ANNUAL REPORT

2021

COOPERATION IN INTERNATIONAL WATERS IN AFRICA

CIWA

THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP

ACKNOWLEDGEMENTS

This report was prepared by a CIWA team led by Noosha Tayebi and Christine Ochieng and consisting of Charles Gilman, Karen Schneider, Carine Durand, Jung Roxanne Weil, and Anna Kim. In addition, contributions were made by the following Bank staff and consultants: Victor Osei Kwadwo, Anders (Lars) Jagerskog, Anna Cestari, Angelica V. Ospina, Ellen Hagerman, Fook Chuan Eng, Francois Bertone, Yeli Mariam Sou, Habab Taifour, Nathan Engle, Nicolas Salazar-Godoy, Palesa Mokorosi, Piet Theron, Sanjay Pahuja, Richard Abdulnour, Shyam KC, Yukio Tanaka, Malala Wakunguma, and Tesfaye Bekalu Wondem. With special thanks for management guidance to Maria Angelica Sotomayor Araujo, Catherine Signe Tovey, and Yogita Mumssen. Document design was created by Scriptoria.

PHOTO INFORMATION
Front cover: Patrick Shepherd / CIFOR. Page 5: HandmadePictures / Shutterstock. Page 10: Kwame Amo / Shutterstock. Page 12: klublu / Shutterstock. Page 14: ENTRO / NBI. Page 15: Egypt NDF. Page 15: JLwarehouse / Shutterstock. Page 16: UNDF. Page 18: lier 4 life / Shutterstock. Page 19: Amna Omer/ ENTRO. Page 20: hikrcn / Shutterstock. Page 21: Sarah Farhat / World Bank. Page 23: Piyaset / Shutterstock. Page 24: Chantal Richey / World Bank. Page 25: Torsten Pursche/Shutterstock. Page 27: Anton_Ivanov / Shutterstock. Page 28: LCBC. Page 29: UHL & Associates, Inc. Page 30: Apex 360 / Unsplash. Page 31: Redcharlie / Unsplash. Page 33: Dietmar Temps / Shutterstock. Page 34: Thandeka Ngobe. Page 36: Eva Mont / Shutterstock. Page 37: Wilford Machili. Page 38: TLF Images / Shutterstock. Page 41: Vadim Petrakov / Shutterstock. Page 42: Amors photos / Shutterstock. Page 44: STEPHANGladieu / World Bank. Page 45: Thandeka Fortunate Ngobe. Page 47: Eva Mont / Shutterstock. Page 48: Photographer RM / Shutterstock. Page 49: Travel stock. Page 57: World Bank. Page 79: Deldew / Shutterstock.

CONTENTS

ABBREVIATIONS

AfDB	African Development Bank
CIWA	Cooperation for International Waters in Africa
COM	Council of Ministers
COVID-19	Coronavirus Disease 2019
CSO	Civil society organization
DRC	Democratic Republic of the Congo
DSS	Decision Support System
ENTRO	Eastern Nile Technical Regional Office
EU	European Union
FCV	Fragility, conflict, and violence
FEWS	Flood Early Warning System
FY	Fiscal Year
GEF	Global Environment Facility
GESI	Gender equality and social inclusion
GFDRR	Global Facility for Disaster Reduction and Recovery
GIZ	German Agency for International Cooperation
GWSP	Global Water Security and Sanitation Partnership
HoA	Horn of Africa
HoAI	Horn of Africa Groundwater Initiative
IDA	International Development Association
IGAD	Intergovernmental Authority on Development
IKP	Integrated Knowledge Portal
IWRPM	Integrated Water Resources Planning and Management
LCBC	Lake Chad Basin Commission
LIMCOM	Limpopo Watercourse Commission
LVBC	Lake Victoria Basin Commission
LVEMP	Lake Victoria Environmental Management Project
MOU	Memorandum of Understanding
NBA	Niger Basin Authority
NBD	Nile Basin Discourse
NBDF	Nile Basin Development Forum
NBI	Nile Basin Initiative
NCCR	Nile Cooperation for Climate Resilience
NCORE	Nile Cooperation for Results
NEL	Nile Equatorial Lakes
NELSAPCU	Nile Equatorial Lakes Subsidiary Action Program Coordination Unit
Nile-Sec	Nile Basin Initiative Secretariat
OKACOM	Permanent Okavango River Basin Water Commission
RAP	Resettlement Action Plan
RBO	River Basin Organization
SADC	Southern African Development Community
SADC-GMI	Southern African Development Community Groundwater Management Institute
SAP	Subsidiary Action Program
SDG	Sustainable Development Goal
TAC	Technical Advisory Committee
TBA	Transboundary Aquifer
UNESCO	United Nations Educational, Scientific and Cultural Organization
VBA	Volta Basin Authority
ZAMCOM	Zambezi Watercourse Commission
ZRA	Zambezi River Authority

Okavango Delta, Botswana

FOREWORD

It has been a year like no other in our lifetime, including for the countries in which CIWA works. The COVID-19 pandemic, along with its socio-economic effects, has shone a spotlight on the critical role of water in protecting people's health and achieving a resilient recovery. But it has also highlighted the challenges that Africa faces to ensure access to water to sustain lives, increase economic prosperity, and improve resilience to climate change.

The COVID-19 pandemic has shone a spotlight on the critical role of water in protecting people's health

CIWA's program activities continued apace during the fiscal year that ended June 30, 2021 despite having to conduct most of our work virtually and realign some projects and initiatives. These activities are essential contributors to building back better after the pandemic and responding to other severe shocks and stresses that African countries contended with last year, including fragility, conflict, and violence (FCV), destructive flooding in Sudan, and massive swarms of desert locusts in the Horn of Africa.

These crises redoubled CIWA's determination to build resilience and support riparian governments on their path toward more impactful, data-driven, and collaborative management of transboundary waters.

Those efforts can be seen this year, when CIWA sustained its long-standing engagement in the Nile Basin and Great Lakes region by launching a new project on climate resilience in the Nile. The initiative succeeds the Nile Cooperation for Results (NCORE) project which, having made strong improvements in transboundary cooperation, water resources management, and basin development, closed this year. We plan to actively continue our engagement on Lake Victoria, expanding on the technical cooperation initiative on Great Lakes Water Quality, which developed recommendations for regional- and country-specific operations focused on building resilience into multi-sector investments.

In 2021, Sudan re-engaged with the World Bank after nearly three decades, and CIWA provided assistance to Sudan to establish foundational policies and systems for flood-risk management and safety protocols for water harvesting structures, helping increase resilience to climate shocks.

We placed greater emphasis on groundwater aquifers – because of their long-term sustainability and potential to enhance livelihoods

In the Horn of Africa (HoA), CIWA supported technical cooperation activities that have achieved important results. The Transboundary Water Resource Management technical cooperation initiative in Somalia, which closed this year, enhanced capacity to articulate water resources development options for the Juba and Shebelle basins and structure a solid transboundary agenda. The HoA Regional Groundwater Initiative, implemented by the Intergovernmental Authority on Development (IGAD), expanded the knowledge base on regional groundwater resources and strengthened capacities of IGAD member countries in groundwater development and management. CIWA plans to continue supporting regional integration efforts and investments by IGAD member states to enhance the climate resilience of communities by increasing the sustainable use and management of groundwater resources.

CIWA works in fragile hotspots in West Africa. Its projects deliver on the World Bank's strategy for FCV, which includes preventing conflict, remaining engaged in conflict areas, and helping countries out of fragility by strengthening the capacity of core institutions. In many countries with the greatest capacity challenges, strengthening national institutions and infrastructure is critical to ensuring meaningful participation on transboundary issues. Providing credible platforms for transboundary dialogue and cooperation is an important vehicle for preventing conflict over water resources and related assets.

In terms of new technical cooperation, the Lake Chad Transboundary Water Security initiative aims to develop an analytical and institutional foundation for water security, while the Sahel Groundwater Initiative will enhance groundwater knowledge and management capacity in Western Sahel.

CIWA has begun the second phase of the Southern African Development Community Sustainable Groundwater Management (SADC-GMI) project, which supports capacity-building and institution-strengthening through a range of technical assistance activities and the creation of a groundwater information platform for the region. It also launched the Southern Africa Drought Resilience Initiative to address cross-border drought risks and promote cooperative management of shared natural resources among SADC member states.

Throughout our regional programs, we placed greater emphasis on the so-called 'invisible waters' – groundwater aquifers – because of their long-term sustainability and potential to enhance livelihoods. We advanced an agenda of cooperative management of groundwater in the Horn of Africa, Southern Africa, and West Africa, with a special focus on the Sahel, acknowledging the pivotal role of regional solutions to address shared challenges.

CIWA seized opportunities to scale up its support for activities and investments to protect the region from further biodiversity loss, which is key to sustaining livelihoods and mitigating the impacts of climate change. These efforts are part of the program's long-term commitment to better equip communities to plan for, and adapt to, the impact of the increasing number and severity of droughts and floods.

Because women participate at lower rates than men in transboundary water management, we need exponential progress in addressing gender inequalities in the field. CIWA's approach addresses gender, sustainable development, and water resources management in a holistic way through our new Gender and Social Inclusion (GESI) Framework. We began to integrate a GESI lens and analysis throughout our projects, which will ramp up even more next year.

The rapid expansion of technology solutions has increased the potential to scale up CIWA's contribution to evidence-based decision-making, which enables governments to make informed decisions earlier. This will ensure a resilient water supply that will allow people to better cope with natural disasters. We are expanding our knowledge management work to improve countries' access to data platforms to better manage international waters. We are stepping up our communications and outreach efforts in the region to underscore the importance of transboundary cooperation and are working to bring citizen participation, pioneered so well in the Nile Basin, to West and Central Africa.

CIWA's agility, creativity, and flexibility have characterized the program's positive impact on transboundary cooperation over the past decade. As we mark our 10th anniversary, we are undertaking a 10-year review of our work and impact. We have much to be proud of and look forward to contributing to more sustainable, climate-resilient growth on the continent.

As demand continues to grow and outpace the current CIWA program, it is critical that additional financing be secured to enable CIWA to expand and deepen its engagements for efficient, effective, and sustainable management of water resources; all of the funds raised to date have been fully allocated. In the year ahead, CIWA plans to actively fundraise for the program for the next five years.

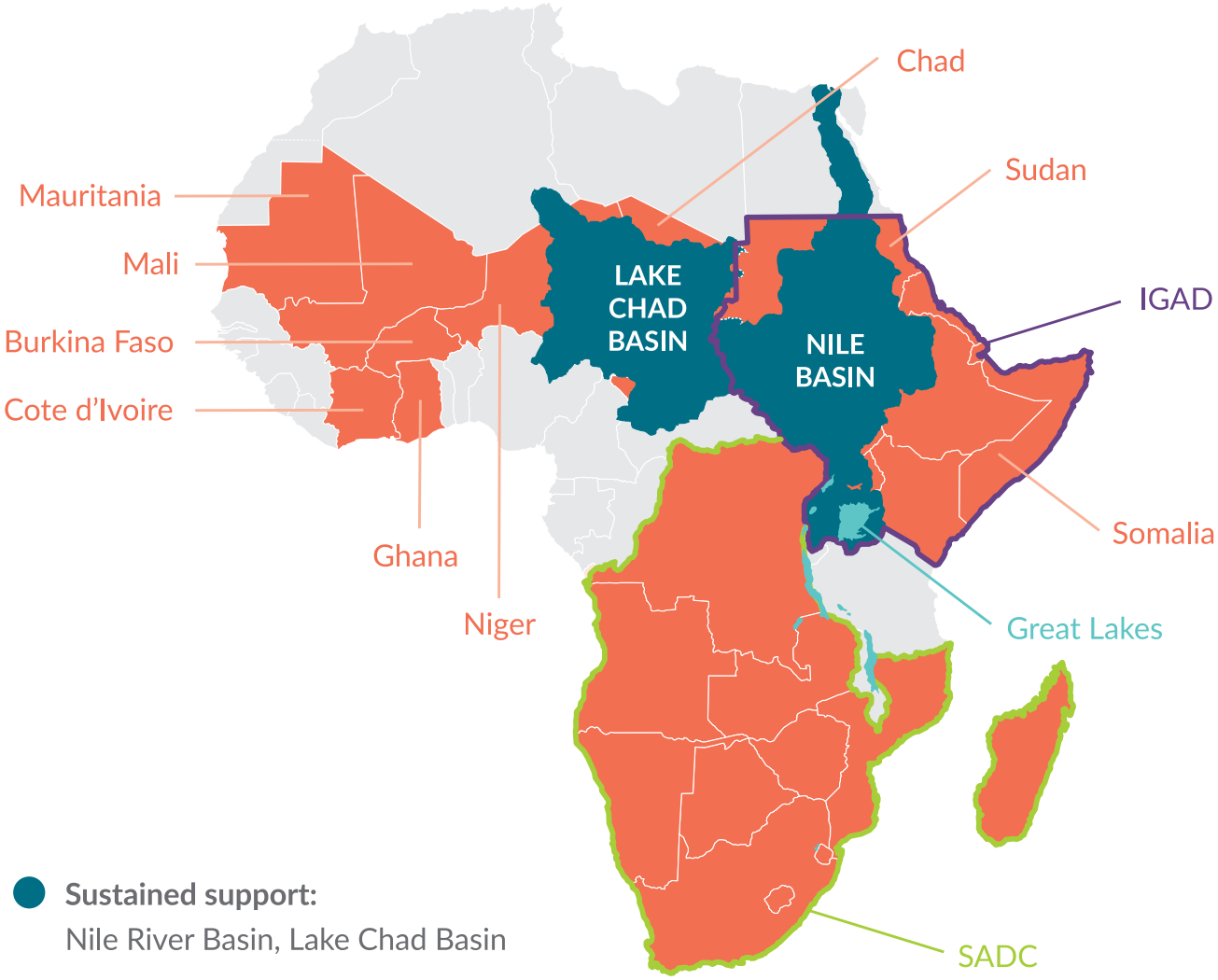
Thank you for your support of our vital work.

Sincerely,

Erwin De Nys and Ai-Ju Huang

Program Managers

CIWA IN FY2021: A SNAPSHOT



Sustained support:
Nile River Basin, Lake Chad Basin

Strategic support:
SADC, IGAD, Somalia, Great Lakes, Sudan, Burkina Faso, Chad, Mali, Mauritania, Niger, Ghana, and Cote d'Ivoire

IGAD

SADC

CIWA'S IMPACT

People who benefit from investments influenced by CIWA

36.86 million

INVESTMENTS

To manage watersheds, develop groundwater, build storage, etc.

US$17.146 billion

Value of mobilized investments influenced by CIWA

US$6.34 billion

Value of potential investments influenced by CIWA

US$10.806 billion

INSTITUTIONS

To build trust, coordinate planning, and manage shared resources

Transboundary institutions supported with CIWA technical assistance and financing

16

INFORMATION

For understanding risks, better decision-making, and monitoring compliance

Strategic analyses and knowledge products used to illustrate the evidence base for cooperation

82

All the data is cumulative.

EAST AFRICA

East Africa houses several of the world's greatest freshwater bodies, but the region's water resources are too often not optimally distributed or managed, resulting in floods, droughts, and insecurity. This year, CIWA recommitted itself to sustained engagement in the Nile River Basin through a new project focused on building climate resilience while expanding to provide much needed assistance for flood-risk management in Sudan and leveraging strengthened partnerships in the Great Lakes to address regional water quality issues in Lake Victoria.

EAST AFRICA

Nile Cooperation for Results

Context

Few regions have experienced as much social, economic, and political upheaval, renewal, and growth in the last decade as the Nile Basin. Regionally, there have been millions of internally displaced people and forced migrants from instability, conflict, and resource scarcity, catastrophic locust infestations, major flood events – 83 in Eastern Nile alone – and disease outbreaks, including the Ebola virus and yellow fever, all of which intersect with impacts from climate change and their effects on water. When the Nile Cooperation for Results (NCORE) project began in 2013, the participating Nile Basin countries[1] needed better management of shared risks; more infrastructure for water storage, energy production, and irrigation; adoption of common dam safety standards; improved regional hydrometeorological- and early-warning systems, and stronger capacity to adapt to extreme climatic events. Despite geopolitical disagreements, Basin countries acknowledged that water-related problems are transboundary in nature and require collaborative solutions.

Through NCORE, CIWA ensured continuity of Nile Basin Initiative (NBI)[2] activities to advocate for cooperative water resources management and development that provides advisory, analytical, and technical services, a platform for dialogue, and regional investment support. NCORE helped the NBI build trust and cooperation, empower member states for transboundary water management and development, and refine the approaches to cross-cutting issues, such as gender equality. NCORE was nimbly restructured and refinanced twice. The project, which closed in November 2020, led to the creation of the Nile Cooperation for Climate Resilience (NCCR) project[3] (see below).

Progress

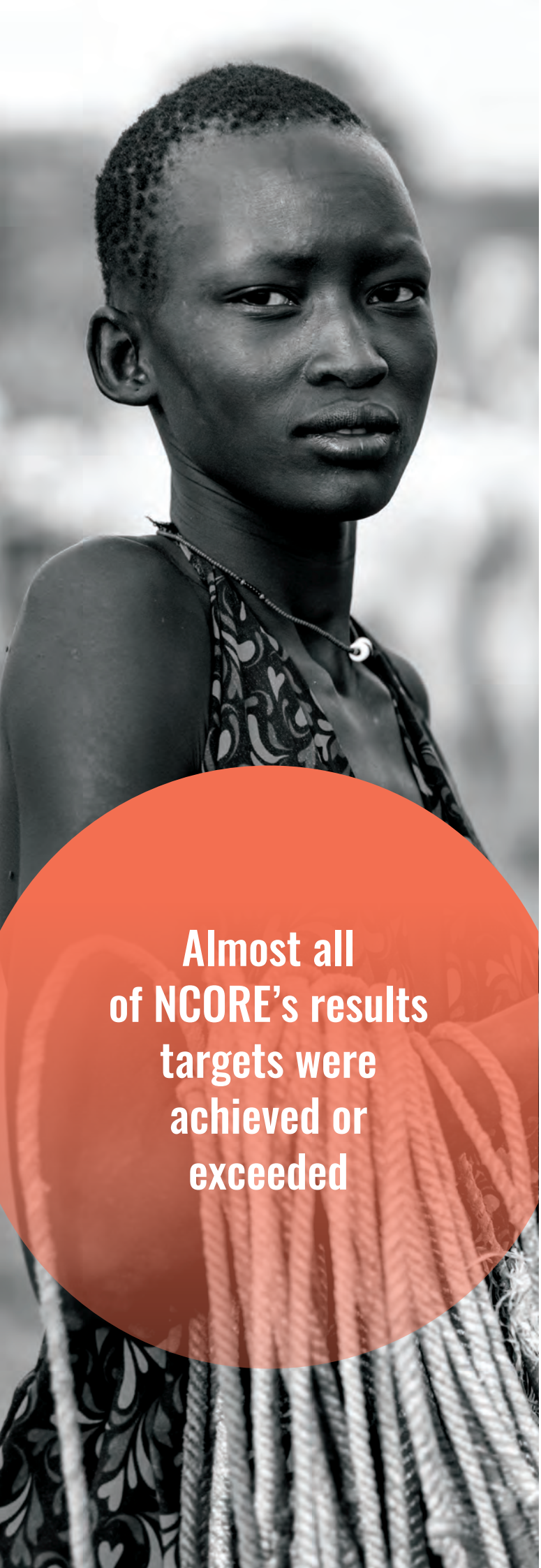
By project closure, almost all result targets were achieved or exceeded. The full assessment of all project results can be found in the Implementation Completion and Results Report[4] and in the 2020 CIWA Annual Report[5]. The following is a summary of the NCORE project's cumulative achievements:

CIWA's support through NCORE and the Nile River Basin Support Program was instrumental in NBI's investment mobilization and its approach to investment identification and prioritization.

Through NCORE, the NBI influenced seven investments that have been mobilized (see Annex 2, Table A2.2). These investments, estimated at US$648 million, aim to benefit more than 2.1 million people. For example:

- NCORE funded the development of the Regional Rusumo Falls Hydroelectric Project Resettlement Action Plan (RAP)[6].
- The Nile Equatorial Lakes Subsidiary Action Program Coordination Unit (NELSAPCU) helped develop the project-affected persons database and preliminary investigations regarding the shifted channel along the Kagera River.
- The project provided support for feasibility study preparation, Environmental and Social Impact Assessment/RAP assessments, and detailed designs and tender documents for four transboundary-relevant investments[7].
- NCORE supported the development of Catchment Management Plans for Middle Malakisi in the Sio-Malaba Malakisi sub-basin and the Ol Choro Lemek in the Mara sub-basin[8].
- In FY21, work began on the NBI's Kabuyanda Multipurpose Water Resources Development Project, which is now part of Uganda's International Development Association (IDA) financing through the World Bank's Uganda Irrigation for Climate Resilience project[9].

[1] The Nile Basin countries are Burundi, Democratic Republic of Congo, Egypt, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, Tanzania, and Uganda. Eritrea participates in the Nile Basin Initiative (NBI) as an observer.
[2] NBI is composed of three entities: the Nile Basin Initiative Secretariat (Nile-Sec), the Nile Equatorial Lakes Subsidiary Action Program Coordination Unit (NELSAPCU), and the Eastern Nile Technical Regional Office (ENTRO). Nile-Sec is the executive arm that strengthens member states' institutional and technical capacities and provides shared knowledge bases to support decision-making and action. ENTRO and NELSAPCU are regional centers that support identification, negotiation, and implementation of cooperative investment projects with a focus on mutual and sustainable benefits for the countries involved. https://nilebasin.org/
[3] https://projects.worldbank.org/en/projects-operations/project-detail/P172848
[4] https://documents1.worldbank.org/curated/en/811171622207806568/pdf/Eastern-Africa-Nile-Cooperation-for-Results-Project.pdf
[5] https://www.ciwaprogram.org/annualreportfy20/
[6] Construction of the 80 MW Regional Rusumo Falls hydroelectric Power Station (included in the mobilized Nile investments in Annex 2, Table 2) is 60% completed to date.
[7] Mara Valley and Ngono Multipurpose Water Resource Development projects in Tanzania, the Sio-Sango Water Resources Development project in Kenya, and the Kabuyanda Water Resource Development project in Uganda (included in the mobilized Nile investments in Annex 2, Table 2). The Kabuyanda multipurpose project in the Kagera Basin in Uganda is now part of the World Bank's country portfolio through the Uganda Irrigation for Climate Resilience project.
[8] Catchment Management Plans for Middle Malakisi benefit Uganda and Kenya and Ol Choro Lemek benefit Kenya and Tanzania.
[9] https://projects.worldbank.org/en/projects-operations/project-detail/P163836



Almost all of NCORE's results targets were achieved or exceeded

NCORE also directly supported the NBI to prepare or conduct major studies that positioned an additional 14 potential investments for future implementation, (see Annex 2, Table A2.2), eight of which are highly prioritized by the NBI's governing Councils of Ministers (COMs) for mobilization. These principally include catchment, watershed, and fisheries integrated water management plans and other medium-sized, nature-based multipurpose water resource development plans with a total estimated value of US$6.9 billion and over seven million direct beneficiaries.

A high level of engagement demonstrates the importance and relevance of the NBI and project activities, particularly decisions made, products endorsed, and stakeholders satisfied. Each NBI center convened meetings for its governing and technical bodies (COMs and Technical Advisory Committees [TACs], respectively) to design and implement NCORE activities and outputs. Joint decisions by the COMs included the approval of flagship knowledge and communications products, such as the Nile Basin Water Resources Atlas[10]; strategic and planning documents, including the Gender Mainstreaming Policy and Strategy[11], Wetlands Strategy[12], Financing Strategy 2018–2022, and the Resource Mobilization Action Plan; support to South Sudan as a new member state; approval of the regional hydrometeorological network project; and investment prioritization and preparation. Regional investment dialogues moved the regional agenda forward, helped develop the financial sustainability strategy, and championed transboundary considerations in investment preparation.

The NBI also collaborated with the NBD to provide fora including strategic dialogues, such as the Annual Nile Days, and the Nile Basin Development Fora (NBDF), which provided a platform for hydro-diplomacy, technical advocacy, capacity strengthening, civil society engagement, and increased cooperation. The NBI's partnership with the NBD also expanded community involvement in investment preparation and related actions such as implementation of gender-inclusive RAPs.

Institutional strengthening occurred both for the NBI itself and to support its stakeholders. Major accomplishments included national and regional dam safety institutionalization and training, capacity-building for flood early-warning systems

[10] Nile Basin Initiative (2019). *Nile Basin Water Resources Atlas*.
[11] Nile Basin Initiative (2013). *Gender Mainstreaming Policy and Strategy*.
[12] Nile Basin Initiative (2013). *Wetland Management Strategy*.

(FEWS), and major support to South Sudan's Water Ministry upon the country's independence. Institutional strengthening occurred through human resource capacity-building, the provision of water resource management/development tools, the institutionalization of gender equality, climate change, and other policies, and advancement of results monitoring and reporting capacity. Eastern Nile Technical Regional Office's (ENTRO's) internship and Young Professional programs positively impacted the careers of over 130 technical specialists from all four Eastern Nile countries and recruited and supported the inclusion of 31 female professionals.

The improved quality, quantity, and sharing of hydrometeorological data contributed to public dissemination of Nile Basin tools, data, and communications and knowledge products. Activities included the expanded functionality and use of Earth Observation data and the DSS (Decision Support System; the basin-wide planning/allocation modeling tools), the flood and drought forecasting and early-warning systems to inform stakeholders of the potential for flood-disaster events, and the new IKP to publicly disseminate and manage all of the NBI's information products and tools[13]. NBI disseminated knowledge products to key stakeholders, held trainings, and conducted country consultation workshops, which informed decision-making and strengthened cooperation, thereby complementing the investment planning and institutional strengthening support. Over 3,400 professionals were trained in water management or development applications.

Next Steps

All the achievements made under NCORE will be elevated and strengthened through support provided by the new NCCR project launched in March 2021 (see below).

Nile Cooperation for Climate Resilience

Context

The Nile Basin faces numerous challenges that no member state can address alone, especially the impacts from climate change and the COVID-19 pandemic. States must build collective resilience against water insecurity and capitalize on economies of scale for transformational water management infrastructure. The Nile Cooperation for Climate Resilience (NCCR) project, launched in March 2021, continues the World Bank's long-term strategic engagement to address the Basin's challenges, in particular, building the region's resilience to climate change. NCCR will scale up actions and engagements to leverage the success of regional organizations with whom the Bank partners – the NBI, as well as the Lake Victoria Basin Commission (LVBC) and NBD. It will also focus on strengthening mechanisms for cooperation on water resources management and development in five thematic areas that contribute to climate resilience: reducing and managing flood and drought risks; improving dam safety; providing water-related information services that consider climate change; promoting platforms for cooperation, dialogue, and capacity-building; and identifying water-quality hotspots and investments to address these challenges.

Progress

> The new Nile Cooperation for Climate Resilience project will help build resilience against water insecurity and transform water management infrastructure.

NCCR's project design incorporates many lessons learned from NCORE, including deepening strategic partnerships, filling gaps in water quality information and strategy, prioritizing investments regionally, reconsidering strategies for gender equality and social inclusion, and strengthening capacity to mitigate climate shocks regionally, as this is a core driver for development challenges stemming from floods, droughts, pollution, land degradation and overall water insecurity.

Deepening strategic partnerships: Regional institutions have limited capacity and resources and cannot be maximally effective without strong relationships and collaborative action. NCCR brings together the NBI, NBD, and LVBC[14] to collaborate on building regional approaches to climate resilience and addressing problems that are inherently regional. In particular, this includes addressing the growing challenges to water quality in LVB and systematically

[13] www.ikp.nilebasin.org

[14] In parallel with its support to the NBI, the World Bank has also supported the LVBC through the LVEMP 1 and LVEMP 2. The respective mandates of the LVBC and NBI are complementary, but an even stronger regional approach could be achieved through closer cooperation, particularly in the area of water quality. The World Bank and CIWA have also supported the NBD through the Engaging Civil Society for Social and Climate Resilience project in the Nile, and the inclusion of the NBD in the NCCR project will enable improved stakeholder engagement and participation in project activities.

maximizing the usefulness of the NBI's FEWS to the communities most affected by climate shocks in the Eastern Nile sub-basin by the NBD.

Measuring water quality: The NBI's focus on water-quality challenges has largely been in watershed management, with NELSAPCU and ENTRO preparing investments in critical sub-basins and developing good practice guides. NCCR will move the agenda forward by filling the water quality data gaps and prioritize actions to improve them.

Prioritizing investments: NCORE supported feasibility and design studies for four multipurpose investments in the Nile Equatorial Lakes (NEL), but there is a mixed record of NBI-prepared investments being taken up by member states. Lessons learned that have been incorporated in the NCCR include the need to involve the appropriate departments within national ministries throughout preparation and to balance national and regional considerations in site selection for national lending with financing prior to conducting studies, thereby increasing the likelihood that the investment will be mobilized. Project support will develop and enhance tools and processes to identify and analyze water-related investment opportunities, including preliminary analyses of potential investment scenarios using the DSS. Investment screening and prioritization will be coupled with robust capacity-building and a member state engagement process with NBI and ministries' technical units.

Alumni 2018 posing in front of the Eastern Nile Technical Regional Office building in Addis Ababa, Ethiopia.
Photo Credit: ENTRO/NBI

Reconsidering strategies for gender equality and social inclusion: Under the now closed NCORE project, notable efforts were made toward increasing gender equality, such as through women's recruitment in the internship and Young Professionals' program at ENTRO. However, the NBI's Action Plan for its Gender Strategy has expired and remains unfulfilled. During design of the new NCCR, CIWA's Nile River Basin Support Program conducted a deep gender analysis and new opportunities were identified including operationalizing gender-sensitive indicators and formulating baselines and targets for each context, incorporating a gender-sensitive approach to community consultations for improving information dissemination by the Eastern Nile FEWS, and including gender in terms of reference of key activities.

Next Steps

Key priorities will be to pilot the community survey and gender assessment for the FEWS, launch the high-level regional Dam Safety Technical Working Group, and conduct the basin-wide flash flood early-warning consultancy. Further work will build on the European Union–Gesellschaft fur International Zusammenarbeit (EU-GIZ) Regional HydroMet Project and install water-quality monitoring equipment on a subset[15] of the 73 HydroMet stations.

The project obtained supplemental funding from both the Global Facility for Disaster Reduction and Recovery (GFDRR) and Global Water Security and Sanitation Partnership (GWSP) (see Annex 5, Table A5.1). The GFDRR complementary support will be used for satellite image-based mapping of major flood events in the Nile Basin during the 2021 flood season, piloting community awareness surveys to better incorporate the needs of women and youth into NBI's flood and drought early-warning systems, and institutionalization of dam safety. Co-finance from the GWSP will support extended dialogue with regional organizations, national governments, development partners, the private sector, and CSOs on Lake Victoria water quality policy notes; preparation of a comprehensive Lake-wide Inclusive Sanitation Plan; and studies on the opportunities for private sector participation and the identification of opportunities for integrating 'green and gray' infrastructure for wastewater treatment in the LVB.

[15] The final number of stations and locations supported by NCCR are to be determined, as the activity will be updated and finalized during implementation; approximately 39 stations will be equipped under this project.

Activities are already underway to develop a regional cloud-based Nile Basin Data and Analytic Services Platform, with an Earth Observation Toolkit, online analytics and visualization, e-packaging of data, analytical and interactive dashboards to improve data quality and utilization, and water-quality maps and models to inform investment prioritization in pollution hotspots. The Nile Basin Data and Analytic Services platform will facilitate the collation of an ecosystem of free/public-domain data and analytic services to develop customized dashboards and other e-packaging (e.g. interactive storymaps), which will facilitate interactive visualization on key themes (climate, water resources, environment, social, economic). An open NB-DAS User Community has been created in Oct 2021 to facilitate stakeholder use.

The LVBC will work with the East African Community (EAC), collaborate with NELSAPCU to include DRC and South Sudan to clarify and explore opportunities to harmonize water-quality management policies in the NEL region, engage NBD to support the flood- and drought-risk mitigation thematic area led by ENTRO and NELSAPCU for their stakeholder-mapping exercise, and develop an information dissemination strategy to incorporate the needs of users of the early-warning tools.

Engaging Civil Society for Social and Climate Resilience in the Nile

Context

The Engaging Civil Society for Social and Climate Resilience in the Nile Basin project has supported the Nile Basin Discourse (NBD) for the last eight years. NBD is a network of over 600 Civil Society Organizations (CSOs) from Nile Basin states that provide a way for citizens to discuss and organize their interests, participate in advocacy and service delivery, and increase skills and engagement in transboundary cooperation. NBD links communities with national and intergovernmental organizations, particularly the NBI, to inform and enrich transboundary projects.

> The Nile Basin Discourse empowered communities to engage in transboundary cooperation activities.

Significant progress has been made in NBD's communications and outreach to its network members and NBD has involved many stakeholders in project plans over the years, contributing to strong citizen involvement in transboundary water resources management. NBD revamped its website, leading to a rise in website visits. Nine videos with such themes as water-related disasters have been produced and promoted on social media platforms.

Participants in Nile Day 2021, organized by the Nile Basin Discourse Forum, clean Nile River banks in the Dakahlia Governorate area in Egypt.
Photo Credit: Egypt NDF

The COVID-19 pandemic has been a significant challenge to NBD's ability to convene grassroots gatherings for transboundary dialogue, but several events were held virtually. During the 6th Nile Basin Development Forum (NBDF) in April 2021, NBD co-convened the virtual seminar, "Participation and Inclusivity as Success Factors to Water Governance in the Nile Basin." NBD also partnered with NBI for the Nile Media Awards 2021. NBD has proposed a hybrid model of transboundary dialogues that will be piloted in Rusumo, where initial meetings will occur near project sites followed by virtual community discussions.

NBD's Nile Discourse Forums (NDF) commemorated the 15th Annual National Nile Day in their respective countries under the theme, "Rethinking Regional Investments in the Nile." The celebrations focused on protecting and managing natural resources through improved data and information-sharing, infrastructure development, and institutional capacity-building. The celebrations involved youth in outdoor tree planting and environmental advocacy activities. National Technical Support Experts have provided periodic public updates, and NBD has worked with media outlets to publicize ongoing activities.

Next Steps

With the closing of this project in December 2021, NBD's engagement with communities will continue, albeit at a smaller scale, through implementation of its role under the NCCR project, in which it will design community-awareness surveys to understand expectations and how flood early-warning information is received and used.

Based on NBD's experience, CIWA has recently undertaken a mapping of CSOs in G5 Sahel[16] countries to assess the viability of forming a network of CSOs acting as a voice for their communities. The principal finding of the diagnostic was that civil society organizations are numerous throughout the Sahel, but the depth and sufficiency of the legal environment varies widely and the participation of civil society in the development of national and sectoral policies remains insufficient in all countries other than Burkina Faso. Additional consultations are being undertaken in the Niger Basin, which will involve the Niger Basin Authority, nongovernmental organizations (NGOs), and community-based associations. Through the consultations, key criteria will be developed for selection of CSOs and their potential involvement in the design and implementation of water programs.

The headteacher and pupils of Prisons Primary School plant trees at school during a Multi-Stakeholder Environmental Conservation Sensitization program organized by the Nile Basin Discourse Forum on Nile Day 2021 in Jinja, Uganda.
Photo Credit: UNDF

Great Lakes Water Quality

Context

The Lake Victoria Basin (LVB) covers 194,000 square kilometers, and is shared by Tanzania (44%), Kenya (22%), Uganda (16%), Rwanda (11%), and Burundi (7%). The Basin has rampant poverty, heavy reliance on natural resources for livelihoods, and high population density that increases pressures on land, forests, catchments, and the lake itself. There are four main causes of pollution – sediment, agrichemicals, industrial effluents, and human fecal, liquid, and solid wastes – that emanate from upstream rural and agricultural areas and in cities and informal settlements around the lake. LVB water pollution increases eutrophication, algal blooms, water hyacinths, salinity, and turbidity. This reduces fish stocks and biodiversity, which in turn decreases food security and increases disease, especially burdening poor people and women.

The Great Lakes Water Quality technical cooperation, which ended in FY21, built on more than two decades of Bank support to reduce environmental degradation in the LVB, through the Lake Victoria Environmental Management project (LVEMP) series of projects[17]. The main goal of this technical cooperation consisted of defining the key priority areas for future Bank engagement and support of the Bank and development partners.

> The Great Lakes Water Quality project reduced environmental degradation in the Lake Victoria Basin.

A Strategy Note was produced, "Improving Water Quality in Lake Victoria Basin," which consolidated recommendations, including policy actions and opportunities for regional- and country-specific operations focused on building resilience into multi-sector investments. COVID-19-related travel restrictions meant that no primary data could be collected; instead, a review of the literature and virtual consultations with nearly 40 stakeholders from more than 30 organizations were conducted.

[16] The G5 Sahel is an institutional framework for coordination of regional cooperation in development policies and security matters in Burkina Faso, Chad, Mali, Mauritania, and Niger.
[17] The LVEMP series of World Bank projects sought to improve collaborative management of the transboundary natural resources of the LVB by reducing environmental stress in targeted pollution hotspots and selected degraded sub-catchments with the goal to improve the livelihoods of communities who depend on the natural resources of the LVB. LVEMP was cofinanced by the Global Environment Facility, the Swedish International Development Cooperation Agency, and IDA.

Technical assistance for a multi-criteria analysis was provided, with support including producing water-quality assessment guidelines, identifying water-quality hotspots with transboundary significance, and conducting analysis for prioritizing investments. ENTRO, NELSAPCU, and the LVBC benefited from the support.

A key finding of this analysis is that no single investment project can tackle more than a tiny fraction of LVB water-quality issues, and that addressing them in an integrated manner requires long-term, comprehensive, and multi-donor and multi-stakeholder approaches to coordinate, leverage, and catalyze investments. Combining technical assistance, capacity-strengthening, and infrastructure investments, while keeping the community at the center, will require detailed multi-sectoral analyses, starting with an assessment of what is already being done to address needs; identify gaps; establish robust and effective models for interventions; address institutional, policy and regulatory challenges; and exploit multiple sources of financial and other support to scale up interventions.

Other major lessons learned include:

- Restoring lakes is central to restoring livelihoods and minimizing associated impacts such as poor health, poverty, forced migration, and internal conflicts.
- Strong national action and collaboration are needed that build on existing efforts between states.
- Improving the capacity of national stakeholders and their leadership is key to lake restoration.
- Technical assistance will consolidate institution strengthening, regulatory and policy frameworks, enforcement mechanisms, and incentives and recruitment of financial resources. Local communities and households should be incentivized to develop good practices to reduce their impact on the lakes, which in turn will contribute to sustainability.
- Losses of biodiversity and other ecological functions stem from wetlands destruction. This is caused primarily by agriculture development, extraction of sand and clay, and the disposal of industrial and human waste.

Next Steps

This technical assistance resulted in important information and resources that are now being utilized in the follow-on work in the NCCR that is focused on water quality in Lake Victoria. A GWSP grant was awarded to continue this work through the NCCR project, and the team is seeking funds to advance the recommended activities through additional trust fund financing. The next step will be to prepare a comprehensive basin-wide sanitation plan for cleaning up Lake Victoria, which would specify regional and national actions to galvanize support from across development partners interested in lake clean-up, including multilateral and bilateral funders, CSOs, and their networks.

Sudan Flood Resilience and Water Resources Management

Context

Despite its arid and semi-arid climate, Sudan is prone to flood disasters from the Nile River, with an average of 200,000 people affected every year. During the 2020 flood, the Nile reached its highest level in 100 years and inflicted devastating damage, killing 120 people, destroying more than 166,000 houses, 34 schools, and 2,671 health care facilities, and creating an estimated 125,000 refugees and internally displaced people. Damage to crops and arable land intensified risks of long-term food insecurity, increase of disease, disruption to transportation and markets, and delivery of basic services. Floods also increase the likelihood of the failure of small dams and water harvesting structures, which store water from seasonal runoff for drinking, irrigation, and animal husbandry during the dry season. In July 2020, the collapse of a dam in the Blue Nile state caused flooding in the downstream town with a population of 100,000, killing six people and destroying more than 1,200 homes. The Flood Forecasting and Early Warning System (FEWS) of the Nile River Basin has suffered severe degradation from years of under-investment. Most monitoring gauges in the Nile River system are degraded, affecting the quality of the overall flood-forecast system. No FEWS exists to support interventions for vulnerable seasonal streams (wadis) in the non-Nilotic system. Critical challenges that hinder effective flood early warning and related integrated water resources management include limited data and hydrological data use capacity, weak institutional coordination, and lack of investments in technology to adequately plan for, and manage, floods.

Progress

CIWA has supported flood-risk management and safety protocols for water harvesting structures, to enhance forecasting and early warning, improve the safety of dams and other flood management structures, and increase institutional capacity. This has been built on regional progress in flood forecasting and dam safety made under the above-mentioned NCORE project. ENTRO[18] implemented analytical work and capacity-building for national governments including Sudan, but this primarily focused on the safety of large dams.

[18] https://www.ciwaprogram.org/media/youth-skills/

FROM WATER STRESS TO A CAREER IN WATER RESOURCES MANAGEMENT

As a child, Amna Omer wondered why people in her country, Sudan, had so much stress about water despite having plentiful water resources. That question would lead her to a career in water management.

“Water became my passion at an early age,” says Omer, 28. “Every time I saw the Nile, I wondered why my people don’t have enough water, even though abundant water resources surround us. This question prompted me to look at the root cause of the problem, and I decided to specialize in water resources management.”

Today, Omer is a water resources engineer at the Eastern Nile Technical Regional Office (ENTRO).

Recognizing a need to train the next generation of water specialists, CIWA supports the Young Professionals program that Omer completed to help budding water professionals understand the potential, risks, and benefits of shared waters, acquire skills, and form relationships.

“The internship program has been catalytic in dispelling some of the misconceptions about Eastern Nile water resources; these misconceptions contribute to the existing tensions between the Eastern Nile countries,” Omer says.

“Reaching out to the next generation of professionals is critical to the transition from intergenerational conflicts to a new era of cooperation,” says Omer.

HORN OF AFRICA

The Horn is beset by increasing intensity and frequency of drought, causing local communities to regularly migrate within and across borders to locate water sources. CIWA is at the forefront of work to assist in the Horn's use of groundwater and is providing leadership for regional groundwater knowledge and planning and institutional resilience to climate change-related shocks. It also supported Somalia with capacity-strengthening efforts through transboundary dialogue, trust-building, and information exchange.

HORN OF AFRICA

Horn of Africa Groundwater Initiative

Context

Thirty percent of the population of the Horn of Africa (HoA) live on arid and semi-arid lands. Groundwater is the Horn's main water resource and has the greatest potential for providing water security and socio-economic benefits. The region faces increasingly longer dry periods, catastrophic and intense drought, and increasing variation in the length of the rainy season.

Development of groundwater resources through boreholes and water harvesting has been instrumental in reducing conflicts over water access and transboundary resource-sharing; however, drilling is often done without proper coordination and community consultation, posing risks to the environment, livelihoods, and health. The transboundary nature of groundwater resources makes the assessment and management of water security for populations and livestock especially challenging during periods of reduced surface water availability without threatening priority uses like water supply for citizens.

The HoA Regional Groundwater Initiative is implemented by the Intergovernmental Authority on Development (IGAD) to support its member countries (Djibouti, Ethiopia, Kenya, Somalia, South Sudan, Sudan, and Uganda) in their effort to strengthen capacities in groundwater development and management and expand the knowledge base on regional groundwater resources. It has entered its last year of implementation and will close in FY22.

Progress

> The groundwater initiative is expanding knowledge about groundwater resources in the Horn of Africa.

The project successfully expanded the knowledge base on regional groundwater resources, including a determination of surface water availability, water variability, and natural recharge of shallow groundwater. Assessments were completed in Djibouti, Ethiopia, Kenya, Sudan, and Uganda and are underway in Somalia and South Sudan. Verification workshops were conducted with member states on the findings and recommendations. Most of the activities are in their final stages of completion, including knowledge management and capacity-building reports and needs assessments for all member states except Sudan.

The evening water collection in the village of Halayat, Kassala State, Sudan.
Photo Credit: Sarah Farhat/World Bank

The project's initial plan to conduct a feasibility study on three shared transboundary aquifers – Mt. Elgon (shared between Kenya and Uganda), Merti (shared between Kenya and Somalia), and Bagarra (shared between South Sudan and Sudan) has been reduced in scope. IGAD asked to cancel the feasibility study on two aquifers (Mount Elgon and Bagarra) and focus on the study of the Merti aquifer because of time and resource limitations. The inception report for the Merti Aquifer feasibility study has been submitted and discussed with the governments of Kenya and Somalia. Regional calibration of the Juba-Shebelle River Basin GeoSFM model, groundwater-related data collection and processing, a hydro-diplomacy training, and the first Project Steering Committee meeting were also conducted.

Next Steps

The project, which will close in FY22, will support the 2nd IGAD Water Forum[19], focusing on groundwater for resilience. It is also contributing lessons for the design and preparation of an IDA-funded regional integration project that will enhance the climate resilience of selected communities by increasing the sustainable use and management of groundwater resources. The project of US$375 million will cover Djibouti, Ethiopia, Kenya, Somalia, Sudan, and IGAD.

Somalia Transboundary Water Resources Management

Context

Continual reform implementation enabled Somalia to reach the first milestone in obtaining debt relief and fully reengage with the international community in March 2020. However, an incomplete political settlement and vulnerability to shocks such as climate disasters, locust infestations, and floods are jeopardizing its recovery. The Somalia technical cooperation supports the country's requested capacity-strengthening efforts through transboundary dialogue, trust-building, and information exchange to articulate water resources development options for the Juba and Shebelle basins, structure its transboundary agenda, and pursue dialogue.

Progress

> CIWA helped Somalia build capacity, dialogue, trust and a transboundary agenda.

The technical cooperation, which ended in June 2021, supported water resource model preparation training, development of the Somalia National Water Strategy, and expansion of stream flow and regional cloud-based data. Though efforts to network and initiate transboundary dialogue on Shebelle and Juba rivers with upstream countries Ethiopia and Kenya were slow, the preparation, information-gathering, and experience in Somalia have improved. Water-resources model development training included four week-long sessions that trained 13 technicians to identify basins for modeling, process climate-input data, prepare models for scenarios, and support officials to make data-informed decisions. Participants are using this training to select sites for the Water for Agro-pastoral Productivity and Resilience (Biyoole) project, the first IDA-financed infrastructure project in Somalia. Cooperation was strengthened by providing support for technical staff from different parts of the country to build a community of practice and create a network of technical officials.

The technical cooperation completed the following deliverables:

- **Strategic Overview report on water resources development and data options**, which describes the importance of economic policy levers outside the water sector, notably trade policy and family planning, in solving water-related challenges.
- **Somalia: 21st century data and information management**, a high-level assessment of options to deliver water-related data and information and articulate principles for their management.
- The Somalia government launched the **National Water Resource Strategy**, which will have important implications for transboundary water dialogue, as it will help Somalia answer questions on where, how frequently, and which water resources data and information need to be exchanged with neighboring countries. While the strategy recognizes the long gestation period for Somalia to implement the proposed actions, it provides a useful starting point for the World Bank and the Ministry of Energy and Water Resources to begin a dialogue on how to improve water resources monitoring and information in Somalia.

Next Steps

This technical cooperation has two important benefits, including helping Somalia develop a framework to illustrate and discuss key sector issues and priorities with its development partners, and empowering Somali water experts to express their priorities in a context where agenda-setting and implementation have typically been the prerogative of international agencies and NGOs.

The technical support helped Ministry of Energy and Water Resources staff build capacity in transboundary water management and hydrological- and water-resources modeling. However, the learning objectives

[19] https://igad.int/divisions/agriculture-and-environment/2709-1st-announcement-for-2nd-igad-water-forum-entebbe-uganda-5-7-october-2021-groundwater-for-resilience-a-virtual-and-face-to-face-event

to perform hydrologic simulations at the watershed and sub-watershed level using the Hydrologic Resource Assessment Model were not achieved due to COVID-19 pandemic travel restrictions. Future simulations will include more advanced capacity-building exercises and policy dialogue on modeling and hydrometeorological data management.

The technical cooperation also helped position the Ministry to prepare the IDA-funded Somalia – Water for Agro – Pastoral Productivity and Resilience (Biyoole) project and the forthcoming Horn of Africa – Ground Water for Resilience project.

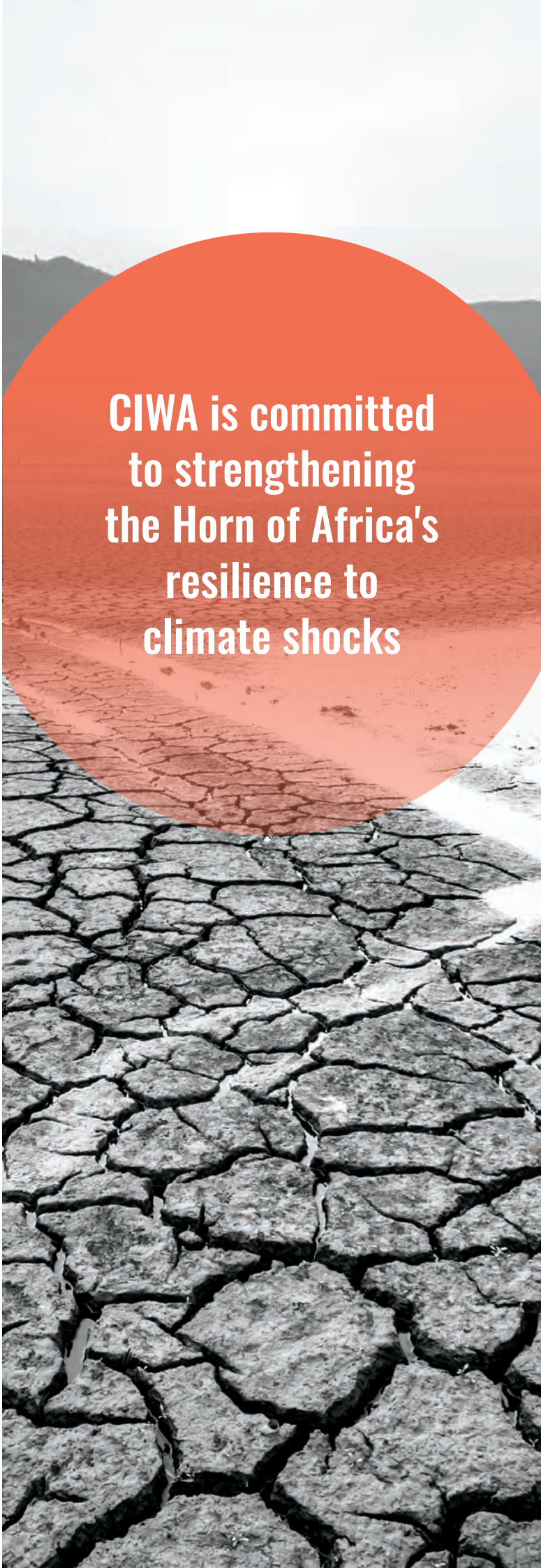
Strengthening Resilience in the Horn of Africa

Context

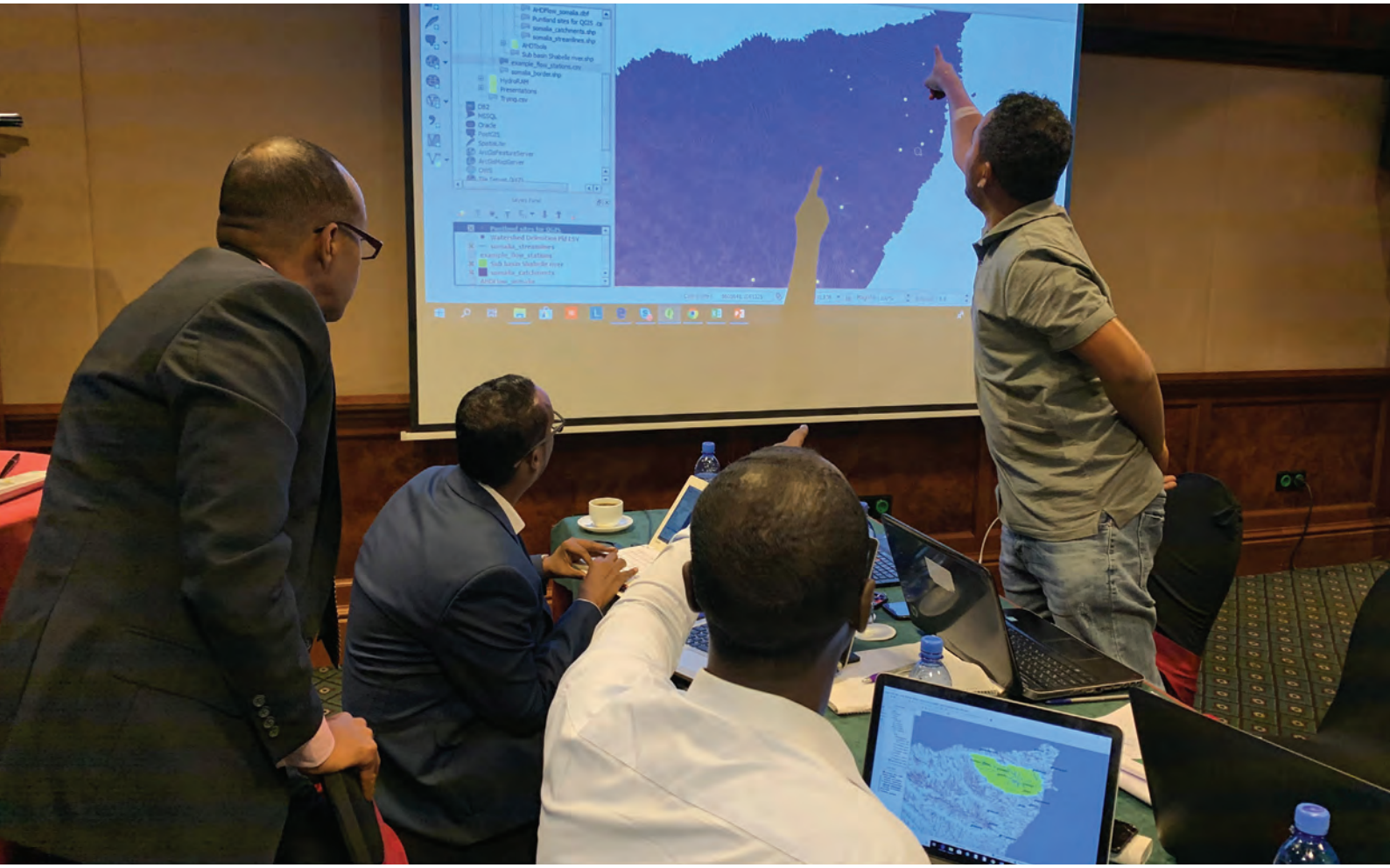
Countries in the Horn of Africa (HoA) fall within the top 20% of the most vulnerable nations, according to the ND-GAIN Index[20], which measures vulnerability to climate change and readiness to increase resilience. Climate impacts exacerbate the effects of concurrent shocks and stressors, including the desert locust outbreak (in 13 countries), conflict, and insecurity. Because climate-related risks are regional in nature, regional organizations have a key role to play in preparing for, and responding to, those impacts. This technical cooperation, which has entered its second year, works to strengthen those organizations and improve the enabling environment to deepen integration efforts and investments on resilience. It supports the preparation of products that will create a vision of what a resilient HoA might look like, scope potential regional investment opportunities across multiple sectors, and improve data and cooperation platforms and events.

Progress

The technical cooperation completed a stocktaking of regional resilience initiatives supported by the World Bank, contributing to the knowledge base and institutional capacity to cope with climate shocks. The "Invisible Bonds: Transboundary Resilience Building in the HoA" report presents key lessons from selected Bank-funded regional projects and identifies approaches to transboundary resilience and future investments. The report introduces a new conceptual framework, the Transboundary Resilience



[20] https://gain.nd.edu/our-work/country-index/



Hydroram water resources modeling training, in Somalia in 2020.
Photo Credit: Chantal Richey/World Bank

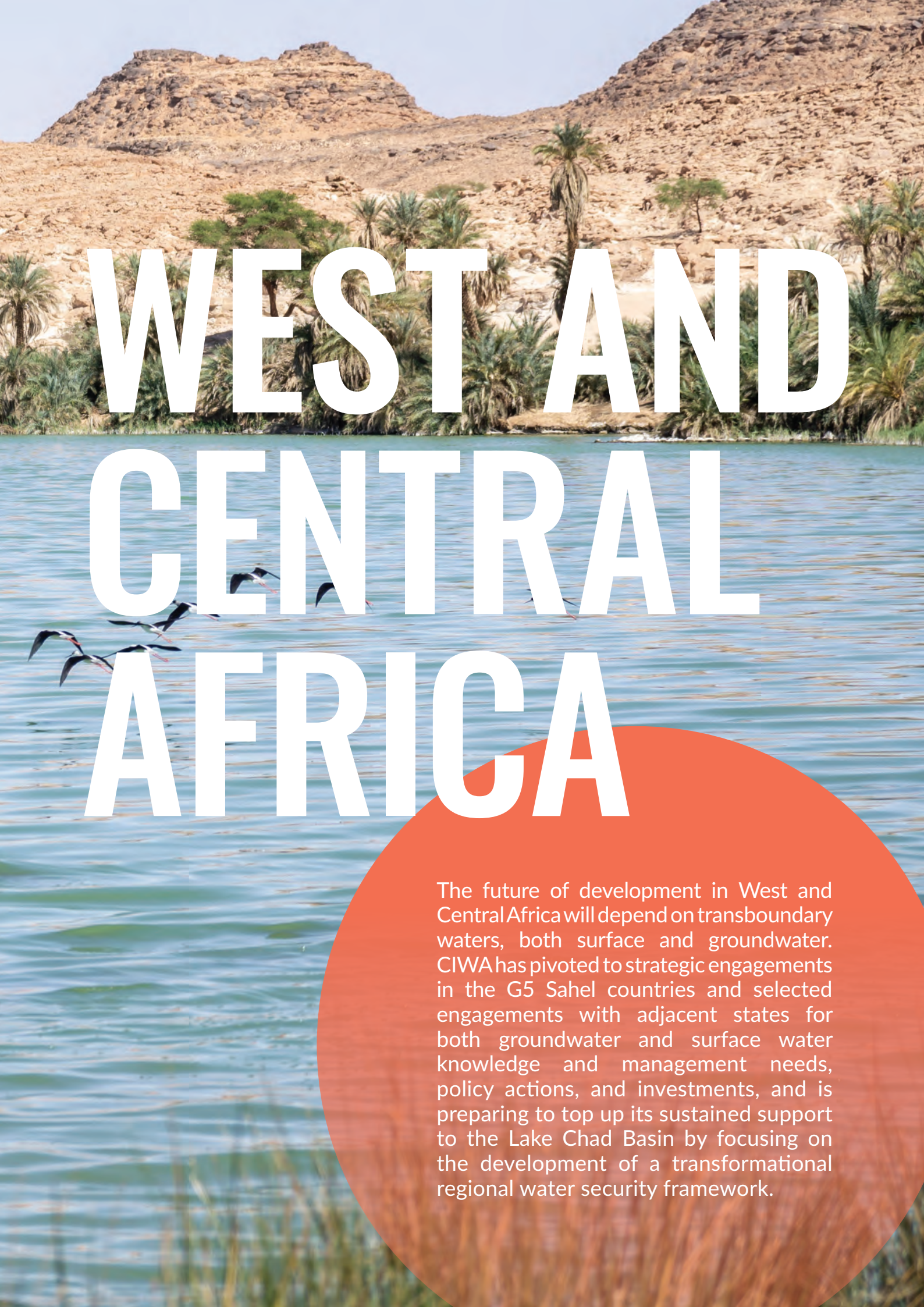
(T-Res) Framework, for practitioners involved in the design and implementation of resilience projects. In particular, the T-Res approach and findings from the stocktaking exercise informed the project design of the above-mentioned regional integration Horn of Africa Ground Water for Resilience project, deepening its approach to transboundary resilience-building, and adopting a robust, system-wide approach that informed the design of project components and sub-components.

Dialogue has created momentum for enhanced capacity and cooperation within a broader regional resilience agenda. The initiative conducted several technical consultative meetings on transboundary threats, in collaboration with HoA governments, regional stakeholders, and development partners, aimed at improving the region's preparedness and responsiveness to transboundary shocks.

Next Steps

Knowledge products are being developed to deepen the understanding of the role of HoA institutions and organizations in resilience-building and strengthen the future pipeline of resilience investments in the region, including:

- The "Regional Groundwater Management Institutional Assessment," which will provide insights into the role of communities in managing groundwater and the challenges and opportunities for groundwater in community resilience to climate change.
- "Strengthening Local Institutions for Resilience in the HoA," will be a synthesis paper reflecting findings from case studies, a broader review, and two sub-studies focused on conflict, resilience and institutions dealing with drought and food insecurity.
- "Rapid Qualitative Assessment to Strengthen Drought Risk Management" is being prepared with a focus on Kenya's water sector.



WEST AND CENTRAL AFRICA

The future of development in West and Central Africa will depend on transboundary waters, both surface and groundwater. CIWA has pivoted to strategic engagements in the G5 Sahel countries and selected engagements with adjacent states for both groundwater and surface water knowledge and management needs, policy actions, and investments, and is preparing to top up its sustained support to the Lake Chad Basin by focusing on the development of a transformational regional water security framework.

WEST AND CENTRAL AFRICA

Improving Water Resources Management in West and Central Sahel

Context

With up to 80% of its people living on less than US$2 a day, poverty is rampant in the Sahel. The Sahel also has one of the youngest and fastest-growing populations globally, expected to double by 2045. With the lowest levels of human capital in the world, the Sahel faces severe challenges, including from climate change and worsening droughts. Rainy seasons have become shorter, more intense, and less predictable, raising the risk of flooding in what is otherwise one of the driest places in the world.

The Improving Water Resources Management in West and Central Sahel technical cooperation is a three-year initiative that aims to improve water resources management by identifying pragmatic investments and policy actions and addressing critical knowledge and capacity gaps. The first phase of consultations and activity selection was completed in November 2020, resulting in the selection of seven engagements.

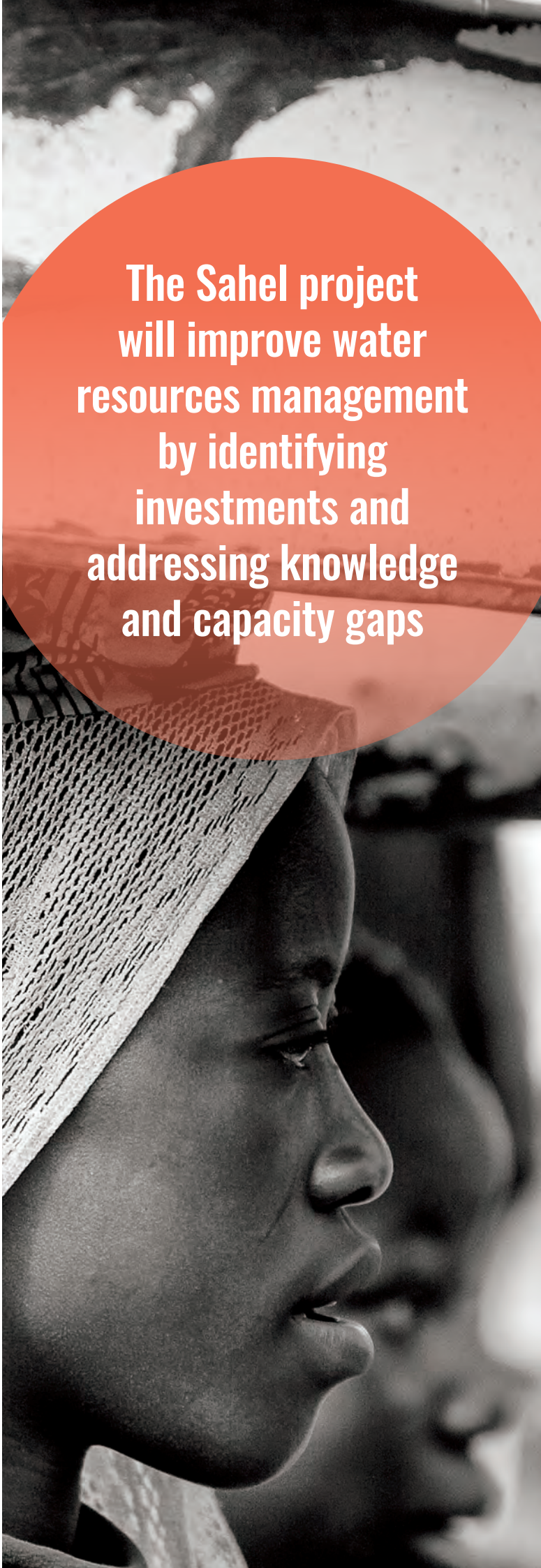
Progress

All engagements were initiated in 2020 and have advanced significantly; one has been completed:

- **West Africa Transboundary Waters Retrospective** (Thematic): A review of the World Bank's engagement in transboundary waters in West Africa over the last 20 years has been completed and is the first part of a broader strategic assessment that derives key lessons to inform further analysis and influence future engagement; it will be disseminated in FY22. One of the key recommendations is to focus on building relationships and capacity on the national levels while also strengthening the underpinnings for transboundary cooperation.
- **Burkina Faso – Mobilizing Water Resources for Development:** This activity consisted of a rapid diagnostic of current and emerging water resources challenges and identified recommendations for an integrated water security program to address challenges. The activity engaged the key water sector counterparts in the government of Burkina Faso, led by the Ministry of Water and Sanitation. This work was co-financed by the World Bank, and the national-level recommendations have been compiled in a draft Technical Note that will be presented at a development partner's roundtable being organized in October 2021. In parallel, the challenges and opportunities for transboundary cooperation with Ghana in the Volta basin are also being explored and will be presented in an addendum chapter prepared jointly with the Ghana engagement (see below).
- **Ghana – Addressing Critical Water Resources Management Challenges:** This engagement is developing a framework for discussions between the government of Ghana and development partners on future investment priorities and policy and institutional actions to improve water resources management, with a focus on northern Ghana. The activity engaged the key water sector counterparts in the government of Ghana, led by the Ministry of Sanitation and Water Resources. Given the strong upstream linkages with Burkina Faso through the various Volta Basin tributaries, the transboundary aspects of this study are being coordinated with the Burkina Faso team (see above) with the objective of developing a joint chapter on opportunities and recommendations. The chapter will serve as the basis for internal World Bank/CIWA discussions in December 2021, to be potentially followed by discussions with the countries and the Volta Basin Authority. The report will be finalized in FY22.
- **Cote d'Ivoire – Gaps Assessment for Water Resources Management:** This activity is supporting a rapid sector review and conceptualization of an integrated water security and services program that can meet different sectors' water resources needs. The main counterparts are the Ministry of Hydraulics and the Ministry of Water and Forests of the government of Cote d'Ivoire. While the identification of national level challenges has made good progress and will be summarized in a draft report in January 2022, the focus for transboundary assessments has not yet been agreed with the government.
- **Strengthening Water Security in the G5 Sahel countries** (Regional): This activity includes a rapid analysis of water security challenges and recommendations for future engagements on regional water security. A development-driven approach is proposed to clarify the linkages

between regional water security and socio-economic development and fragility, in addition to a set of 14 guiding principles for the next regional engagements on water security. With most waters being transboundary in the Sahel, the RBOs remain an important counterpart; however, the note proposes that, depending on the scale of the problem, other actors should be proactively involved, such as pastoralists and farmers or rural and urban users. This activity was co-financed by the World Bank, and discussions included the Sahel Alliance, the Permanent Interstate Committee for Drought Control in the Sahel, Economic Committee of West African States (ECOWAS), Niger Basin Authority (NBA), and Senegal River Basin Development Authority. Based on these findings, the team is exploring specific areas of potential investment and technical and knowledge support.

- **Operationalizing Strategic Storage in Western Sahel** (Thematic): While the population in West Africa is growing at the fastest rate in the world, water resources availability in the region is decreasing. At the same time, the conventional approach of building storage through large dams and reservoirs is facing increasing scrutiny due to environmental and social concerns, which raises important questions about how West Africa will find the water it needs. A critical regional need has emerged of exploring and developing small-scale and nature-based solutions for water storage. A consortium of leading technical organizations (Aidenvironment, Rain Foundation, IHE Delft, Meta Meta, Acacia, IGRAC, WOCAT and GWP West Africa, among others) has been recruited. The analytical work for development of Sahelian typologies and recommended storage interventions has been completed, with draft technical and implementation manuals due in November 2021. A web-based decision tool has also been developed for practitioners and will be piloted in Niger in 2022, followed by regional scale-up.
- **Identifying Partners for CSO Dialogue in Western Sahel** (Thematic): A preliminary diagnostic of CSOs in the G5 Sahel countries has been completed and is being finalized through additional consultations. It is expected to be completed in FY22. The promising work will map out how to involve CSOs more efficiently in the design and implementation of water programs and leverage their experience and capacity to reach out to, empower, and represent vulnerable and socially excluded groups.



Next Steps

The regional engagement on G5 Sahel and the three thematic activities will enter extensive consultations in FY22, aimed at regional and national counterparts, development partners, and internal World Bank stakeholders to identify mechanisms for supporting investments and technical cooperation. The "Burkina Faso Water for Development to 2030 Policy Note" will serve as a key document for the water resources roundtable being organized by the government in October 2021 and support preparation of a national water security project with potential Bank financing. The Ghana and Cote d'Ivoire reports will be finalized in late 2021. These three national-level assessments will have joint chapters focusing on identification of specific areas, themes, and regions where transboundary dialogue and cooperation can be strengthened. These will serve as the basis for World Bank/CIWA discussions in December 2021, which may be followed by discussions with the countries and regional counterparts such as the Volta Basin Authority, for advancing potential investment and knowledge support. The joint chapters on transboundary cooperation will be completed by January 2022.

A young boy rests as his cows and horse drink out of a trough.
Photo Credit: LCBC

Lake Chad Transboundary Cooperation

Context

The Lake Chad region[21] spans the poorest and most marginalized parts of each respective country that is in its active hydrological basin. Its population is caught in a conflict-climate risk trap, as the political, social, and security stresses of the past decade have exceeded the coping capacity of most governments, with climate change bringing even more variability and uncertainty. The Lake Chad Basin Commission (LCBC) has been one of the main platforms for regional cooperation, with a mission of managing the Basin's cross-border resources, yet the lake remains one of the most challenging places to govern.

Multiple efforts by the international community are underway to promote peace and stability in the region. CIWA recently completed its latest round of analytical support, the Lake Chad Dialogue[22], and supported preparation of the Lake Chad Development and Climate Resilient Action Plan, which was presented by the heads of State of the LCBC at COP21 in Paris in 2015. This work helped initiate the design of a large IDA-funded regional investment program for recovery and stabilization (PROLAC), approved by the World Bank in 2020.

Today, CIWA is supporting a new round of dialogue under the Lake Chad Transboundary Water Security program. This program aims to broaden the World Bank's engagement in the water sector in the Lake Chad region and shift its focus from conventional transboundary waters approaches toward a transformational regional water security framework. It will consist of two pillars of work first, it will assess the current state of water security in transboundary cooperation in the Basin, and then catalyze and support national and regional investments.

Progress

> The Lake Chad technical cooperation will develop a transformational regional water security framework.

[21] Lake Chad is a tropical lake with related wetlands, shared by Cameroon, Chad, Niger, and Nigeria. Parts of the Central African Republic are in its active hydrological basin and some of the aquifers connected to the lake are in Libya.
[22] CIWA's Lake Chad Dialogue technical assistance to the LCBC ended in FY 20 and informed this new phase of support.

The first pillar of the program will build the analytical and institutional foundation for water security. It will produce a broad water security assessment (WSA) that will help identify analytical and institutional gaps as well as current or future opportunities in policy reform, programs, or projects that could be further supported under the second pillar. Through a continuous consultative process with the key stakeholders in the basin, this assessment will explore major themes such as water and the climate-conflict trap and the role of CSOs, and include a broad analysis of groundwater management, parts of which will be conducted in partnership with UNICEF. The WSA was initiated in July 2021 and is expected to be completed by September 2022.

The second pillar will consist of activities supporting current or future operations based on the findings of the WSA. This will begin with support to the LCBC under PROLAC for communications and knowledge management, while more activities will be identified and designed during the development of the WSA, based on demand, readiness, impact, and relevance for the Lake Chad Basin. Such activities may identify investments that could be supported in future phases of PROLAC.

Next Steps

A first consultative workshop will be held with key stakeholders by October 2022 to ensure that there is general alignment of the proposed approach with the needs in the region.

A first draft is expected to be delivered by March 2022, at which point another more comprehensive series of workshops will be organized to garner feedback on the ground and finalize the WSA. These workshops will help understand country water security perspectives and priorities as well as the overall basin and will also secure client feedback and ownership needed to develop a better model for supporting transboundary management in the Basin.

Support to LCBC on the second pillar is expected to begin in September 2021 and be completed by March 2022. More activities could be initiated in parallel as opportunities for operational support are identified under the WSA. The annual review will also look at on going and proposed activities under the second pillar.

Members of a women's cooperative stand near solar panels for a submersible pump in hand-dug wells for small-scale irrigation.
Photo Credit: UHL & Associates, Inc.

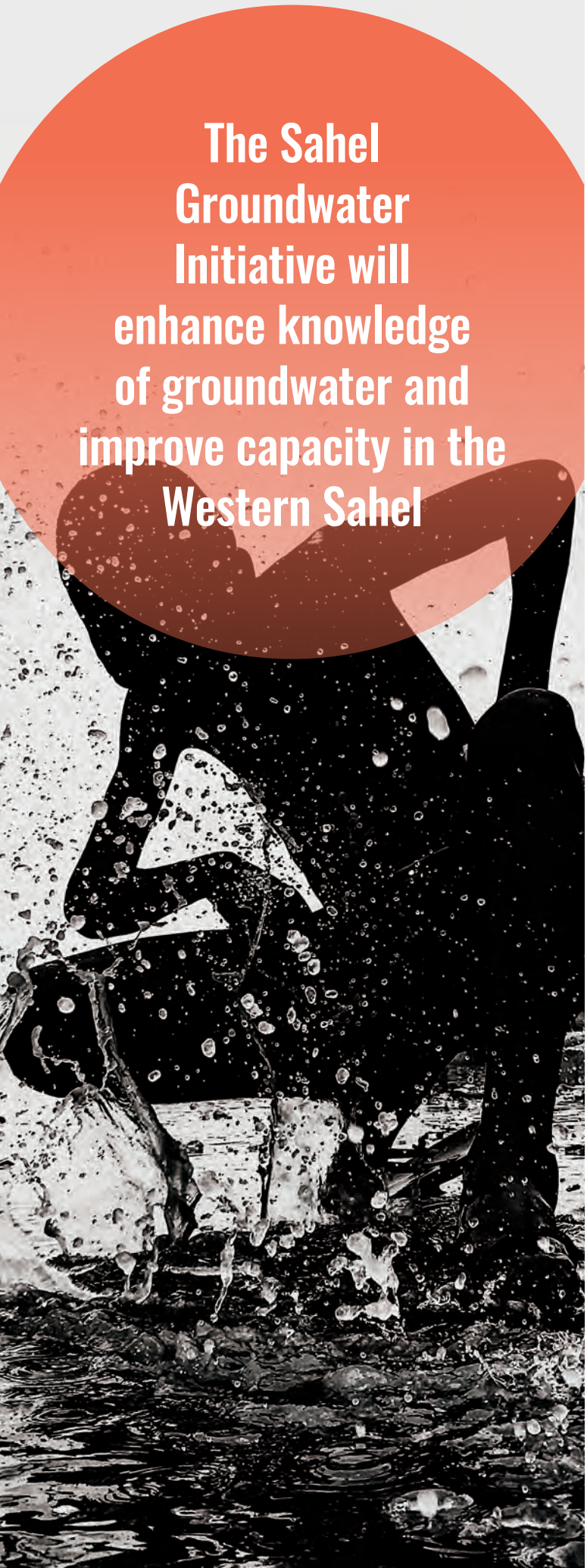
Sahel Groundwater Initiative

Context

The Sahel Groundwater Initiative is a CIWA technical cooperation that aims to strengthen the foundation for enhanced groundwater knowledge and management capacity in Western Sahel, which entered its second year of implementation. This work focuses on three outcomes: providing solutions, including on gender, to remove the constraints on the use of groundwater for small-scale and farmer-led irrigation, reviewing the status of groundwater assessment and exploration capacity in Western Sahel with a focus on FCV, and facilitating regional cooperation on the development of groundwater expertise.

The analytic and technical assistance activity supports country-level efforts in Burkina Faso, Chad, Mauritania, Mali, Niger, and Senegal to compile and analyze the available information on water resources management and identify critical gaps and measures to address them.

The Sahel Groundwater Initiative will enhance knowledge of groundwater and improve capacity in the Western Sahel



Progress

As part of preliminary findings, a gap analysis and typology on groundwater-dependent ecosystems (GDE) were produced with recommendations to fill data gaps. In the Sahel, the quantification and evaluation of groundwater resources underestimate, or do not include, the use of groundwater by micro-organisms, animals, and plants, and associated substrates, whose functioning relies on the presence of water underground and/or its emergence to the surface. Consequently, the amount of truly available water for additional development may be overestimated. The final report will provide a more thorough version of this work, along with the conception of a GDE map that is built from typology. This work formulates the first-ever value estimation of regional biodiversity.

Preliminary findings also cover identification of the existing barriers to gender equality, including in access to groundwater for irrigation, groundwater management activities, and careers in the hydrogeology field. Activities to address these gender gaps are underway.

Next Steps

Building on the recommendations of the above-mentioned diagnostic on the status of groundwater expertise in the Sahel and considering barriers to women's access to careers in the water sector, a research and/or academic cooperation mechanism in the Sahel will be identified to train the next generation of groundwater experts, while supporting scientists to cooperate on transboundary aquifers.

In FY22, the activity will also evaluate an integrated management approach at local, national, and international levels that would allow groundwater resources development for productive use while considering the One-Health[23] vision. It will also address the emerging groundwater quality issues, focusing attention on the shallow groundwater quality beneath urban areas and in FCV contexts. A pilot will also be designed for promoting the use of groundwater for small-scale and farmer-led irrigation in areas where a shallow resource is available for development, carefully considering equal access of the deployed technology for men and women.

[23] The term One-Health came into use to represent the inextricable links among human and animal health and the health of the ecosystems they inhabit. https://oneworldonehealth.wcs.org/news/ID/16322.aspx

SOUTHERN AFRICA

In many parts of Southern Africa, communities are facing recurrent and longer droughts. Drought resilience is stronglylinkedtoaccesstogroundwaterand proper development and management of this resource. CIWA's current engagement in the region focuses on the development of transboundary groundwater utilization and management capacity and is contributing to the development of a new drought-risk management framework.

SOUTHERN AFRICA

Sustainable Groundwater Management in SADC Member States

Context

The 16 member states of the Southern African Development Community (SADC) region[24] are highly affected by climate change, especially repeated and protracted droughts, impacting food security, energy production, and access to water and ecological services. The lack of climate-resilient infrastructure and climate-proof insurance in most Southern African countries will likely exacerbate these risks.

COVID-19 has worsened existing vulnerabilities to water- and climate-related shocks. Food insecurity is expected to increase dramatically. Weakened macro-fiscal positions also make it harder for governments to honor social safety net schemes, where they do exist, or to introduce them if they do not. All these factors threaten the poor and impose a significant burden on women.

The critical importance of groundwater in supporting development and resilience has made it essential to improve sustainable use of surface and groundwater in the region, which has 30 transboundary aquifers and 15 river basins. The SADC Protocol on Shared Watercourses, Regional Water Policy, and Regional Water Strategy provide frameworks for the SADC-Groundwater Management Institute (GMI) to operate as a regional advocate for sustainable groundwater management and development.

The Sustainable Groundwater Management in SADC member states project, which closed in June 2021, helped mitigate the effects of climate change, pollution, and rapidly growing water demand by strengthening institutional and technical capacity to implement national reforms and to facilitate cooperation on shared aquifers. CIWA supported sustainable management of groundwater across the SADC member states and through engagement with five River Basin Commissions: Orange-Senqu Commission (ORASECOM), Limpopo River Commission (LIMCOM), Cuvelia River Commission (CUVECOM), Zambezi Watercourse Commission (ZAMCOM), and Okavango River Commission (OKACOM).

Progress

The following is a cumulative summary of the closed project's achievements.

The 13 completed subgrants projects were at the core of affecting change in groundwater management that impacted socio-economic conditions, access to water, and equitable distribution of groundwater resources. The grants were distributed to Malawi (1), Botswana (3), Zimbabwe (3), Tanzania (1), Mozambique (1), Zambia (1), Namibia (1), Eswatini (1), and Lesotho (1). These activities included studies to better understand the potential of transboundary aquifer use and management and contributed insights and knowledge about groundwater. The Transboundary Diagnostic Analyses (TDAs) and a subsidiary action program (SAP) were completed for three transboundary aquifers: Shire (Malawi/Mozambique), Eastern Kalahari Karoo (Botswana/Zimbabwe), and Tuli-Karoo (Botswana/South Africa/Zimbabwe). The TDA/SAP processes provided common frameworks to identify and formulate strategies, programs, and investments, responding to transboundary issues of environmental and biodiversity management.

To strengthen regional water management policies, the project developed Groundwater Policy, Legal and Institutional Gap Analyses reports and Action Plans for all 16 SADC member states and at the regional level. The project implemented priority actions in the SADC Regional Strategic Action Plans for Integrated Water Resources Management (Phase IV, 2016–2020)[25] in alignment with the Revised SADC Protocol on Shared Watercourses (2000)[26] and river basin agreements. The project has updated the SADC Groundwater Drought Risk Map[27] and identified water security hotspots and water supply options. Twenty initiatives were implemented jointly with the five main RBOs to promote the integration of groundwater. Multi-stakeholder groundwater National Focal Groups were established in five member states to enhance groundwater advocacy and governance. SADC-GMI has developed guidelines to ensure coordinated management of different aspects of groundwater.

[24] Angola, Botswana, Comoros, DRC, Eswatini, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Tanzania, Zambia, and Zimbabwe
[25] https://www.sadc.int/files/9914/6823/9107/SADC_Water_4th_Regional_Strategic_Action_Plan_English_version.pdf
[26] https://www.sadc.int/documents-publications/show/Revised_Protocol_on_Shared_Watercourses_-_2000_-_English.pdf
[27] https://sadc-gip.org/layers/Groundwater_drought_risk_updated_final:geonode:Groundwater_drought_risk_updated_final

Through the successful implementation of numerous knowledge initiatives and infrastructure pilot projects, SADC-GMI has increased capacity of member states. Targeted capacity-building has enhanced Ministries' capacity, including by training 200 people on groundwater data collection, management, and sharing. The project supported 65 internships for young professionals, 34% of whom were women, to work on data collection and management projects and expand the SADC Groundwater Information Portal[28] and the SADC Groundwater Literature Archive[29]. The COVID-19 pandemic meant relatively fewer training events were held and most were virtual.

Next Steps

Information systems to manage groundwater data are disparate throughout the region. The implementation of groundwater management action plans, where developed, needs to be strengthened. The hydrogeological capacity in public institutions must be strengthened and regulations established. Even when regulatory instruments exist, often no enforcement or sanctions of unlawful activities are conducted, and there is limited coordination with energy and mining sectors.

A US$9 million CIWA grant for the new phase of the Sustainable Groundwater Management Project was approved and is expected to begin in late 2021. A complementary grant of US$5 million from the Global Environment Facility (GEF) was also approved and a US$500,000 grant from GFDRR has been requested (Annex 5, Table A5.1). This second phase will support capacity-building and institution-strengthening through a range of technical assistance activities and build on work to create a useful groundwater information platform. The project will support groundwater management approaches that consider the key role that communities, including women and vulnerable populations, play as the principal promoters, educators, and leaders of home- and community-based water and sanitation practices. This component will further pilot innovative groundwater infrastructure solutions, which can be scaled up through a future investment program.

[28] https://sadc-gip.org/
[29] http://sadc-gla.org/SADC/

Thandeka Ngobe during the CIWA-supported Young Professionals program at SADC-GMI, with other young water resources professionals.
Photo Credit: Thandeka Ngobe

Southern Africa Drought Resilience Initiative

Context

Population growth affects the river system in terms of water use and pollution, and droughts are a growing problem. Riparian economies depend on hydropower from the Zambezi River, but high climatic variability puts significant pressure on hydropower generation. Climate change will cause an increase in evapotranspiration from higher air temperature, and COVID-19 is expected to exacerbate drought vulnerabilities.

This technical cooperation, which enters its second year, addresses cross-border drought risks, promotes cooperative management of shared natural resources, and creates an integrated vision of drought-risk management across the water-energy-food-environment (WEFE) nexus. It supports technical assistance and analytics along three pillars – cities, energy systems, and livelihoods and food security – and fills knowledge gaps, advises on transboundary drought-risk management strategies and approaches, and connects to potential investments:

- **Cities:** This pillar supports more effective use of national hydrometeorological and drought-risk management systems to strengthen early-warning systems and planning through the standardization of tools to assess vulnerabilities and build opportunities for enhancing drought resilience. The mitigation measures will include guidance notes, emergency response plans, and planning for, and/or applying, adaptive water management approaches such as rainwater harvesting and other green infrastructure.
- **Energy systems:** This pillar supports hydropower operators, power utilities, and efforts to secure more resilient energy systems, especially cross-border. It fills critical analytical gaps in the WEFE nexus, improves operational decision-making of dam operators, and supports the Southern Africa Power Pool (SAPP)'s strategic priorities.
- **Livelihoods and food security:** This pillar builds on the development of an Agriculture Risk Finance Framework[30] in Southern Africa by creating drought-risk analytical and advisory products and solutions for food security and livelihoods, including agri-food value chain solutions to manage and finance drought-risk mitigation and operational manuals for contingency mechanisms within investment operations. This pillar also supports Trans-Frontier Conservation Areas (TFCAs) to explore opportunities for climate-smart agriculture and livelihood diversification. TFCAs approach biodiversity conservation from a regional perspective, seeking shared solutions for sustainable land use and economic development.

Progress

> SADRI will address cross-border drought risks, promote cooperation, and create a holistic vision of drought-risk management.

The project launch included a virtual regional workshop for SADRI in February 2021 with over 90 participants from 30 institutions. The workshop brought together regional partners and technical experts to discuss the dire need for drought management in the Southern Africa region and socialize the project's roadmap and working model with the SADC member states' drought focal points.

[30] https://openknowledge.worldbank.org/handle/10986/34314

The national and regional level Stocktaking and Needs Assessment was advanced to produce comprehensive profiles that capture commonalities and key opportunities. The drought resilience profiles for South Africa, Botswana, Namibia, Eswatini, Lesotho, Zambia, Zimbabwe, Mozambique, Angola, DRC, Malawi, Madagascar, Comoros, Seychelles, Mauritius, and Tanzania were completed (https://www.ciwaprogram.org/resources/). The purpose of this activity is to deepen the understanding of the state of drought-risk management in SADC member countries according to the three elements of the integrated drought-risk management framework: who the major stakeholders are, what the policy and institutional framework looks like, and the availability and operability of key systems for improving drought resilience. The stocktaking and needs assessment are intended to guide the consultation process and support the identification of region-wide drought-risk management investment opportunities.

The Knowledge Hub for Drought Resilience[31] was developed to provide users with easy access to articles, reports, videos, and websites on drought-related topics. In addition, a story map has been initiated as an overview of SADRI and includes e-publications and e-profiles for disaster risk management. The team is exploring hosting the knowledge hub on the World Food Program Risk and Vulnerability Assessment Atlas for SADC, which is currently being developed, and using the Climate Change Knowledge Portal as a linked platform.

SADRI will support more effective use of national hydrometeorological and drought-risk management systems to strengthen early-warning systems and planning by standardizing vulnerability assessment tools and build opportunities for enhancing cities' drought resilience. The mitigation measures will include guidance notes to enable cities and urban service providers to plan for drought-sensitive water resources, develop emergency response plans, and plan for adaptive water management approaches, such as rainwater harvesting and other green infrastructure investments. An Urban Drought Resilience Toolkit will provide an evolving narrative on global best practices. Regional Guidance notes for water systems to increase drought resilience are drawing on African and global case studies for improved drought monitoring, early-warning systems, policy and institutional reform, and investments.

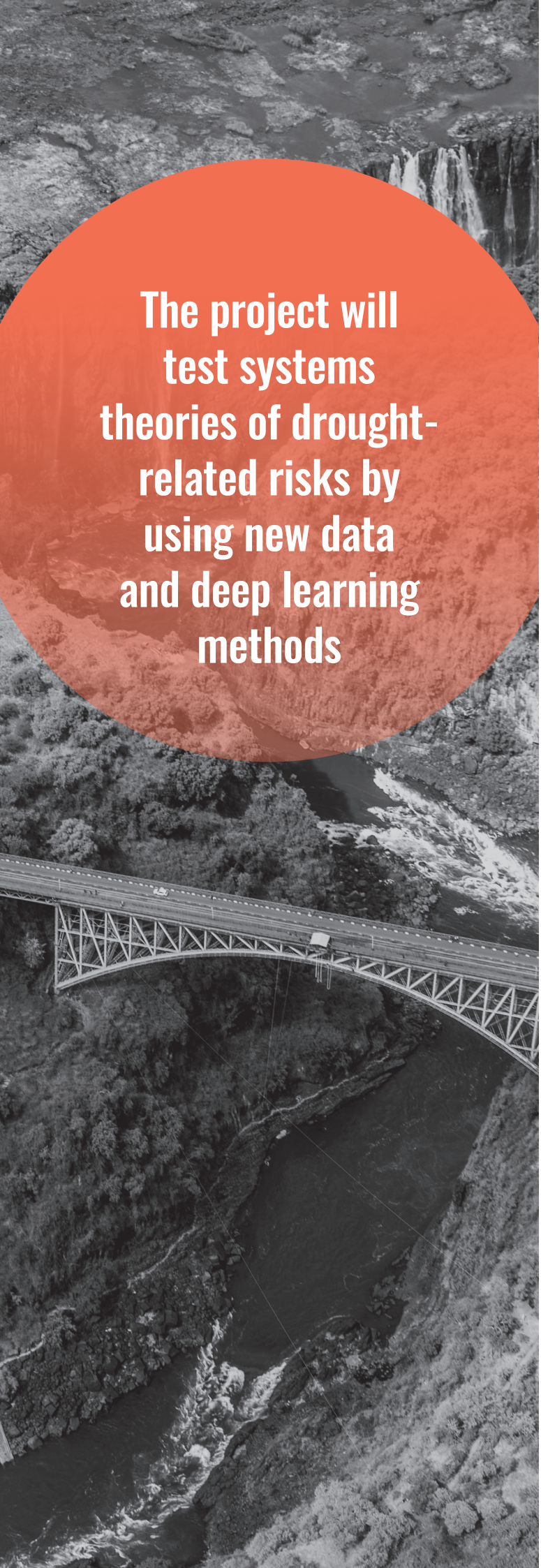
The initial priorities to deliver decision support tools for Zambezi Dam operations optimization have been delayed due to multiple constraints. The project is preparing for the possibility of reshaping the pillar and its deliverables to ensure alignment and a clearer division of labor with the Regional Transmission Infrastructure Financing Facility. The SAPP Coordination Center approved the revision and expansion of the drought-sensitivity assessment originally carried out as part of the SAPP plan. The team continues to work on national transactions to integrate existing hydropower capacity with other potential renewable energy projects.

A scoping study on watershed management constraints and ongoing interventions in Eastern Cape Province (focusing on the Umzimvubu Watershed, part of the larger transboundary Maloti-Drakensberg Watershed) was completed and presented to the Eastern Cape Provincial government. The report identifies the need for investments in landscape restoration, pasture-based livestock management, community agroforestry, natural resource-based microenterprise development, and water harvesting and management in the upper catchment.

Operationalizing drought-resilient contingency components/mechanisms of agriculture and food security investment operations have been implemented. A draft guidance note on including a dedicated response mechanism to agricultural emergencies in Bank operations was prepared for Bank task teams and project implementation units in client countries. It describes the implementation modalities and financing sources of the rapid response mechanism to agricultural emergencies. In addition, training materials based on this note will be prepared and training delivered in FY22 to Bank task team leaders.

Activities for Watershed Management for Livelihood Resilience in the Limpopo and Cubango/Okavango Basins were conducted. The activity focused on building resilient livelihoods, especially those exposed to regular droughts and who have minimal safety net options for managing drought risk. To take advantage of regional approaches to natural resources management, these activities aim to leverage the governance structure of TFCAs. Communities living in and around TFCAs are among marginalized groups in Southern Africa and disproportionately derive their livelihoods from land-based activities, including

[31] https://geowb.maps.arcgis.com/apps/MapJournal/index.html?appid=cb0fc8aa450f4b35a018f7e0115867be



agriculture, making them highly vulnerable to drought. The Parfuri-Sengwe Node, located in the heart of the Great Limpopo TFCA (South Africa, Zimbabwe, and Mozambique), is targeted to begin the engagement. Bilateral consultations produced stakeholder mapping and priority activities for the node.

Next Steps

The project will test systems theories of drought-related risks by using new data and deep learning methods. By analyzing the relationships between drought, agricultural outputs, commodity prices, and social group perceptions of inequality and violence, the complex intermediary and contextual factors that contribute to conflict risk will be better understood. These analyses will form the foundation for regional and national drought resilience investments.

In FY22, a cross-national study exploring the relationship between water and drought related to climate shocks and levels of violence and social unrest will be launched. Other activities will include characterization of wetlands within the Parfuri-Sengwe Node and transboundary aquifer, determination of suitable areas for small-scale agriculture on the Limpopo River flood plain (Mozambique and Zimbabwe), a hydro-census for the Limpopo, Luvuvhu, Mwenezi/Nuanetsi, and Bubye river systems to identify water-use practices, characterization of existing water resources management and governance, and identification of potential investments. Training materials based on implementation modalities and financing resources of the rapid response mechanisms to agricultural emergencies in Zambia and Zimbabwe will be delivered.

IF THERE IS NO WATER, THERE IS NO LIFE

The people of Muchocolote, in the Matutuíne district of Maputo Province in southern Mozambique, raise cattle and other animals. As is common throughout Africa, women and girls walked one-to-three kilometers every day to fetch water for their families, often after many hours of work in the fields or at home. Sometimes the unclean water sickened them with cholera and other diseases. As few as 35% of the rural population in Mozambique has access to safe, potable water.

But now Muchocolote residents have clean water for all their needs, thanks to a project by the Southern African Development Community's (SADC) Groundwater Management Institute (GMI), supported by CIWA and the Global Environment Facility. A new solar-powered submersible pump supplies water to 2,000 people in Muchocolote. Subterranean pipelines deliver water from the underground tanks to several other villages.

It's been a game changer.

"We are grateful for this development," says farmer Linda Fazenda Sucane. "Earlier, I would come home after a long day at the field, tired and exhausted, and think of ways to get water, as it was far away. Now our lives have become easier with close access to water for us and our animals."

Women can use the time saved from collecting water for other productive activities, and they no longer worry about gender-based violence on long walks to fetch water.

Says farmer Paulo Francisco Baloi, "If there is no water, there is no life. But now the water is coming permanently. This is a win for us!"

STRATEGIC DIRECTIONS

Fragility, Conflict, and Violence

> CIWA is deepening its support for 11 countries grappling with fragility, conflict, and violence.

CIWA is expanding and deepening its support to countries affected by fragility, conflict, and violence (FCV). In 2021, 21 countries in Africa were classified as FCV states, and CIWA operates in 11.

In FY21, CIWA strengthened synergies with the World Bank's FCV Group by participating in the risk and resilience assessments (RRAs) conducted in the Sahel, the HoA and South Sudan. An RRA aims to improve understanding of FCV drivers and resilience factors and to inform strategic, operational and policy approaches. The HoA RRA is applying a "drivers of conflict" lens to transboundary water governance and assessing entry points for incentives for collaboration, confidence-building measures, and conflict mitigation.

CIWA remains engaged in four high priority FCV-affected regions – the Horn of Africa, West and Central Sahel, Lake Chad, and the Great Lakes. In the HoA, CIWA is engaged in the borderland areas through the new IDA-financed Groundwater for Resilience project, which is strengthening the ability of targeted entities and communities to cope with, and adapt to, climate shocks through enhanced management and use of groundwater resources.

Similarly, through the NCCR project, CIWA is improving mechanisms for cooperation on water resources management and development in the Nile Basin. In West and South Africa, CIWA is helping build the analytical and institutional foundation to enhance transboundary cooperation on water security in the Sahel region (through the Improving Water Resources Management in West and Central Africa project) and Lake Chad (through the Lake Chad Transboundary Water Security initiative), both high-priority areas affected by FCV.

Data-driven decisions are key for effective development planning in transboundary waters. However, FCV countries are among the most data-deprived because of multiple factors stemming from conflict and violence. In 2020, CIWA initiated the digital data platform to build regional institutional capacity and demonstrate applications of remote-sensing data tools to improve management of transboundary waters. The digital data platform has synergies with the Bank's Geo-Enabling initiative for Monitoring and Supervision launched to enhance monitoring, evaluation, and supervision in FCV settings and will support CIWA clients and partners to make data-driven decisions.

With the goal of deepening understanding of fragility and water cooperation at the local level, CIWA commissioned a study on how water cooperation can address drivers of water-related conflicts in the HoA. The study will be conducted by the Stockholm International Peace Research Institute in FY22.

Resilience

> CIWA is helping communities and governments mitigate the impacts of shocks and natural disasters.

CIWA operates in multi-shock contexts, where the impacts of climate change on water security are part of a much more complex scenario. Adopting a broader resilience perspective is crucial, as the program helps strengthen the capacity of riparian governments to better adapt, and potentially transform, amid change.

Resilience means taking a long-term, holistic perspective to strengthen the ability of vulnerable communities and institutions to better prepare for, manage, change, and prevent or mitigate the impacts of the next disaster. Well-managed water resources will play a crucial role in the transition from *quantity* of growth to *quality* of growth – a transition that is increasingly relevant for African countries as they recover from the impacts of the global pandemic, as well as for the World Bank and other development partners.

CIWA has a key role to play in strengthening the ability to build back stronger and better and to achieve a more resilient and sustainable future. Analytical work supporting resilience in the Horn of Africa Initiative (HoAI) has shown that interactions among governments but also among regional, national, and

local level stakeholders are pivotal to ensure lasting impact. CIWA's role in strengthening institutional capacity to cope with change is one of the key entry points to foster integration and inclusion and ensure foundations of trust and accountability. CIWA is contributing to building the region's resilience by:

- **Raising awareness of conditions on the ground and improving early-warning systems through a knowledge base that is accurate, accessible, and used by riparians.** For example, CIWA's involvement in the Lake Chad Dialogue helped develop a basin-wide groundwater model to assist countries to understand hydrological dynamics and make better decisions about development and use.
- **Generating data, information systems, and knowledge products to inform climate-sensitive planning and respond to shocks early and effectively.** In Western Sahel, CIWA is working with a consortium of practitioners to develop an innovative tool for developing appropriate small-scale water storage solutions for rural communities. CIWA's engagement in the HoA includes a groundwater pilot project implemented by IGAD, technical assistance for Somalia on transboundary water resources management, and an analytical project to strengthen transboundary resilience-building through improved information systems and institutional capacity.
- **Working with partners to define strategies for long-term sustainability of river basins that promote cooperative water resources management and development.** CIWA's engagement in the Sahel, for example, includes fostering dialogue among the G5 countries and providing country-level support, a water-storage study, and the development of an investment pipeline to facilitate the sustainable management and mobilization of transboundary water resources as a foundation for broader socioeconomic development.
- **Addressing institutional capacity gaps and building skills to anticipate and respond to shocks and stressors affecting the region and to face future uncertainty.** CIWA's engagement in the Great Lakes aims to increase the capacity of Nile Basin institutions to analyze and identify investments to address water-quality hotspots and to undertake a multi-criteria decision analysis to prioritize investment options.

CIWA's resilience-building efforts are closely aligned with World Bank support for countries to invest in and build a low-carbon, climate-resilient future. The World Bank made adaptation and resilience a key priority of its 2025 Climate Change Targets, elevating adaptation to an equal footing with climate mitigation actions.

Biodiversity

The CIWA program is exploring ways to better align transboundary water cooperation efforts with biodiversity conservation goals, including identifying opportunities at the intersection of transboundary water management and freshwater biodiversity conservation.

Rivers and other freshwater ecosystems are key to supporting biodiversity and the benefits of healthy, functional natural systems. Rivers play an important role in delivering sediment to maintain riverbanks, floodplains, coastal dunes, and deltas. Wetlands are among the most biodiversity-rich ecosystems, helping reduce flood risk, improve water purification and groundwater recharge, and support sustainable fishing. Freshwater fish are essential for the livelihoods of vulnerable rural communities, enhance food security, and often play a significant role in local economies. Sustainable groundwater supply is critical for GDEs, such as riparian vegetation and grasslands, and indirectly sustains lakes and wetlands. Groundwater and surface water environmental flows help maintain the resilience of aquatic ecosystems to ensure an ongoing provision of goods and services to local communities.

Supporting a range of biodiversity-related activities, CIWA identified opportunities to further scale up biodiversity interventions across the region. In East Africa, the NCORE project supported the NBI to strengthen governance mechanisms and the knowledge base to allow for more informed and inclusive decision-making related to biodiversity. In line with World Bank standards, NCORE also ensured compliance with global best practices in environmental safeguards for all investment studies. Good water quality has a large impact on fish stocks and biodiversity, which in turn decreases food insecurity and disease, and the Great Lakes Water Quality assistance focused on improving water quality in the Lake Victoria Basin, thus reducing environmental degradation.

In the Sahel Groundwater Initiative in West and Central Africa, technical and analytical support included a better understanding of Sahelian groundwater-dependent ecosystems, highly relevant to the development and well-being of people, fauna, flora, and the environment. In the Lake Chad Basin, CIWA supported an integrated approach to the development of a water security program, which included examining the potential for nature-based solutions as a key instrument involving watershed management, reforestation, and payment for ecosystem services. The Horn of Africa Groundwater Initiative expanded knowledge of regional groundwater resources, including evidence-based joint planning and decision-making about natural resources such as livestock, crops, and water.

The SADRI initiative supported analytical work to develop a better understanding of water resources and how they are being utilized in the Pafuri-Sengwe Node of the Great Limpopo TFCA. Activities included mapping flood plains and wetland systems associated with four river systems in the node, assessing current water demand and usage, understanding the role of wetlands in livelihoods and climate resilience, and evaluating governance practices to manage water resources. The overarching goal is to better equip climate-resilient communities to plan for and mitigate drought, contributing to a decrease in biodiversity loss.

The World Bank is further exploring ways to align transboundary water cooperation efforts with biodiversity conservation goals, including identifying opportunities at the intersection of transboundary water management and freshwater biodiversity conservation, which will be presented in a background paper.

CIWA is aligning transboundary water cooperation with biodiversity conservation goals

CROSS-CUTTING THEMES

Water Data Revolution: Closing the data gap for transboundary water in Africa

> CIWA is enhancing access to Remote Sensing data and data platforms to address constraints to cooperative water management.

Information and data on the quantity and quality of water is vital to ensuring equitable and efficient use of transboundary waters. Improved management of water resources and increased resilience to hydrological extremes requires understanding water resource dynamics at the basin level. However, hydrometeorological monitoring networks across Africa are often sparse and have large latency, making them impractical for real-time decision-making. Many water managers need better access to remotely sensed (RS) data acquired from satellites.

RS data and information, combined with in-situ data, can provide continuous and reliable coverage for basin water planning and transboundary applications, such as flood forecasting, monitoring of surface water quality, tracking of water diversions and allocations, and quantification of water storage in reservoirs. Many decision-makers lack the capacity to access and adapt the many free- or low-cost platforms to collect, store and analyze RS data to provide solutions at scale. Users of these platforms, such as RBOs, need to be able to translate these data for enhanced decision-making and to strengthen data exchange and sharing.

Through the new Water Data Revolution (WDR) technical cooperation, CIWA is assisting governments to address constraints to cooperative water management by enhancing access to RS data and data platforms. CIWA is building the capacity of its partners to make evidence-based decisions and use cutting-edge technologies while creating a collaborative atmosphere to address challenges. The WDR is expected to form a pipeline to CIWA's other investment projects.

WDR supports selected engagements through a bottom-up, user-driven approach to identify and support commonalities and a top-down approach to connect innovative technologies such as RS tools, satellite imagery, and data platforms to users. This initiative will help countries improve their capacity to collect, store, and analyze data and information and to make evidence-based decisions about water, essentially by reducing the cost and complexity of water data and by establishing connections with data platforms that facilitate the translation of information for better decisions.

Assessments are being conducted to mobilize understanding of user groups and their needs and capacity through evaluating the current status, availability, and use of data and data platforms among RBOs. A brief review of World Bank experiences and engagements related to data collection, analysis, and management in supporting transboundary waters cooperation will also be performed.

Workshops and trainings on RS data analysis tools and uses for water management applications are being prepared to build capacity of transboundary water organizations, coordinating with partners such as Digital Earth Africa, International Water Management Institute, and the Global Partnership for Sustainable Development Data.

A data platform will be adapted to a specified water management application for selected clients. Successful demonstration and implementation of the data platform should lead to increased, sustained usage of RS data to assess water resource management issues and increase the capacity for data-driven decision-making.

Gender and Social Inclusion

CIWA's work on Gender and Social Inclusion (GESI) offers a transformative approach that shifts from one-off interventions toward actions that disrupt deeply entrenched norms and attitudes about gender inequality and social exclusion and target multiple, diverse stakeholders. Given that transboundary water management remains a male-dominated field, CIWA recognizes the importance of engaging male stakeholders to ensure that efforts to empower women face minimal resistance.

In FY21, CIWA developed a GESI Framework to provide guidance on the most appropriate and transformative strategies and approaches. The Framework unpacks the social inclusion dimension by recognizing that women and men are not homogeneous and have multiple identities and vulnerabilities to be considered when developing projects and programs.

As part of CIWA's commitment to ensure that GESI is integrated into all its projects, CIWA has provided GESI technical assistance and strategic input on project documents at the concept phase. Guidance has ranged from conducting and integrating results from interviews and secondary research on GESI considerations in the Great Lakes region to drafting a gender analysis note for the Sahel Groundwater Initiative that incorporates strategies to facilitate the inclusion of female hydrogeologists to providing strategic input into concept notes being developed for the SADC Groundwater Management Initiative and the Lake Chad Transboundary Security Initiative.

CIWA drew upon its long-term experience working with the Nile Basin Initiative (NBI) to conduct interviews with key stakeholders about lessons learned in adopting a transformative approach and presented the findings at an international conference on gender and transboundary water and in a Learning Note to assist CIWA staff and partners on how to apply a transformative GESI approach within different transboundary contexts.

Learning Notes will be produced to capture best practices, lessons learned, and recommendations on applying a GESI lens to transboundary water resource management and development. The first will reflect lessons learned and recommendations, illustrating essential steps that should be taken early in project design to ensure that GESI is firmly entrenched at the implementation phase. Additional tools will consider key cross-cutting issues including climate change, FCV, and food security. CIWA will also continue to identify opportunities to raise awareness externally about how, where, and why to incorporate GESI considerations within a transboundary water context through blogs and other communications.

PASSION LEADS TO PERSEVERANCE IN MALE-DOMINATED WATER FIELD

When Thandeka Ngobe was growing up in Nkomonye, a small rural village in the Kingdom of Eswatini in southern Africa, she saw her grandmother walk a long way every day to fetch water from a "scoop dam" used by both people and animals.

Eventually her community had access to a nearby borehole for water, which meant cleaner water and less distance to travel. But the water from the borehole was salty, and young Thandeka wondered why. Later, in secondary school, her class did a project to identify sources of pollution in a nearby stream.

Those early experiences got her hooked on the study of water.

Ngobe, now 28, became the first person in her family to attend college. Today, she is studying for a master's degree in hydrogeology at the University of the Free State and is researching the groundwater discharge processes in groundwater-dependent ecosystems in the Khakhea Bray transboundary aquifer, funded by the Southern African Development Commission Groundwater Management Institute and the JRS Biodiversity Project.

In 2018, Ngobe joined the CIWA-supported Young Professionals program at SADC-GMI, where she met other young water resource professionals and collaborated on research projects.

Ngobe says she likes "working in the field, collecting data and analyzing it." Yet she knows that, as a woman, doing field work is an anomaly. "It is easier for a man to be in the field," she says, because the water resources profession is very male-dominated.

The sparse number of women in management positions, she says, "has an impact on young, aspiring hydrogeologists like me. This is a masculine profession. We don't have anyone to look up to."

Still, Ngobe is not letting gender norms stop her from pursuing her passion. "I really see myself going far in this profession," she says. "It's possible as long as you put your mind and your heart into it."

Communications

CIWA focuses its communications efforts on raising awareness about transboundary cooperation and cross-cutting issues. By creating a cohesive strategy, CIWA spearheads outreach, engagement, and advocacy to targeted stakeholders across Africa.

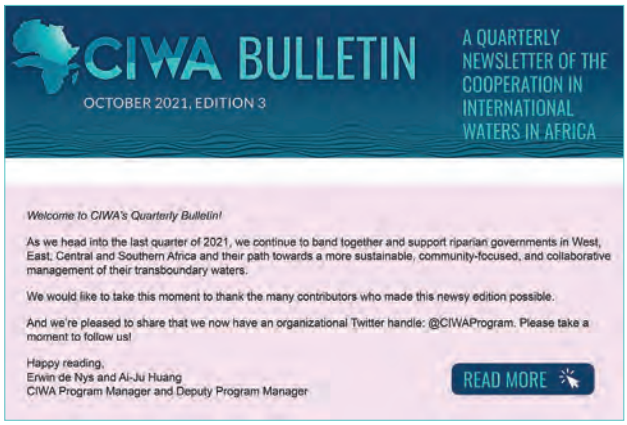
CIWA's communications strategy aims to reach a global audience with engaging, informative content published in English and French. One of the key objectives of the strategy is to raise the visibility of CIWA's projects and analytical work. CIWA has been working closely with the World Bank's Water Global Practice and other departments to coordinate efforts and find synergies with editorial content produced across the World Bank.

CIWA's newly revamped bilingual English-French website (ciwaprogram.org and ciwaprogram.org/fr) has been enhanced by new features and updated content, including live data, blogs, interviews, podcasts, short documentaries, and animations.

CIWA also launched its first social media campaign focusing on its Gender and Social Inclusion framework in light of International Women's Day on March 8. CIWA also launched its quarterly newsletter, CIWA Bulletin, in March 2021, to communicate more broadly about CIWA's engagements and to inspire readers about efforts to improve transboundary water cooperation in Africa. All the latest news on CIWA can be seen on the newly-launched @CIWAProgram Twitter Account.

A growing number of professionals in many sectors form and cultivate Communities of Practice (CoPs) to improve their performance and gain insights from one another. In July 2021, CIWA formed the Water Information and Communications in Africa (WICA) CoP, continuing its positive working relationships with communications professionals at African basin commissions and water organizations. CoP members – the African Network of Basin Organizations (ANBO), the African Ministers' Council on Water (AMCOW), the Cooperation in International Waters in Africa (CIWA), the Lake Chad Basin Commission (LCBC), the Nile Basin Discourse (NBD), the Nile Basin Initiative (NBI), and the Southern Africa Development-Groundwater Management Institute (SADC-GMI) – share best practices, cross-promote one another's communications content, and provide promotional support for events.

The team will a conduct a multimedia publicity campaign spotlighting the 10-year anniversary of CIWA in early 2022, telling stories about the foundations of CIWA, profiling transboundary water cooperation champions, the need for greater cooperation among countries with shared international waters in Sub-Saharan Africa, and progress made so far.



Visit the new CIWA Bulletin launched in March 2021

Visit CIWA's 2021 Website

LOOKING AHEAD

> CIWA will focus on the power of dialogue and cooperation to build resilience to drought, floods, and other natural disasters.

We have accomplished much in the last year despite the challenges of working amid a global pandemic, a testament to the tenacity, commitment, and creativity of our staff and our partners in Sub-Saharan Africa. We look forward to seizing opportunities for meaningful impact on the region's growth and development in the months and years ahead, as countries advance on their road toward a resilient recovery.

In the coming year, we will focus on the power of dialogue and cooperation to build resilience to a range of shocks, from drought in the Horn of Africa to floods in Western Africa. We will do this through innovative programs targeting climate resilience in the Nile Basin, groundwater's potential in Southern Africa, and enhanced cooperation in Lake Chad, a region beset by multiple challenges and crises.

A focus of our resilience work is helping people to better prepare for, and adapt to, the effects of climate change, which continue to intensify across the continent. This includes CIWA's support to sustainable water resources management in fragile and conflict-ridden states, as well as the protection of the region's biodiversity, which plays a critical role in people's livelihoods, ecosystems, and sustainable economic development. We will assess CIWA's impact on protecting biodiversity in the region and use the emerging lessons to inform future work in this area.

Women walking with water containers in a village near Dar Es Salaam, Tanzania.
Photo Credit: Photographer RM/Shutterstock

We look forward to advancing our work on GESI, including training CIWA staff and colleagues in river basin organizations and governments on what it means to incorporate a GESI lens throughout transboundary water resources management.

Of course, CIWA will continue to build transboundary cooperation through our three pillars of improving access to information, strengthening institutions, and identifying, preparing, and mobilizing sustainable investments. We will maintain the program's proven dual approach of continuity and change, by balancing long-term engagements in priority basins with short-term strategic projects.

The quantity, quality, and allocation of water resources are key to countries' ability to prepare for and respond to crises, including the impacts of the COVID-19 pandemic. Water resources will remain critical not only to ensure an inclusive, sustainable, and more efficient recovery, but also to make progress on countries' development and climate goals. In this context, CIWA plays an important role in building the foundations for a bluer, greener, and more resilient future.

As we celebrate our 10th year of improving transboundary water cooperation, we are conducting an external evaluation of program achievements and developing lessons learned to inform our strategy for the next five years. We expect to be able to share results of the evaluation with our Advisory Council of donors in the Spring of 2022.

We also are cognizant of the fact that all of the US$135 million raised from donors is already fully allocated (see Annex 4) and that we have a pressing need to secure additional financing to support our work over the next five years. In addition, we will explore opportunities to leverage our funds with other funding sources, such as climate finance.

We are optimistic that, together, we can continue to make progress for the governments and organizations that serve the people of Sub-Saharan Africa.

Katse Dam, Lesotho, Southern Africa. Photo *Credit: Deldiew/Shutterstock*

CIWA

Cooperation in International Waters in Africa

The Cooperation in International Waters in Africa (CIWA) was established in 2011 and represents a partnership between the World Bank, its African partners and the governments of Denmark, the European Commission, Norway, Sweden, the Netherlands, and the United Kingdom. CIWA supports riparian governments in Sub-Saharan Africa to unlock the potential for sustainable and inclusive growth, climate resilience, and poverty reduction by addressing constraints to cooperative management and development of international waters.

www.ciwaprogram.org

www.ciwaprogram.org/fr

@CIWAProgram

THE WORLD BANK
IBRD • IDA

Co-funded by the European Union
Foreign, Commonwealth & Development Office
Ministry of Foreign Affairs
MINISTRY OF FOREIGN AFFAIRS OF DENMARK
Norwegian Ministry of Foreign Affairs
Sweden Sverige