga River basin, for example, has seen an increase in inter-annual variation in average temperature by about two degrees Centigrade over the past 60 years, while rainfall has reduced significantly during this period. To replace the stream, pond, and river waters that they used to rely on, locals in the Mayo Tsanaga River basin are looking underground.

But new wells and boreholes yield more than clear water for drinking, washing, and watering crops and livestock. Invisible at first, minerals in the water build up in living beings that consume the groundwater. Driven by climate change to rely increasingly on groundwater over the past decades, people in the area have been suffering

health problems: teeth have become pitted and stained an ugly brown, and bones of the youth and children malformed. This is a condition called fluorosis, caused by drinking groundwater naturally high in fluoride, often at toxic levels. To counteract this over-exposure, the World Health Organisation has recommended that the fluoride in drinking water in the Mayo Tsanaga River basin be no higher than 0.7 mg/litre, less than half the global standard upper limit of 1.5 mg/litre.

Since finding sustainable alternatives to the dwindling surface waters is a longer-term process, local people needed an immediate way to reduce fluoride levels in their well-water.

A local solution

In 2017, through WACDEP, the Global Water Partnership Cameroon (GWP Cameroon) was working with the country's government to integrate water-related priorities in the

National Climate Change Adaptation Plan. The case of the Mayo Tsanaga provided an opportunity to demonstrate the need to connect important high-level policy processes, such as that for national adaptation planning, with accurate on-ground vulnerability assessments to truly address climate risks faced by the most vulnerable and far flung, and therefore the most in need. GWP Cameroon joined the Ministry of Water Resources and Energy and the United Nations Children's Fund (UNICEF) Cameroon to identify sources of fluoride in groundwater, and to design, install, and test a pilot fluoride removal system in the Mayo Tsanaga region. Alongside reducing fluoride concentrations, this initiative also raised awareness of the health impacts of excess fluoride, having developed and tested sensitisation materials and methods and distributed these to villages in French and in two local languages. To train students to collect water samples, the initiative engaged partners at the Cameroon National Institute for Geological and Mining Research, the National Polytechnic School of the Sahel, and the National Advanced School of Public Works. To further negotiate design of the fluoride removal system, the initiative partnered with the Cameroon Centre for Environment and Development Studies, leading to an ingenious solution: household fluoride removal filters that used charcoal from locally-sourced cattle bones as the filtering agent. The research partnership constructed furnaces for locals to produce the charcoal.

Women as agents of change

Fluorosis, a gender analysis by GWP Cameroon found, could have a more significant psychosocial impact on girls and women. The analysis revealed that local people had limited information about the illness, and saw it as a hereditary malady transmitted by mothers, or as an ethnic disease. They did not link it to the groundwater, which the women and girls in the household were responsible for fetching. People generally frowned upon women and girls

with deteriorated dental health and oral disfigurement, while they overlooked the same in men and boys. The resulting social stigma faced by women and girls impacted their confidence, career choices, relationships, and social mobility. In light of these gender-related issues, the researchers that developed the filters worked closely with women in the region – not only to train the women to use the filters, but importantly, to get the women's ideas and advice on how best to introduce the filters and the knowledge of fluorosis into their communities. Paying attention to gender dimensions of the problem also helped to draw in more partners such as government health workers, municipal officials, and local non-governmental organisations, broadening both understanding and uptake of knowledge.

More resilient communities

Local villages in northern Cameroon are now aware of the source of fluorosis, and of practical interventions needed to protect people from its negative effects. In addition to the transfer of knowledge and technical skills to local people, the government now has new evidence for the gendered dimension of its psychosocial impacts, and is aware of the need for gender-disaggregated data in managing water – learning that is of potential use in the wider Lake Chad basin, of which the Mayo Tsanaga region is a part.

Linking the impacts of climate change to the disfigured teeth of a young girl translates a complex global issue to the human level. Interpreting climate change at this

Local villages in northern Cameroon are now aware of the source of fluorosis and of practical steps needed to protect people from its negative effects.



level, and enabling formulation of appropriate practical responses that can effectively be scaled up to reach vulnerable populations, can only take place when policy frameworks are working. It is in this critical space of enabling policy frameworks that WACDEP brokers links between national commitments to addressing climate change with empowerment and action on the ground.

2

Protecting fields and forests in Uganda

The Global Water Partnership Eastern Africa, through WACDEP, helped Uganda access US\$7.75 million in climate finance for an integrated catchment management programme that addresses land and ecosystem degradation while improving the livelihoods and resilience of smallholder farmers.

A vulnerable geography

Rain that falls within a region is naturally caught and distributed by rivers, streams, and other watercourses, with all the water ultimately running off to a single outlet. The geographic area that contributes to this process is called a catchment, and integrated catchment management aims to manage all components of the hydrological cycle that operate there, such as evaporation, precipitation, runoff, and infiltration. This also includes human activities like farming, construction, and forestry that have an impact on these components. The scale of catchment management has to be large enough to capture all interacting elements, but limited to ensure that people who live in the area can easily relate to what happens there.

Integrated catchment management has become accepted as the best way to manage water resources sustainably because the approach considers the most important factors – hydrology, climate, socio-economic activity, ecosystems, governance, and administration – and encourages public participation and transparency in

decision-making. The approach also makes it easier to plan for the complex effects of climate change.

Uganda's Maziba, Aswa, and Awoja catchments are home to some of the most vulnerable people in the country, many of them small-scale farmers or herders in the regions' highlands, wetlands, and savannas. The three catchment areas characterise a spectrum of livelihoods and states of catchment health, ranging from densely populated high slopes and degraded areas dominated by crop farming to semi-arid mixed agriculture. Use of the land and water in these catchments has intensified over the past 50 years, with cultivated fields climbing to the top of mountains and creeping to the edges of rivers and lakes.

People have cut many trees to make charcoal for cooking. When the rains come there is little vegetation to hold the water, so fields and buildings are flooded, and life-threatening landslides bring rivers of mud and debris to settlements. Rivers and streams become clouded with sediment that makes the water unusable and eventually leads to more flooding. Increasingly erratic rainfall is bringing drought episodes to this land of formerly plentiful

rivers and lakes, while the melting of mountain ice caps has increased flooding and threatens reduction of the water stored long-term as ice.

Protecting fields and forests

WACDEP's assessment of priority climate and water issues in eastern Africa identified these conditions in Uganda's major catchments as needing urgent attention. WACDEP looked for a partner that could work with Uganda's Ministry of Water and Environment to apply an integrated catchment management approach to the regions' problems. The right partner was found in the Sahara and Sahel Observatory (OSS), an accredited climate finance broker for both the Green Climate Fund and the Adaptation Fund. The Global Water Partnership Eastern Africa (GWP-EAF), working with OSS, supported Uganda's lead ministry in preparing an integrated catchment management project proposal that was compatible with community needs.

In 2017, a four-year programme, *Enhancing Resilience of Communities to Climate Change through Catchment Based Integrated Management of Water and Related Resources in Uganda* (EURECCCA), was launched. Its support by the Adaptation Fund of US\$7.75 million was a first for Uganda.²

The design of the EURECCCA programme has built on Uganda's existing framework for integrated water resources management; it is integrating climate change adaptation in the catchment management plans for Awoja and Maziba, and developing a similar plan for Aswa that addresses linkages between land use and water resources. The programme is designed to facilitate engagement among the Ministry of Water and Environment, Ministry of Agriculture Animal Industry and Fisheries, local

government staff, catchment management committees, communities, civil society organisations, and the private sector, all to increase resilience of ecosystems, agricultural land, and community livelihoods to climate change.

Building the capacity of extension services and institutions at local catchment levels, water management zones levels, and national levels to better support local stakeholders is a key goal of the programme. In each of the three selected catchments, particularly vulnerable hotspots have been identified – in the highlands, the midlands, and the lowlands – to ensure that the programme addresses the need for catchment management at an appropriate scale.

Learning for the land

Reforestation of the regions' slopes, restoring ecosystem services, and taking up new livelihood options require intensive learning. Therefore, the GWP-EAF team not only provide strategic guidance through the project steering committee but also support capacity building and knowledge management, especially focusing on rural extension services. This work has included a capacity needs assessment, delivery of training modules, training of trainers, and documentation of good practices and lessons learned.

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The programme is leading to better control of floods and landslides across agricultural landscapes and to diversification of livelihood strategies. It is also building capacities of extension services and institutions at different levels, including sub-catchment, catchment, water management zone, and national. While the end goal is to support local communities and manage knowledge, it has become clear along the way that building the capacity of government agricultural extension services is leading to better support of local stakeholders.

From problem identification to programme implementation, GWP-EAF, through WACDEP, has been able to ensure that Uganda is supported in its drive to address climate change using stakeholder-driven, integrated catchment-based planning, development, and management of water and related resources.

² Source: <https://www.adaptation-fund.org/project/enhancing-resilience-of-communities-to-climate-change-through-catchment-based-integrated-management-of-water-and-related-resources-in-uganda/>

3

Mobilising communities to manage floods in north-western Thailand

To encourage development of community-based flood disaster management in northern Thailand, the Global Water Partnership Thailand, through WACDEP, mobilised local governments to share knowledge with communities. The region now has a flood early warning system that helps communities to plan ahead and protect themselves.

More trade, more floods

Surrounded by waterfalls, hot springs, and freshwater creeks, and living with rains that last eight months each year, the people in Thailand's lively border town of Mae Sot understand water. Three main creeks flow through the municipality's valley basin before converging to form the Moei River, which marks the border between Thailand and Myanmar. These waterways have always naturally flooded, but as the town has grown, the removal of riverine trees and paving of roads and parking lots areas has altered water flow courses and decreased seepage into the ground. On top of this, climate change has increased the intensity of rainfall in the region. The result is magnified flood risk, both for businesses and for the informal riverine settlements of the region's many displaced ethnic minorities. Mae Sot's system for warning people about oncoming floods has not kept up with this growing threat.

Under the established flood warning practice, Thailand's Royal Irrigation Department posts official information about anticipated weather conditions and water levels on

bulletin boards in local government offices. People have to go to district or municipal offices to check for warnings, and in Mae Sot, a border town of busy traders, this system is no longer working.

Mae Sot suffered its worst flood in 2012, when the Mae Sot Reservoir overflowed and, without warning, flooded more than 10 villages along the banks of the Moei River. The Mae Sot municipality was declared an emergency zone. A €2 million concrete levee that had been constructed by the municipality without consulting the community appeared to worsen the flooding. This lowered local communities' trust in the involved government agencies, including the provincial-level Department of Disaster Prevention and Mitigation, which is legally responsible for developing the country's disaster warning systems.

A community-driven solution

In 2014, Global Water Partnership Thailand (GWP Thailand), supported by WACDEP, adopted a community-

based approach to bridge the gaps between the remits of the state authorities and Mae Sot's 20 local communities. The aim was to implement a sustainable community-based flood management solution and, ultimately, to mitigate flood risk in the town of Mae Sot.

Recognising that there was a lack of knowledge about the causes of flooding in the region, GWP Thailand began its work in Mae Sot by leading programmes to educate local groups about the basin's natural water sources, flows, and interconnected subsystem ecology. A WACDEP project team guided site visits, led surveys of waterways using a participatory geographic information system, and plotted risk and safe areas on a map. This work consolidated local understanding of different sources of flooding. GWP Thailand also assisted the community in transforming the risk mapping results into risk reduction plans.

Boundary work

GWP Thailand facilitated discussions between community members and Royal Irrigation Department authorities and also supported training simulations to promote integration and horizontal communication across key local and government actors. The programme worked with Mae Sot's civic group to encourage the participation of and collaboration among local communities, line agencies, businesses, and academic institutions. This helped establish a network of local people committed to improving Mae Sot's flood management strategies. The Royal Irrigation Department got involved, and the project received technical support from the Geo-Informatics and Space Technology Agency of Chiang Mai University and from the Water Resources Research Centre of Naresuan University.

The idea to use LINE, a free, mobile phone-based communication application, as the platform for the flood early warning system surfaced during this collaboration.

The application provided a means of rapidly sharing community observations and enhancing real-time communication throughout the basin. Drawing on their increased awareness of flood sources and their growing capacity to assess risk, local people began to routinely monitor water levels and exchange this information via LINE, allowing for appropriate lead time to implement flood mitigation plans and preparation strategies. The shared information was also disseminated across other channels, such as community radio stations, to reach the wider public.

A meeting of minds

The Department of Disaster Prevention and Mitigation is mandated to carry out annual drills for flood disaster preparation and management in each province of Thailand. In 2014, motivated by WACDEP's focus on local engagement, the department decided to have the Mae Sot community organise the drill in its province. All government agencies, the municipality, and sub-district administration were invited. The departmental head from the provincial office joined in. The importance of tailoring to local context was highlighted, as capacities and needs of the communities for flood disaster management were included in the drill. On the same day, the Thai Public Broadcasting Service shared the story of Mae Sot communities' preparedness for flood disaster, live and nationwide.

Shared knowledge, inclusive planning

This cooperation marked an official turn towards community-based flood disaster management in Mae Sot. National authorities agreed to provide regularly updated information to the flood early warning system platform, especially during high-risk periods.

GWP Thailand's facilitation of discussions between community members and government authorities transformed how water policy is implemented in Mae Sot. Never again would the municipality repeat a project such as the €2 million concrete levee that neglected local inputs on how Mae Sot's water subsystems operate, leading in turn to exacerbated flooding. Since then, the municipality has engaged community members in reviews of water management project proposals, calling on their local knowledge to help shape flood mitigation strategies.

Mae Sot's flood early warning system benefits a population of at least 200,000 people. Through WACDEP, GWP Thailand opened up multidirectional flows of knowledge among the region's water stakeholders, ensuring that science at the national and provincial levels will be available to local communities and that local people's knowledge will drive the design of municipal initiatives.

GWP Thailand's facilitation of discussions between community members and government authorities transformed how water policy is implemented in Mae Sot.

4

Coordinating action for climate-resilient water projects in Mauritania

Supported by WACDEP, Mauritania's water sector has taken steps to improve its resilience: developing an action plan for the monitoring and evaluation of its water resources and WASH services, and mobilising financial resources to implement this action plan.

The need for clean water

In the dry rural settlements of the north-western Islamic Republic of Mauritania, women and children walk long distances to fetch water from muddy wells, consuming the hard-won liquid sparingly between drinking and cooking. Washing hands after visiting the bush or latrine is a luxury, and boiling the dirty water uses precious fuel. Mothers know that children could fall ill, but often they have little choice.

Over half the land in Mauritania is sparsely populated desert. Its gross domestic product is one of the lowest in Africa, despite plentiful natural resources such as iron ore, gold, and natural gas. Lacking storage or irrigation infrastructure, agriculture is vulnerable to the changing climate. In recent years, increasingly extreme and frequent droughts have driven traditional nomads to migrate from rural areas to urban centres. Inequalities in access to water, sanitation, and hygiene (WASH) services between urban and rural populations, and between rich and poor, have grown. As a major social consequence, diarrheal diseases are the second-highest cause of infant death in the country.

How much is available, and where?

The government does not have the right data to plan appropriate interventions for storing water, treating water, transferring and supplying water to populations and farmers, and providing toilets, drainage, and wastewater management. Addressing data deficiencies is a first step to answering the kinds of questions that stand in the way of action:

What water resources are available in each region of Mauritania? How large are the water withdrawals, and what are the sources? What are the water needs per sector (agriculture, livestock, industry, domestic use) and by region? How many people don't have access to safe drinking water and to latrines? How far are the nearest standpipes from areas of resettlement?

A collaborative response

Aware of the need to help build Mauritania's capacity to answer questions like these, in 2017 the Global Water Partnership Mediterranean (GWP-MED), through WACDEP

and supported by the country's National Water Resources Centre, began to develop an action plan for a monitoring and evaluation (M&E) system that would provide the needed data. This would be built for the context of climate change, when precipitation patterns are changing and droughts are becoming more frequent and extreme. GWP-MED had help in the form of a system of indicators being developed by the African Ministers' Council on Water (AMCOW) in response to the UN Sustainable Development Goal for water.

Meanwhile, UNICEF had been supporting the Planning, Monitoring, and Cooperation Department at the national Ministry of Hydraulics and Sanitation to elaborate an action plan for an M&E system for WASH. The WACDEP project team recognised an opportunity and approached UNICEF with a suggestion to join forces and merge the two action plans. Working together, the partners produced a 10-year M&E Action Plan covering the years 2018–2027, including costs of outlined activities. The M&E Action Plan included investments needed for both infrastructure in the form of hardware and measuring devices, and for steps to improve the governance framework that would reinforce stakeholders' capacity to maintain the system.

A national workshop in February 2018 brought together key stakeholders representing the different technical departments of the Ministry of Hydraulics and Sanitation, water utilities, the Ministry of Agriculture, and the Ministry of Environment and validated the plan.

Finding resources

Finding financial resources to implement the M&E Action Plan was the next step. In April 2018, Mauritania joined its sister states in the Arab Maghreb Union and Group of Five for the Sahel at a regional conference organised through WACDEP, to consolidate the countries' knowledge of approaches for assessing impacts and vulnerabilities

to climate change. There, the participants prioritised adaptation actions, shared experiences and good practices in the design and implementation of co-benefits from water projects, and accessed information about funding opportunities to support implementation of the countries' Nationally Determined Contributions and the Sustainable Development Goals.

Discussions during the conference guided Mauritania to approach the Green Climate Fund (GCF) to support the implementation of the M&E Action Plan; an adaptive water supply project in the priority Adrar area in the north of Mauritania was determined to be the first potential project. The Ministry of Hydraulics and Sanitation, with the support of GWP-MED, began preparing a funding request to submit to the GCF in 2019.

Duplication of effort in development aid projects wastes resources, while complementary and collaborative activities accelerate development. In the case of Mauritania's national water and sanitation policy and planning, GWP-MED's experience in mobilising partnerships enabled the WACDEP initiative to take a coordinated approach that strengthened the argument for an integrated M&E system and for an improved process to put it in place.

From knowledge to services

Mauritania's traditional partners have been successfully mobilised to contribute to implementation of the M&E Action Plan, resulting, so far, in UNICEF support for WASH service monitoring in two pilot areas in the south of Mauritania and in the World Bank providing US\$3.5 million for water resources monitoring.

Furthermore, Mauritania's Country Programme submission to the GCF included the water adaptation project in Adrar as a priority. The preparation of the funding request is



advancing. The influence of the country's M&E Action Plan, meanwhile, has already shifted priorities for the country's decision-makers; it has opened doors to investing in effective management of Mauritania's water resources and in the health of its people.

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5

Investing in transboundary waters to build resilience to climate change in the Orange-Senqu basin

A key WACDEP programme supported the Orange-Senqu River Commission in putting its integrated water resources management plan to work through a climate-resilient water resources investment strategy. This built new capacity for the regional body to manage large and complex development projects that share water security benefits across national boundaries.

Planning for a busy basin

All major river systems of Southern Africa are shared by more than one country. Crossing borders, and sometimes changing names, their waters have to meet the needs of users in many different locations. Member states of the Southern African Development Community (SADC) have been working together for more than 20 years to learn how to jointly manage these rivers to support economic development while preserving the ecosystem services that they provide to people. Carefully negotiated integrated water resources management (IWRM) plans now guide these efforts, with transboundary river basin organisations in place to advise national governments on their implementation.

The next step after adoption of an IWRM plan is to look at how to put its recommendations into practice. Building and maintaining water infrastructure such as storage, conveyance, and treatment systems is costly. What are

the priorities? Who will pay, and for what? Because water affects so many different human activities, how can the costs and benefits of managing, developing, and using it be fairly shared?

Funding for the future

One of WACDEP's key programme areas focused on these questions, supporting governing institutions to prepare investment and financing strategies and plans for water security, while building in resilience to climate change. A big opportunity to do this arrived in 2014, when the Orange-Senqu River Commission (ORASECOM) completed its IWRM plan. Implementing joint water management for this large and economically active basin, which serves 19 million people in Lesotho, South Africa, Botswana, and Namibia, was urgent: variability in rainfall and hydrological flow patterns was high and increasing. As a partner that had been

involved in supporting ORASECOM's programmes since the establishment of the Commission, the Global Water Partnership Southern Africa (GWP-SAF), through WACDEP, supported ORASECOM to prepare for the development of a climate-resilient water resources investment strategy. The aim of the investment strategy was to prioritise actions that would enhance resilience in the Orange-Senqu River basin system.

GWP-SAF helped to identify funding opportunities to pitch the idea of implementing an investment planning process in the basin to the African Water Facility. Supported by GWP-SAF, ORASECOM successfully argued the case for funding assistance through a jointly developed concept note. Support was also received through the New Partnership for Africa's Development Infrastructure Project Preparation Facility (NEPAD-IPPF) to develop the *Climate Resilient Water Resources Investment Strategy and Multipurpose Project Preparation for the Orange-Senqu River Basin*. With confidence and trust built, more partners were drawn in, including the Climate Resilient Infrastructure Development Facility and the Stockholm International Water Institute.

Through an agreed strategy, the partners would aim to promote sustainable socio-economic growth in the basin riparian countries through climate-resilient water resources development, with an emphasis on multipurpose projects for both rural and urban areas.

Ready to roll

The first need was to identify investment goals and priorities, the appropriate actions to achieve these goals, and their timelines, institutional arrangements, and financial feasibility. GWP-SAF supported ORASECOM in this process by engaging with stakeholders and working with the Commission's Technical Task Team to build capacity,

mobilise resources, and raise awareness of climate resilience and investment planning development.

An example priority project emerging from the investment strategy was a proposed water transfer from Lesotho's highlands to Botswana. This would involve priority transboundary work on investments in infrastructure, governance, and supporting information systems to enhance overall resilience in the basin.

From diplomacy to project planning

For the first time, ORASECOM was helping its riparian governments to prepare a transboundary project, reinforcing the principles of regional benefit sharing among the countries, and building new capacity to manage large and complex development work. Through WACDEP, ORASECOM had moved from providing knowledge about management of the basin towards influencing the way water storage and transfer schemes are prepared. These infrastructure developments stand to contribute considerably to the Orange-Senqu basin's adaptation to climate change.

The strategy would aim to promote sustainable socio-economic growth in the basin riparian countries through climate-resilient water resources development, with an emphasis on multipurpose projects for both rural and urban areas.



6

Planning inclusively for a better future in a Tunisian watershed

Through WACDEP, the Global Water Partnership Mediterranean worked in Tunisia to demonstrate the value of including a range of stakeholders in all stages of North African watershed management planning. A combination of local and broader sources of knowledge produced relevant and trusted recommendations that were incorporated in Tunisia's national development planning process.

An eroded future

In Tunisia's mountainous and forested north, rivers fill rarely yet ferociously, scoring the hillsides as they send their waters down to the sea. The water carries away the topsoils that sustain farmers' crops and livestock grazing. Then follow months of drought. In the past, farmers would place riprap – or contour banks – to capture and store some of this water and avoid erosion, but that sufficed only for small-scale agriculture. Modern times, with increased commercial production of irrigated export crops such as wheat and vegetables, face more water shortages and have to address increased pollution of existing water sources from fertilisers. Climate change is adding to these challenges.

The Douimis River watershed, with flows that reach Lake Ichkeul, Tunisia's national wetland park classified as a Ramsar Site, has become ecologically fragile due to advanced erosion. At least 46 percent of agricultural land in the area is severely eroded. The region's farmers talk about the exacerbation of these forms of degradation due

to climate change, referencing increasing temperatures, decreasing rainfall, and wildfires that together create conditions of hardship:

“Now there isn't enough rain, fires have become common, droughts frequently causing a lot more work for us. We are always thirsty. We don't have roads, which makes collecting water even more difficult. We have a well, but engineers have come to tell us that the water is not good to drink. So we had to go 15 kilometres – I went myself only to find that the source was dry. We are going to stay thirsty for the next 10 days.”

(Douimis Basin farmer)

Tunisia's national government, which combines the responsibility for water resources management with agriculture, has recognised the region as especially vulnerable and as a priority intervention area for water and soil conservation projects.

Combining knowledge

In 2010, the Global Water Partnership Mediterranean (GWP-MED) initiated a demonstration project through WACDEP to support the Tunisian government's planning for soil and water conservation in the region. This brought together a cross-section of stakeholders – scientists, farmers, local communities, and national and regional government representatives – to learn about the conditions and potential of the region, and to begin working together to help decide how best to create a sustainable future there.

GWP-MED applied its understanding of the need to involve different types and levels of stakeholders from the beginning. It has established a close collaboration with the Tunisian General Department for Planning and Conservation of Agricultural Lands at the national level, and the regional Department for Agriculture Development of Bizerte at the local level. The National Meteorological Institute and the National Research Institute for Rural Water Engineering and Forestry, as national reference institutions, brought science to the project in the form of climate change models and rural development research. Facilitation groups were formed to bring the voices of farmers and community members to meetings and workshops.

The project explained climate science in language that could be understood by all; through vulnerability and risk maps, the project visualised the potential impacts and made the urgency to act jointly easy to comprehend.

Understanding relationships

While availability and quality of water was naturally an important focus for discussions, the WACDEP approach recognised the need to consider and discuss critical, related socio-economic issues such as land tenure, education, culture, and transport. Five thematic planning groups tasked

the stakeholders to look at issues related to infrastructure, natural resources conservation, land tenure, human development, shared equipment, and productive sectors, coming up with practical solutions that could be included in a planning document. The groups also discussed how the government could budget for priority issues.

Building a chain of influence

Working together to deal with local problems, the stakeholders produced highly relevant recommendations that were integrated into Tunisia's Five Year Development Plan 2016–2020.

Enthusiastic local participation and contributions to the Douimis regional planning process created a model for Tunisia to use in other management plans. They also created new connections among those who participated. The process made clear that a combination of lived experience, scientific evidence, and understanding of management needs is the basis for a strong and locally relevant response to climate change.



The project explained climate science in language that could be understood by all; through vulnerability and risk maps, the project visualised the potential impacts and made the urgency to act jointly easy to comprehend.

7

Preparing for regional drought in Slovakia

Through a partnership with the World Meteorological Organization, the Global Water Partnership Central and Eastern Europe assisted in mobilising Central Europe's first drought action plan – creating a decision-support system for those with livelihoods on the front line of climate change.

A shifting climate

Slovakia, a country of mountains, lakes, dense forests, and the fertile lowlands of the Danube River plain, would appear to be one of the last places to be concerned about climate change. Yet in the early 2000s, a series of hotter than normal summers raised an alarm among the country's farmers and weather monitoring experts. Rain was still falling, but the hot weather was causing the water to evaporate quickly. This left crops dry and reservoirs and groundwater emptier. Drought had come to this normally cool, green country.

And the problem was regional: the whole of the transboundary Danube River basin was affected by the drying conditions. The impact was felt across sectors, from the productivity of vineyards to the movement of shipping barges and tourists' river cruises.

Changing thinking

In 2013, working with the World Meteorological Organization (WMO), the Global Water Partnership

Central and Eastern Europe (GWP-CEE) leveraged WACDEP funding to establish the Integrated Drought Management Programme in Central and Eastern Europe (IDMP CEE). Its aim was to shift the focus of governments from reactive to proactive drought management. This meant convincing management agencies to move from clearing up the one-off results of forest fires and compensating farmers for a season of lost crops, to learning how to know *when* – not if – drought was coming, and thinking about how to prepare for and reduce its effects.

New tools

Understanding that drought occurs in stages that sometimes go unnoticed, the IDMP CEE decided that early warning systems were needed. Additional funding from the EU Interreg Danube Programme and DriDanube project made it possible to set up a platform to collect and share broadly the region's weather, soil, crop, and forestry data in a public online space. IDMP CEE began recruiting a network of observer-reporters among the farmers, fruit growers, vineyard keepers, and foresters of the region.

Called [Drought Watch](#), the system makes use of a set of earth observation data from a range of operational remote sensing satellites, data from meteorological stations, and drought impact reports to generate interactive maps of current conditions, providing up-to-date information that helps users of land and water to plan ahead.

Providing reliable information is only part of the solution to dealing with climate change. Governments also need to have informed policy in place to ensure a strong support system for managing risk. Drought management plans and policies help to organise the work of institutions and existing legislation to allow cooperation and reaction during the different stages of drought.

Setting an example

Slovakia, an active partner in this programme, was selected by the IDMP CEE to provide a case study on developing drought risk management guidelines that could be used by the entire region, as all countries would create their own risk management plans. In 2014, GWP-CEE produced a report on the case study that provided detailed analysis of conditions in Slovakia and suggested drought indicators and management structures. A step-by-step approach to applying drought management guidelines was a result of this process. Convincing in the level of detail provided and in the relevance of its recommendations, the report – and the resulting guidelines – were taken up by Slovakia’s government. In partnership with the IDMP CEE, in 2017, an inter-ministerial working group that included stakeholders from relevant sectors was tasked to prepare the region’s first country-level [Drought Action Plan](#).

The plan’s designers looked closely at the preventive, operational, and crisis measures needed. Among these measures were identifying drought-resistant tree species, surveying groundwater, designing new irrigation canals,



expanding the monitoring network, and developing triage processes for disaster conditions. Having a cross-section of stakeholders engaged in developing the plan meant that the finished product was well understood by those who would be using it.

Norbert Kurilla, Slovak State Secretary and Deputy Minister for Environment and Climate Change, reported:

“Drought is a phenomenon which we are battling more and more often. We are very happy to have developed the Slovak Drought Action Plan, in the frame of which we plan to invest €140 million into the approved measures.”

In 2018, the action plan was launched to regional acclaim. Focused on anticipation, prevention, and action, the plan has the potential to lead the way in mitigating the effects of Europe’s new climate.

Their aim was to shift the focus of governments from reactive to proactive drought management.

8

Stimulating investment in climate-proof infrastructure in Mozambique

Through WACDEP, the Global Water Partnership Southern Africa was able to bring together Mozambican government planners from across sectors to work together to apply climate-resilient project preparation and investment planning to the problem of urban flood management. This resulted in successful funding of a feasibility study and master plan for vulnerable communities.

Flooded cities

Africa's low-lying coastal cities are among the first to experience the effects of climate change – in the form of wild storms that come in from the sea, flooding streets and buildings, and drowning ageing sewage and drainage systems. Since these urban areas are also frequently located on rivers, another threat comes from seasonal flood waters driven by heavy rains upstream. Mozambique's Indian Ocean cities are among these vulnerable urban areas, but the damage caused by tropical storms and flooding rivers reaches even inland villages and towns. Mozambique ranks third among African countries for being most exposed to risks from multiple weather-related hazards. With rapidly growing populations to serve, and tough competition for government funding, water managers in the country's urban areas face considerable challenges.

Rebuilding for resilience

Recognising these issues, GWP Southern Africa (GWP-SAF), through WACDEP and in partnership with the Mozambican Directorate of Water Resources Management and the Water and Sanitation Infrastructure Administration, identified urban flood water management as a critical challenge to development. Working together, planners from different government departments from water- and climate-related sectors developed a cross-sectoral project responding to floods in urban areas. They proposed an integrated urban water management (IUWM) approach to address poor drainage, sanitation, and water supply in vulnerable towns in Mozambique.

IUWM is an approach that promotes a circular economy – a system aimed at eliminating waste and promoting continual reuse of resources – in urban areas. Cities and towns using this approach adjust certain practices of planning and effective management, while recognising

their local socio-economic context. This approach applies the principles of reusing, reducing, and recycling. Sanitation and wastewater management are seen as business opportunities that can generate income and employment, have a positive impact on the environment, and contribute improvements to the quality of life. Two towns in Mozambique provided WACDEP with the opportunity to apply these principles.

The right people

In response to the capacity needs and gaps identified in water security and climate-resilient development planning, WACDEP facilitated training of government officials. The capacity needs assessment engaged the right people: planners and technical officers, and senior policy-makers from a cross-section of the country's water sector institutions. Building on the principles of Mozambique's National Climate Change Response Strategy, these officials learned in a series of training workshops about the practicalities of climate-resilient project preparation and investment planning. They gained a new understanding of the needs of project investors, financing mechanisms, and of ways to include adaptation to changing climate conditions in water projects. The participants also received support and coaching from water profession mentors to make sure that what they were learning could be aligned to existing Mozambican institutional knowledge and practice.

Having absorbed the theory through workshops, coaching, and accredited training modules from the United Nations Institute for Training and Research, the participants began to apply their learning to real life by producing a concept note for an urban flood management project.

Life-saving solutions

Choosing an urban setting for the project was not difficult. Child mortality in the towns of Chimoio and Inhambane was higher than in many other parts of the country, and this could be linked to the deteriorating drainage systems and poor toilet facilities in both municipalities. Only the most central parts of town had some solid waste collection. Floodwaters were creating health crises.

The group of newly trained planners identified institutional roles, mandates, and possible project partners and promoters. They examined options for, and barriers to, project implementation, and they discussed possible sources of funding. The project, while focused on flood management, had to also address the inseparable problems of sanitation and solid waste management; the planners made these linkages clear. Finally, they submitted their completed concept note for an IUWM feasibility study, detailed design, and priority infrastructure to the African Water Facility. But the concept note was not the only outcome of this concentrated work: the participants returned to their sector posts with a whole network of new colleagues from other sectors, and with shared knowledge and experience.

Learning through working together

In 2016, the African Water Facility announced an award of €2.1 million to carry out the work the concept note had proposed: *Development of an IUWM Masterplan and Feasibility Study for Urban Sanitation, Drainage and Solid Waste Management in Chimoio and Inhambane in Mozambique*. Putting GWP-SAF's expertise in capacity development and stakeholder engagement to good use had meant that participants in the capacity-building process could learn to work together and achieve sustainable outcomes by promoting integrated approaches.



The project, while focused on flood management, had to also address the inseparable problems of sanitation and solid waste management; the planners made these linkages clear.

9

Fighting drought with rainwater harvesting in Central America

WACDEP provided an opportunity to engage women in Central American small-producer communities with technology that could take advantage of seasonal and geographic variation in rainfall through better water storage. Demonstrating how resilience to climate change can be developed led to replication and adaptation of the technology across the region.

A long hungry season

Central America is already affected by climate change, its effects reflected in the two extremes of floods and drought. These, combined with rapid degradation of the natural environment, uncoordinated land use planning, institutional weaknesses, and lack of adequate infrastructure, make it one of the most vulnerable regions in the world in the face of climatic extremes. The dry corridor area of El Salvador and Honduras, where even a slight variation in rainfall can leave people hungry for months, is an example of these challenges.

Between May and July 2014, Central America suffered the effects of a drought associated with the El Niño–Southern Oscillation. This caused irregular rainfall that prolonged the *canícula* – the dry period in the middle of the rainy season – for up to 45 days, leading to shortfalls for agriculture, hydroelectric power, and drinking water supply in Honduras. A national emergency was declared, and water rationing became the rule. People knew that when the rains came again, the water should not be wasted, but they needed a way to prevent its loss.

Catching water

In Honduras, the drought affected small-producer families in 64 municipalities across the country's dry corridor. The southern portion of the Honduran dry corridor is where the least number of rainy days and the highest temperatures are recorded, and at the same time the influence of the sea brings the most intense rainfall compared to the rest of the country. In 2015, the Global Water Partnership Central America (GWP-CAM) joined efforts with CARE and GWP-CAM's partner Mexichem-Amanco to replicate the use of a technological solution for water storage in communities that were hit particularly hard by water scarcity and reduced access to water.

The solution proposed was a rainwater harvesting system using geomembrane bags – flexible and foldable containers that could be easily transported and installed outside the small houses in the region's rural communities. The bags could be attached to the downpipes of house roof gutters, and expanded to hold up to 25,000 litres of rainwater each. Use of the bags, and their repair, could be easily

understood, and the cost was less than that of other technologies used for rainwater harvesting.

Technology is for women

Pilot installations in Honduras worked well. In 2016, GWP-CAM, Mexichem-Amanco, CARE, and the *Zamorano* Pan-American Agricultural School joined forces through WACDEP to disseminate the technology at the regional level and to build capacity in its use. Recognising the importance of engaging women in water management improvements, they used a gender-based approach in a Central American workshop on the principles of integrated water resources management to promote women's use of the new technology.

The women who attended the regional training workshop were mostly from rural communities and linked to water management associations. Practical sessions included setting up a demonstration system in La Ciénaga, a community near the Zamorano campus. This complemented another WACDEP pilot project aimed at improving community bio-intensive garden yields.

One of the women who participated in the workshop was the mayor of the municipality of Jerusalén, El Salvador, and a member of the Jiboa Valley Women's Network. She requested that the workshop be replicated in El Salvador. The partnership expanded there to include the Association of Municipalities of the Jiboa Valley, the National Foundation for Development, and Mexichem El Salvador, and it succeeded in transferring the technology and setting up a demonstration system in the municipality of Jerusalén. WACDEP was able to mobilise further support for this work from the Austrian Government, and to

expand the work to other communities in the Jiboa Valley, with the support of local governments.

Good ideas spread

The technology was successfully replicated across countries and adapted to household, community, school, and irrigation uses. The bags, including a variation of the original concept introduced by GWP-CAM to adapt it to the Salvadoran context, were widely accepted at the community level. Local government involvement proved to be valuable in replicating the initiative in other municipalities and regions.

With the application of investment frameworks, community-based water management, engagement of civil society, and promotion of social change, GWP-CAM was able to take a climate change solution to scale through WACDEP, changing lives at the local level and stimulating good governance practice.

In the words of participant Marta Alicia Rivas:

“Before the project families had to walk half an hour or pay US\$1 per barrel of water that the providers bring to the community. The time we dedicated to fetch water and the effort to go to the river – that time we will now dedicate to our family, and to the work that we as women develop in our community.”³



Recognising the importance of engaging women in water management improvements, they used a gender-based approach in a Central American workshop on the principles of integrated water resources management to promote women's use of the new technology.

³ Funde El Salvador interviews, <http://facebook.com/fundeorg/videos/264585087809619>

10

Shaping business as unusual: Zimbabwe's climate change adaptation strategy

WACDEP facilitated an intensive country-wide consultative process that ensured inclusion of stakeholder concerns and knowledge in Zimbabwe's national climate change adaptation planning process. Basing the consultation process on watersheds reinforced the importance of water in the country's climate future.

A different kind of growth

Zimbabwe is a country of farmers. For many years, its maize, wheat, tobacco, and vegetables catered for much of the Southern African region, and its smallholder growers raised families on income-generating products like groundnuts, milk and meat, and vegetables. Political and economic instability in the early 2000s then led to difficulties, and, while most of the population was distracted, changes in climate began to affect the country's agricultural productivity.

The signs were there in the form of lower water levels in Lake Kariba in the north, with smaller catches in the nets of fishers, and less water to turn the turbines of the Kariba Dam that generates electricity for much of the country. The rains that support crops and livestock have become erratic throughout Zimbabwe, alongside a general increase in mean annual temperature. Large cyclones have brought devastating floods in between the droughts, destroying livestock, homes, and the rich soils that nurture Zimbabwe's crops. Increasing intensity and frequency of

extreme events, together with rising unemployment, a shrinking economy, and the need to import staple foods, has meant more hardships for Zimbabwean people.

Climate change poses a major threat to sustainable development at all levels. It is becoming clear that Zimbabwe needs to adapt to the new conditions, and quickly.

Varied and valued experience

In 2012, a process to respond to climate challenges was initiated by the Government of Zimbabwe through the Department of Climate Change. This centred on the development of Zimbabwe's National Climate Change Response Strategy. The strategy process was supported by several cooperating partners mobilised by the Global Water Partnership Southern Africa (GWP-SAF) through WACDEP: the United Nations Development Programme, the Common Market for Eastern and Southern Africa, the United Nations Children's Fund, and researchers at the University of Zimbabwe. The process depended on coordination by

the Office of the President, with government ministries representing all the climate-related sectors.

The cross-sectoral engagement process ensured that sector-specific plans for natural systems, economic sectors, and physical and social infrastructure were included in the strategy. Options for Zimbabwe's climate change response, across the country's varied geographic regions, were made clear.

Water as an organising principle

Contributors to the process recognised that, in a country with a large rural population, adaptation to climate change was going to depend on the understanding and engagement of local people and local government. WACDEP mobilised stakeholders from the country's seven catchments and 47 sub-catchments in a series of meetings to discuss options for the national climate change response. As the statutory stakeholder institutions were empowered to manage water resources across Zimbabwe, representatives of the catchment authorities had much to say.

WACDEP's emphasis was on integrating water security into the Climate Change Response Strategy, and in doing this it drew on specific expertise and experience from the Ministry of Environment, Water and Climate and the Zimbabwe National Water Authority. The process to develop the strategy was based on intensive national consultation, wherein GWP-SAF ensured that water sector stakeholders participated and water-related issues were captured and addressed in the strategy. Importantly, WACDEP enabled stakeholders to set priorities for financial investments that would be required to address climate change impacts caused by increased water stress.

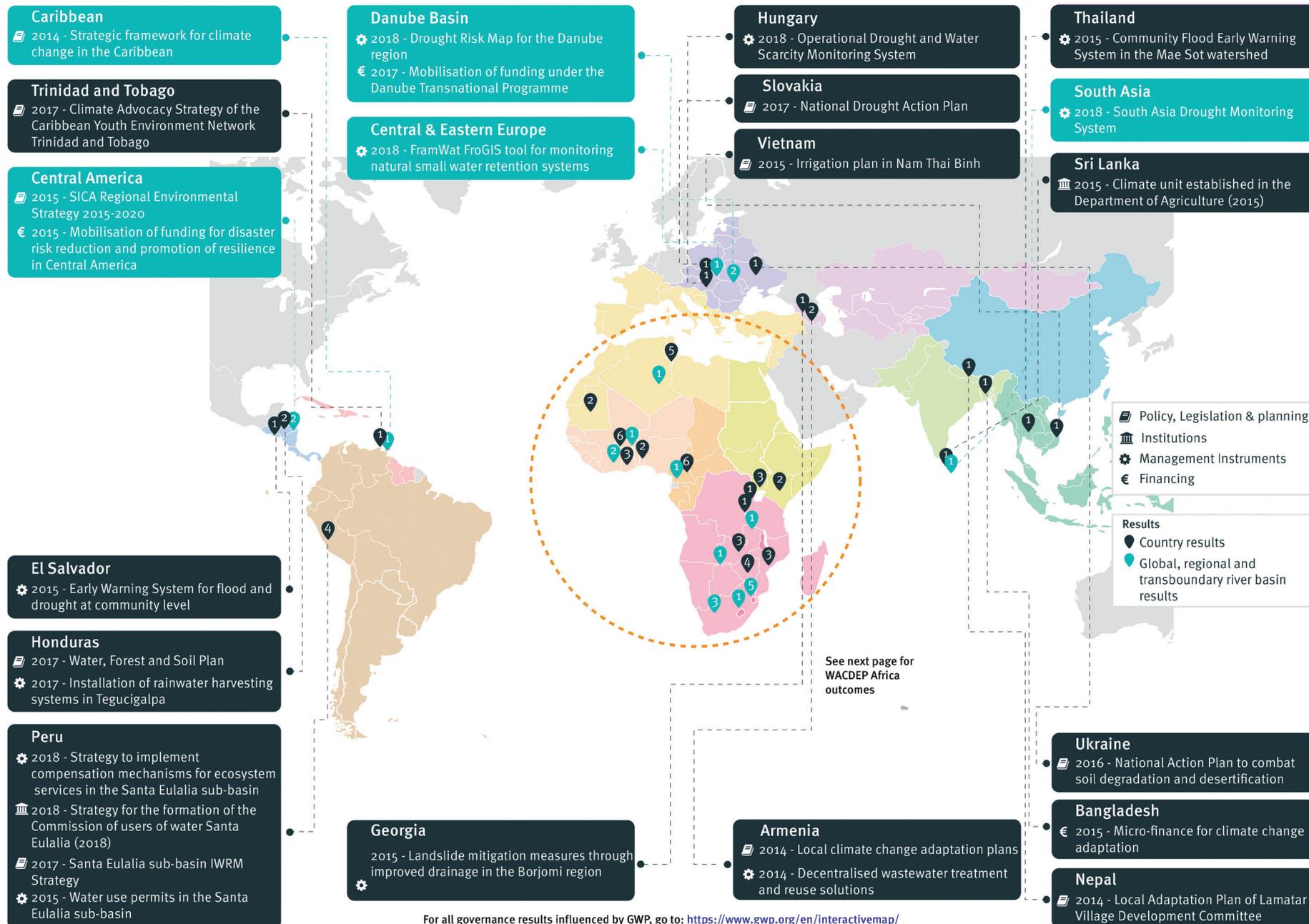


Prepared for change

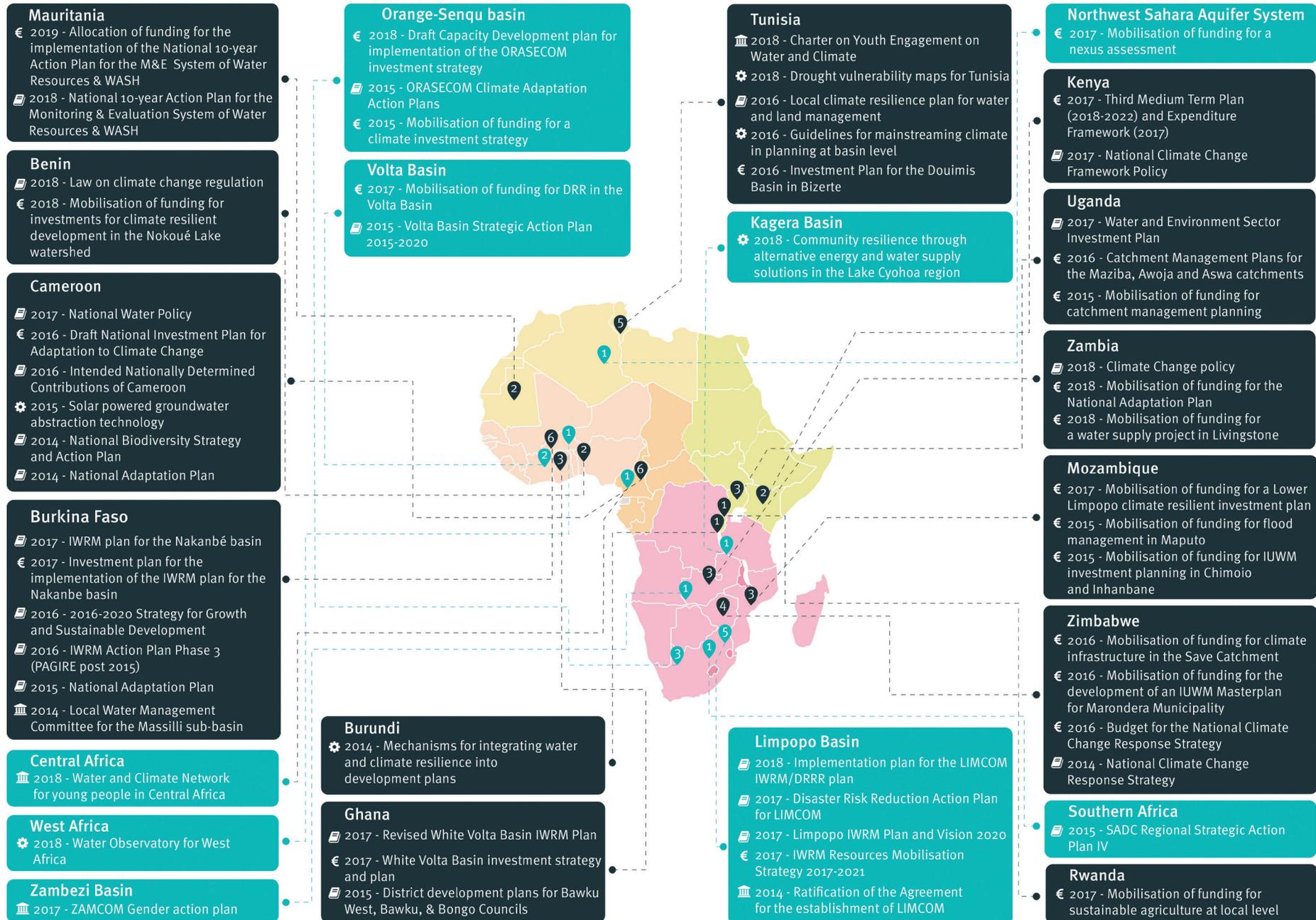
Zimbabwe's National Climate Change Response Strategy was officially adopted by the Ministry of Environment, Water and Climate in July 2014 at a multistakeholder meeting that brought together 62 participants from different ministries, partner organisations, and other relevant departments.

Zimbabweans now have a guide for learning to live with warmer temperatures, unreliable rainfall, increasing extremes of weather, and declining availability of water. The strategy has become the main instrument driving the Nationally Determined Contributions and national adaptation planning in Zimbabwe. The process led by WACDEP to strengthen water security has ensured that climate change impacts related to water are addressed.

Importantly, WACDEP enabled stakeholders to set priorities for financial investments that would be required to address climate change impacts caused by increased water stress.



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