

CIWA AT 10

A DECADE OF BUILDING
TRUST AND IMPROVING
WATER SECURITY IN
SUB-SAHARAN AFRICA

SPECIAL REPORT

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ABBREVIATIONS

CIWA	Cooperation in International Waters in Africa
COVID-19	Coronavirus Disease 2019
CSO	Civil Society Organization
DSS	Decision Support System
ENTRO	Eastern Nile Technical Regional Office
FCV	Fragility, Conflict, and Violence
GESI	Gender Equality and Social Inclusion
IDA	International Development Association
MSIOA	Multi-Sector Investment Opportunities Analysis
NBA	Niger Basin Authority
NBD	Nile Basin Discourse
NBI	Nile Basin Initiative
NBTF	Nile Basin Trust Fund
NEL	Nile Equatorial Lakes
NCCR	Nile Cooperation for Climate Resilience
NCORE	Nile Cooperation for Results
SADC	Southern African Development Community
SADC-GMI	Southern African Development Community-Groundwater Management Institute
UNESCO	United Nations Educational, Scientific, and Cultural Organization
VBA	Volta Basin Authority
ZAMCOM	Zambezi Watercourse Commission
ZAMWIS	Zambezi Water Resources Information System



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PREFACE

Water is essential to life. But billions of people around the world have only tenuous access to that life-saving resource. That is especially true in Africa, where hundreds of millions of people depend on using water from lakes, rivers, and streams to farm their fields, catch fish to feed their families, and protect their health.

But all too often, that precious resource is polluted and unsafe to drink. Ever more frequently, some regions of Africa are suffering prolonged and intense droughts. Other regions are devastated by torrential floods. Still others face an unpredictable mix of droughts and floods, with weather variability and intensity wreaking havoc on lives, livelihoods, and livestock.

All these water-related shocks are magnified by climate change. Without concrete climate action and climate-sensitive development, as many as 86 million people in Sub-Saharan Africa could be forced to relocate by 2050 from water scarcity, sea level rise and storm surges, or declines in crop and ecosystem productivity.

Governments in countries affected by fragility, conflict, or violence are often ill-prepared to



prevent or mitigate these shocks because they lack knowledge, capacity, and financial resources. And conflicts over shared transboundary waters, of which there are many in Africa, can spiral into political hostilities between countries.

That is why the work of the Cooperation in International Waters in Africa (CIWA) partnership is so vital for the people and economies of Africa.

Without CIWA's financing to help countries install flood- and drought-forecasting systems, these natural disasters would have even more devastating consequences.

Without CIWA's strategic analyses, governments would be far less aware of the potential impacts of proposed development projects such as dams.

Without CIWA's understanding of the geopolitical context and its ability to demonstrate the benefits of cooperation, countries that have learned to collaborate over shared water infrastructure and other development projects might still be engaged in dangerous finger-pointing.

CIWA is crucial to the World Bank's efforts to help countries transform economically and strengthen regional integration and cooperation in Africa as it works to build back better after the COVID-19 pandemic. One important component of that strategy focuses on resilience and efforts to address food insecurity and agro-pastoralism, cross-border risks such as climate change, and work on transboundary waters.

As CIWA celebrates 10 years of path-breaking work in Sub-Saharan Africa, the stakes could not be higher for the partnership to continue to enhance water resources and the lives and livelihoods of African people.

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AND THE LIVES AND
LIVELIHOODS OF
AFRICAN PEOPLE

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FOREWORD

Ten years ago, Sub-Saharan African countries and development partners came together with the vision of sparking greater cooperation among nations sharing transboundary waters.

Africa's 63 transboundary river basins account for 90 percent of the continent's surface water. Many of the 48 countries sharing these basins knew that the economic, environmental, and political costs of not cooperating were unacceptably high.

They wanted to strengthen their information systems and exchange data, develop more institutional capacity to better manage water resources, and build more joint infrastructure that would be a win-win for everyone.

Together, they created the Cooperation in International Waters in Africa (CIWA) program, a multi-donor trust fund managed by the World Bank, which was launched in 2011. CIWA would strive to foster cooperation, protect biodiversity, help countries beset by conflict and fragility, and spur climate resilience. It would achieve this by advancing its three pillars: information—to understand risks, make better decisions, and monitor compliance; institutions—to build trust, coordinate planning, and manage shared resources, and investments—to manage watersheds, develop groundwater, and build storage.

Ten years later, despite a multitude of political and economic shocks, instability, climate disasters, and health crises including a pandemic, Sub-Saharan countries are more committed than ever to cooperating around water resources.

CIWA has made strong and steady progress, with much more needed to be done in the years ahead because the challenges are steep.

Since CIWA opened its doors 10 years ago, its work has benefited nearly 37 million people.

The total investment value, both mobilized and potential, influenced by CIWA in its first decade is more than US\$17 billion, 1.7 times larger than the target of US\$10 billion.¹ This



comprises US\$10.806 billion in potential investments and US\$6.34 billion in mobilized investments that CIWA influenced.² Since CIWA began, 42 investment projects have been advanced by projects in operation. (CIWA includes recipient-executed projects and Bank-executed support programs that fund technical assistance and analytical work complementing the recipient-executed projects.)

COOPERATING AROUND
WATER RESOURCES IN
SUB-SAHARAN AFRICA
IS MORE IMPORTANT
THAN EVER

We are extremely grateful to our ongoing donors, Denmark, the European Commission, the Netherlands, Norway, Sweden, and the United Kingdom, who have collectively contributed US\$135.1 million to support CIWA's work.³

This report is not meant to be an exhaustive review of our accomplishments over the last decade. Rather, it presents brief highlights of what has been achieved in six key areas: climate resilience; fragility, conflict, and violence (FCV); biodiversity; gender and social inclusion; civil society; and developing the next generation of water specialists.

We hope it will inspire you to journey with us on the path to greater water security for the people of Sub-Saharan Africa.

Sincerely,

Erwin De Nys and Ai-Ju Huang

Program Managers



^{1, 2, 3} [CIWA's 2021 Annual Report](#)



INTRODUCTION

CIWA is committed to enhancing river basin management and development for the long term because building capacity, trust, and cooperation takes time and staying power.

CIWA's transboundary and multi-basin approach makes it unique in the development field. It works with regional river basin organizations, national governments, civil society groups, and other stakeholders to strengthen information and institutions and prepare investments.

CIWA's work on information-sharing allows knowledge to be exchanged among diverse river basin organizations. In Somalia, CIWA trained water specialists on how to conduct water resources modeling for sustainable management and identify small-scale irrigation sites. It is also leveraging sand dams and other water-harvesting technologies to improve livelihoods in arid regions.

Data from space-based technologies and powerful software are being shared with country partners so that they can remotely monitor rainfall, flow, evapotranspiration, and groundwater withdrawal to better plan for, and mitigate, risks from droughts, floods, and other climate shocks.

Its emphasis on building institutional capacity empowers countries with the mechanisms to better manage shared water resources and advance high-priority infrastructure investments. For example, in the Zambezi Basin, home to 47 million people who are experiencing increasing weather variability and aridity worsened by climate change, CIWA helped the Zambezi Watercourse Commission (ZAMCOM) revitalize the Zambezi Water Information System (ZAMWIS).⁴ This improved the region's forecasting and early-warning systems, information-sharing, and decision-making, which strengthened the ability of the eight Zambezi River Basin countries to make

informed water management decisions.

CIWA has supported many investments in Sub-Saharan Africa, including addressing poverty in the Cubango-Okavango River Basin in southern Africa and making important contributions to the Fomi dam project in the Niger River in West Africa.

The Cubango-Okavango River Basin spans three middle-income countries—Angola, Botswana, and Namibia—and its unique wetland was designated a Wetland of International Importance under the Ramsar Convention; it is also a United Nations Educational, Scientific, and Cultural Organization (UNESCO) World Heritage site.

CIWA'S TRANSBOUNDARY AND MULTI-BASIN APPROACH MAKES IT UNIQUE IN THE DEVELOPMENT FIELD

The renowned but fragile ecosystem is home to some of the world's most endangered species and also supports a thriving nature-based tourism industry. To address drivers of poverty while sustaining basin ecosystem services and the delta's global value, the three countries joined with CIWA and other development partners to create a pathway to sustainable development. CIWA financed the Multi-Sector Investment Opportunities Analysis (MSIOA), which explored different cooperative investment programs, valued at US\$900 million, to enhance resilient livelihoods, ecotourism, and infrastructure development.⁵

The Fomi Multipurpose Project in the Niger River Basin, West Africa's largest transboundary basin and a critical resource in the increasingly fragile arid and semi-arid Sahel region, was intended to provide a significant and diverse stream of transboundary benefits for Guinea and other nearby

countries. CIWA's \$4.2 million grant and support provided technical assistance such as feasibility studies, environmental and social risk assessments, stakeholder consultations, design of decision-making processes, and organizational and financial strengthening of the Niger Basin Authority.⁶

CIWA's support helped the countries reach a game-changing decision to focus on another dam site because of negative environmental and social impacts, including the need to resettle as many as 50,000 people and deleterious impacts on livelihoods on the Inner Niger Delta. The countries unanimously agreed to support the Moussaka Dam, with substantially lower social and environmental impacts; only 12,000 people, for example, would need to be resettled.

The heart of CIWA's work is convening countries with the goal of cooperating more effectively and with less friction on projects and infrastructure whose impact crosses borders. CIWA brings countries together in a systematic approach to surface differing perspectives, build trust, and develop consensus.

In the process, countries gain the confidence they need to operate in the geopolitical context and make better decisions about water resources to protect and improve the lives of Africans.

As Côte d'Ivoire's director of hydrology, Kone Saramatou, puts it, "Without management of this resource, maybe the next war will come from water. Let's avoid it by cooperating for the development of water resources for the well-being of all."

⁴ [Collaborative Management of the Zambezi River Basin](#). CIWA, July 2016

⁵ [Addressing Poverty Through Multi-sector Investment in the Cubango-Okavango River Basin](#). CIWA, August 2017

⁶ [Niger River Basin Management Project](#). The World Bank, June 2020



CIWA'S IMPACT

People who benefit from investments influenced by CIWA



36.86 million



INVESTMENTS

To manage watersheds, develop groundwater, build storage, and others.

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.

CIWA'S ORIGIN STORY: ROOTS IN THE NILE BASIN

CIWA grew out of the progress made in water resources management and development in the Nile River Basin, where the world's longest river, the Nile, underpins livelihoods for more than 200 million people.

The Nile Basin countries, in partnership with the multi-donor Nile Basin Trust Fund (NBTF), administered by the World Bank, and the regional Nile Basin Initiative (NBI), pursued cooperative water resources management and development of infrastructure. As the NBTF program was drawing to a close, the successes and lessons learned led development partners in 2011 to create the Cooperation for International Waters in Africa Trust Fund to provide support for transboundary water activities across Sub-Saharan Africa.

CIWA has maintained a robust presence ever since in the Nile Basin, which covers about 10 percent of Africa's land and is beset by many challenges, including millions of internally displaced people; instability, conflict, and resource scarcity; catastrophic locust infestations, and increasing impacts from climate change, including flooding.

With CIWA's support and in response to member states' requests, the NBI identified dozens of transboundary investments. Through its Nile Cooperation for Results (NCORE) project, CIWA influenced 14 potential investments, estimated at US\$6.9 billion, that will benefit more than seven million people. In addition, it influenced seven investments that have been mobilized; valued at \$648 million, these investments are benefiting two million people.⁷ Recently, CIWA supported

feasibility studies of four Nile Equatorial Lakes (NEL) investments, one of which was incorporated into the World Bank's International Development Association (IDA) lending portfolio for Uganda.

CIWA strengthened the NBI's capacity, including through national and regional dam safety institutionalization and training, capacity-building for flood early-warning systems, and the design of the Nile Basin Regional Hydromet System. It also provided major support to South Sudan's Water Ministry after the country's independence in 2011.

THE NILE BASIN HAS BECOME A MODEL SOUGHT OUT BY OTHERS

CIWA promoted the engagement of women and civil society through its partnership with the Nile Basin Discourse (NBD) and supported the development of the Nile Basin Decision Support System (DSS) to assist countries in developing water resources plans, design dams for flood control, and issue water permits. NCORE also trained more than 3,400 professionals in water management or development applications.⁸

The enhanced dialogue and cooperation among the 11 Nile riparian states helped mitigate against climate change, reduce tensions and conflict, and spur development. The Nile Basin has become a model sought out by others, hosting a delegation from Afghanistan, for example, that was interested in establishing a similar river basin organization.

^{7, 8} [CIWA's 2021 Annual Report](#)

CLIMATE RESILIENCE

STRENGTHENING RESILIENCE TO CLIMATE CHANGE'S SHOCKS AND STRESSORS





Water is crucial to people's survival, but climate change is a growing threat to this life-saving resource.

One of the principal ways that climate change appears is through the water cycle, in the form of increasing numbers and intensity of floods and droughts that are wreaking havoc across Sub-Saharan Africa.

Rural communities, particularly in countries that are fragile or experiencing fragility, conflict, and violence (FCV), are especially vulnerable to water-related climate shocks. Rampant poverty, limited resources and infrastructure, inadequate information, and weak institutions constrain people's ability to adapt, and build resilience, to climate stressors.

Climate change affects water resources in Africa in six main ways. It increases aridity, the number and intensity of droughts, the number and intensity of floods, seasonal variability, erratic swings between wet and dry periods, and higher temperatures causing more evaporation.

These vulnerabilities have a deleterious impact on people's livelihoods and food security. Rain-fed agriculture employs nearly 70 percent of the population in Sub-Saharan Africa, but recent decreases of surface water and groundwater recharge is harming local ecosystems, undermining people's ability to earn a living, increasing the scarcity of food, and spurring migration and other dislocations.⁹

To be resilient and reduce climate vulnerability, countries need to manage their water resources effectively and efficiently, including by strengthening their information systems, institutions, and infrastructure. CIWA has laid the foundation over the last 10 years to strengthen these systems and is stepping up its work to help countries prepare for, and mitigate, the worst impacts of climate change.

In the Nile River Basin, people face major risks to

their lives and livelihoods from the frequent droughts and floods.

The eastern Nile countries of Egypt, Ethiopia, South Sudan, and Sudan experienced 83 floods from 1990 to 2019,¹⁰ causing average annual damage of US\$45 million. And that was before the catastrophic flooding of the Nile River in 2020, which affected more than 2.5 million people.

CIWA supported the Nile Basin Initiative (NBI) to create a flood early-warning system, using satellite-based rainfall data combined with hydrological and hydraulic simulation modeling to produce three-day regional flood forecasts.

**ONE OF THE PRINCIPAL WAYS
THAT CLIMATE CHANGE APPEARS
IS THROUGH THE WATER CYCLE,
IN THE FORM OF INCREASING
NUMBERS AND INTENSITY OF
FLOODS AND DROUGHTS**

Today, during the flood season, people get daily reports on the Internet or via email and text messages. Subsistence farmers and livestock pastoralists can make informed decisions about planting and harvesting crops and minimize the loss of lives and livestock, property damage, and disruption of other productive activities.

In the Zambezi River Basin, the CIWA-funded Zambezi Water Resources Information System (ZAMWIS) is strengthening information-sharing to help countries adopt better disaster prevention, preparation, and other strategies that build resilience and avoid maladaptation to climate change. Hydro-meteorological monitoring and prediction

systems are providing critical early-warning capacity to protect livelihoods and infrastructure from increasing hydrological variability, worsening floods, and prolonged drought.

The Southern Africa Drought Resilience Initiative (SADRI) addresses cross-border drought risks, promotes cooperative management of shared natural resources, and creates an integrated vision of drought-risk management across the nexus of water, energy, food, and the environment. SADRI is supporting analytical work to identify investments at the regional level and within countries to improve resilience to drought.

Climate variability and droughts have had devastating impacts in West and Central Africa.

Prolonged droughts in the Sahel have led Niger River Basin countries to address drought risk in Basin development planning. For example, the CIWA-supported Niger Basin Authority (NBA) has provided a framework for cooperation among riparian countries by improving water information systems, and countries have agreed to share hydrological, environmental, and socioeconomic data. CIWA has mobilized investments of \$200 million in climate resilience in the Basin to benefit more than four million people.¹¹

Though the climate challenges are steep, CIWA's dedicated financing and technical support for building resilience through the water cycle is having an impact on the region.

⁹ [Bringing citizen voices to Nile Basin development](#). CIWA, July 2016

^{10, 11} [CIWA's 2021 Annual Report](#)



Dar Es Salaam floods aftermath.

CLIMATE RESILIENCE CASE STUDY

GROWING CLIMATE RESILIENCE IN THE NILE RIVER BASIN

CIWA has been deeply involved in the Nile River Basin since its inception 10 years ago.

And with good reason: Few regions have experienced as much social, economic, and political upheaval or renewal and growth as the Nile River Basin has in recent times, and climate change has exacerbated many of these challenges.

The Nile Basin has had “so many shocks and changes and yet the cooperation continues,” says Jacqueline Tront, senior water resources management specialist at the World Bank and a former interim CIWA program manager. The Nile countries “continue to be interested in working together on things that matter to them.”

And that is a good thing because of the multiplicity of challenges. When CIWA’s Nile Cooperation for Results (NCORE) project began in 2012, riparian countries wanted better management of shared risks and more infrastructure for water storage, energy production, and irrigation. They also needed common dam safety standards, regional hydro-meteorological- and early-warning systems, and greater capacity to adapt to climate change.

NCORE supported the Nile Basin Initiative (NBI) to become a sustainable regional institution, which generated substantial benefits that helped unlock the Basin’s growth potential and reduce climate-related risks such as floods, drought, and loss of critical ecosystems that support biodiversity.

Nile riparian countries wanted better management of shared risks and more infrastructure for water storage, energy production, and irrigation

With the accelerating trend of flood and drought disasters, some of NCORE’s biggest achievements included the development of early-warning systems. The flood early-warning system generates the stream flow forecast of the Blue Nile and other major tributaries with 72-hour lead time, allowing people downstream to prepare by evacuating themselves and valuable properties, including livestock. The drought early-warning system produces drought predictions for one month and three months ahead. Now farmers can make informed decisions about their crops and residents can prepare for climate change variability.

Today, CIWA’s new Nile Cooperation for Climate Resilience (NCCR) project is stepping up CIWA’s strategic engagement to strengthen climate resilience in the basin.



The head teacher 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.

FRAGILITY, CONFLICT, AND VIOLENCE

TACKLING THE MULTIPLE WATER CHALLENGES OF COUNTRIES AFFECTED BY FRAGILITY, CONFLICT, AND VIOLENCE



Young boy with his cows drinking out of a trough in Lake Chad.

Fragility, armed conflict, violence, forced displacement, and rising inequality pose risks that transcend borders and increase people's vulnerability to shocks and crises.

By 2030, more than half of the world's extreme poor will live in countries afflicted by fragility, conflict, and violence (FCV).

The challenges that CIWA was created to address are exponentially greater in FCV-affected countries. In 2021, 11 of the 38 countries in which CIWA worked were classified as FCV states, including in the Horn of Africa, West and Central Sahel, Lake Chad, and the Great Lakes regions.¹² Not only are institutions weak, sometimes armed actors try to play a role in managing water resources or attack water infrastructure. Forcibly displaced people often live in areas where access to water is diminished and water sources are overexploited, leading to tensions with economically depressed host communities.

Addressing the drivers and impacts of FCV and strengthening countries' resilience to it are key elements of the World Bank's FCV strategy. For CIWA, that means strengthening institutions and governments' knowledge about water resources and spurring infrastructure investments.

CIWA has helped Chad, Niger, and Burkina Faso establish water monitoring stations, hire and train water resources specialists, and use data technology. A new project in Sudan aims to strengthen the capacity for flood-forecasting and early-warning systems and improve the operation and maintenance of small water-harvesting and flood-management structures.

In the Volta River Basin, CIWA supported the development and ratification of a water charter for Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali, and Togo to strengthen the legal and institutional framework for sustainable water management. It also facilitated dialogue, increased data management and sharing, built capacity by training

civil society organizations, and raised awareness about the risks of deforestation.

"Cooperation cannot be achieved unless we work in parallel in building capacity, relationships, and trust with each country's water ministries, so you work both bottom up and top down," says Sanjay Pahuja, CIWA's lead water resources management specialist in West and Central Africa.

CIWA has strengthened the resilience of FCV-affected countries to cope with, and adapt to, climate shocks through enhanced management and use of groundwater, installation of early-warning systems, and implementation of small water-harvesting and flood-management structures.

In the Horn of Africa, which is facing increasingly longer dry periods, catastrophic and intense drought, and growing variation in the length of the rainy season, groundwater has the greatest potential for providing water security and socio-economic benefits. CIWA's groundwater initiative expanded the knowledge base about the Horn's regional groundwater resources, including a determination of surface water availability, water variability, and natural recharge of shallow groundwater.

Data is a particular challenge in FCV states because they usually are data-deprived. Through its Water Data Revolution (WDR) project, CIWA is helping address constraints to cooperative water management by providing access to remote-sensing data and data platforms. The program is building the capacity of country partners to make evidence-based decisions and use cutting-edge technologies while creating a collaborative atmosphere to address challenges.

¹² [FY21 List of Fragile and Conflict-affected Situations](#), World Bank

HELPING SOMALIA OUT OF FRAGILITY THROUGH WATER MANAGEMENT

Somalia, in the Horn of Africa, is one of the most fragile countries in the world. Following a long civil war, Somalia is slowly rebuilding its economy, national government, and institutions amid violence by militant groups and a humanitarian crisis.

Most of the country is suffering from drought, with cattle and crops dying as climate change wreaks havoc on the country's fragility.

Somalia lacked the ability to develop dialogue and agreement on how to share information and jointly manage its only river basins—Shebelle and Juba—with upstream countries Ethiopia and Kenya, and only adopted its first national water strategy, with CIWA's support, in 2021. Somalia has no major water infrastructure for storage or use.

CIWA worked to change that, with solid success.

In 2017, in response to an Ethiopian water supply project, Somalia asked the World Bank to facilitate a dialogue with its upstream neighbors and help build capacity in its water sector.

Most countries need guidance on strategies to build trust and eventually cooperation, and Somalia was no exception.

"The first two meetings were spent attributing all droughts and floods to activities by upstream countries, especially Ethiopia," recalls Tesfaye Bekalu, senior water and sanitation specialist at the World Bank.

"We supported them to look at the issue holistically—knowledge, experience, information, and team readiness—to think things through for a win-win situation," he says. "We helped them realize that dialogue on shared resources requires time, champions and the right window of opportunity and is a multidisciplinary and multi-agency endeavor."

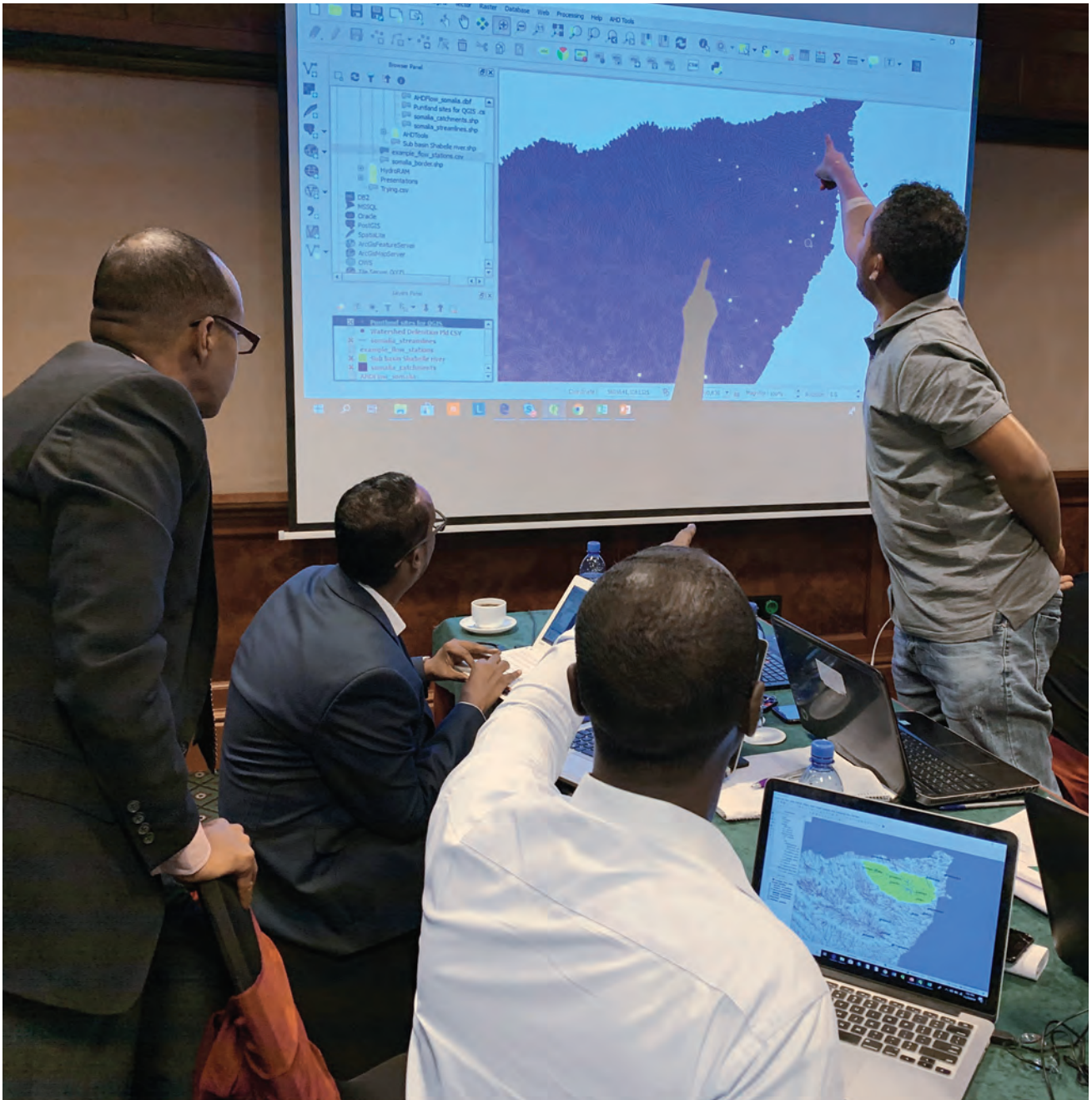
"One of the examples is working together on drought mitigation to keep Somalians from migrating to Ethiopia, which would pose a burden on Ethiopia," Bekalu says. "They are very quick learners. They started to look inward instead of externalizing the issue."

CIWA also helped the government articulate its vision for water management, develop a national water strategy, hire a seasoned transboundary water advisor, consider establishing a transboundary water commission, train hydrologists, and develop data and information systems.



"Without them we couldn't move forward"

ABDULLAHI ELMI



Hydro Ram water resources modeling training, in Somalia, in 2020.

A series of capacity-building activities helped newly trained hydrogeologists under this initiative use their knowledge to select sites for the Biyoole Project, the first International Development Association (IDA)-financed infrastructure project in Somalia, which is developing water and agricultural services, including building sand dams, among agro-pastoralist communities.

Without CIWA and the World Bank, “we couldn’t do this project,” says Abdullahi Elmi, Biyoole project manager. “They not only give us the investments, but we are using their expertise. It is very essential in our work. Without them we couldn’t move forward.”

SHORING UP BIODIVERSITY THROUGH TRANSBOUNDARY WATER COOPERATION



*Exiting the
Okavango Delta
in Botswana.*

Our lives and economy depend on our natural capital. Whether rural Africans can sustain their livelihoods by working in agriculture, fishing, or the wildlife and tourism sector depends on the health of rivers and other freshwater ecosystems that support biodiversity.

But unsustainable fishing, water pollution, and climate change threaten biodiversity and the food security of millions, with increasing droughts and floods an existential risk. Drought affects natural landscapes and the delivery of ecosystem services, causing communities to run out of water and power generation to decline, leading to diminished productivity and livelihoods. Both droughts and floods accelerate food insecurity and forced migration.

CIWA's work to understand and leverage water's role and relationship to nature is a strategic priority, and it is providing robust, long-term support for water-related conservation programs in Sub-Saharan Africa.

In Eastern Africa, its Nile Cooperation for Results (NCORE) project supported the Nile Basin Initiative (NBI) to strengthen governance mechanisms and the regional knowledge base for more informed and inclusive decision-making, including on environmental and social safeguards, to protect biodiversity. Its Great Lakes Water Quality technical cooperation has recommended an integrated approach to improving water quality and reducing environmental degradation in the Lake Victoria Basin.

CIWA's Sahel Groundwater Initiative is enhancing groundwater knowledge and management capacity to protect people, fauna, flora, and the environment. In the Lake Chad Basin, CIWA is supporting a comprehensive approach to developing a water security program. The Horn of Africa Groundwater Initiative is expanding knowledge on groundwater resources and fostering evidence-based planning

and decision-making to protect natural resources, livestock, and crops.

Activities in Southern Africa are focused on sustainable groundwater management, with the Southern African Development Community Groundwater Management Institute (SADC-GMI) facilitating engagement and establishing partnerships.

"Our mandate is to ensure the sustainable and equitable use of groundwater," says Thokozani Dlamini, SADC-GMI's communications and knowledge management specialist. "With the funding from CIWA, we were able to live up to that mandate."

UNSUSTAINABLE FISHING, WATER POLLUTION, AND CLIMATE CHANGE THREATEN BIODIVERSITY AND THE FOOD SECURITY OF MILLIONS

CIWA's Southern Africa Drought Resilience Initiative (SADRI) is equipping communities to plan for, and mitigate, drought, leading to less biodiversity loss in trans-frontier conservation areas. SADRI is mapping flood plains and wetland systems, assessing water demand and usage, understanding the role of wetlands in livelihoods support and climate resilience, and evaluating governance practices to better manage water resources.

It is all part of a critical World Bank effort to align transboundary water cooperation efforts with biodiversity conservation goals. The stakes couldn't be higher.

BIODIVERSITY CASE STUDY

CONSERVING BIODIVERSITY IN THE INNER NIGER DELTA

The Inner Niger Delta in Mali is a vast floodplain within an arid and semi-arid area of the Sahel. The second largest wetland in Africa and rich in natural resources, the Delta is vitally important to the 900,000 people who depend on its waters for fishing, agriculture, crafts, tourism, and other livelihoods.

During the rainy season, water levels rise by as much as 13 feet in just 100 days. These floodwaters sustain people and hundreds of thousands of birds and animals such as cattle, goats, and sheep. The Delta, which has been designated a Ramsar Wetland of International Importance, is thus key to protecting biodiversity, promoting sustainable development, and ensuring food security. Unfortunately, the Delta is under great strain from climate change, reduced flooding, upstream dams, sand extraction for construction, and water extraction for irrigation.

“Our environment has become so degraded that everyone must help our communities save the river on which our livelihoods depend,” says Boureima Toure, a fisherman in Guinea.

The Delta is key to protecting biodiversity, promoting sustainable development, and ensuring food security

CIWA has played a critical role in managing these challenges. Its analytical support helped the Niger Basin Authority (NBA) develop an advanced model for Delta ecosystem services that are provided by annual flooding under various flow patterns from the Upper Niger Basin. The model is helping improve the prediction of impacts on upstream structures such as dams and enabling the NBA to make informed decisions about, and evaluate the trade-offs associated with, various water release patterns of planned infrastructure investments. This model will help conserve the region’s biodiversity.

CIWA also financed a decision-making process on the significant environmental and social risks associated with the location of one of three proposed dams (Fomi) in Guinea, which led to a decision to find a new site. CIWA has also been strengthening the overall capacity of the NBA, including on biodiversity conservation.

All these efforts will help improve the lives of the mostly poor, rural population and build resilience to shocks from climate change and other stressors.

As Toure, the Guinean fisherman says, “We have to increase efforts to restore the degraded banks and protect natural areas because the Delta is a source of growth for Mali as a whole and not just in the Delta.”



The Niger River and Inner Niger Delta in Mali as seen from space, containing modified Copernicus Sentinel Data (2019).

GENDER EQUALITY AND SOCIAL INCLUSION

PUSHING THE ENVELOPE ON GENDER EQUALITY AND SOCIAL INCLUSION



In 1992, the Dublin Statement on Water and Sustainable Development noted that the “pivotal role” that women play as providers and users of water has seldom been reflected in the development and management of water resources.

Three decades later, unfortunately, the statement still rings true. Water resources management in Africa is still a man’s world in which women are often excluded from decision-making.

Recognizing the centrality of gender equality to the elimination of extreme poverty and to sustainable development, CIWA—and the World Bank overall—has stepped up efforts to foster gender and social inclusion (GESI) in the countries where it works.

Mainstreaming gender as a stand-alone strategy is now considered an inadequate response to inequalities. What is needed is a more holistic approach that fosters an understanding of how gender norms are embedded in institutions, market forces, and cultural interactions and that prioritizes transformation through multiple interventions across different sectors and levels. It also requires an understanding that men and women are not homogenous but are stratified by diverse characteristics such as race, ethnicity, disability, sexual orientation, and gender identity.

WATER RESOURCES MANAGEMENT IN AFRICA IS STILL A MAN’S WORLD IN WHICH WOMEN ARE OFTEN EXCLUDED FROM DECISION-MAKING

To jumpstart its focus on GESI, CIWA developed a Gender and Social Inclusion Framework to guide its work and ensure that its investments include women in all phases of projects and achieve results that benefit both women and men. At the institutional level, CIWA is focusing efforts on gender in governance to create an enabling environment for women to participate in leadership roles and for female decision-makers to thrive.

The CIWA-supported Young Professionals and internship programs, housed at the Eastern Nile Technical Regional Office (ENTRO) and at the Southern African Development Community Groundwater Management Institute (SADC-GMI), are helping level the playing field by recruiting women to participate and develop skills and confidence to tackle harmful gender norms; about one-third of the 200 participants in these two programs have been women.

In the Nile River Basin, women are more likely than men to be extremely poor, are highly dependent on natural resources for their livelihoods, and often have less access to those resources because of barriers based on traditional gender roles and customs. The CIWA-supported Nile Basin Initiative (NBI) and the Nile Basin Discourse (NBD), an organization that mobilizes hundreds of civil society organizations, developed several initiatives to mitigate gender inequalities.

The NBI and NBD promote gender-inclusion policies, collect and use sex-disaggregated and gender-sensitive data, foster advocacy and knowledge exchange through stakeholder engagement platforms such as the NBD Forum, and involve women leaders and women’s-interest civil society organizations in infrastructure investment planning and implementation.

Work has begun in the Sahel to diagnose and address existing barriers to equality in access to groundwater for irrigation, groundwater management, and careers in the hydrogeology field and to incorporate GESI into activities. It is also working with consultants to ensure that they incorporate a GESI lens.

As Ellen Hagerman, CIWA’s GESI expert, puts it succinctly, “If you exclude women, you lose.”

GENDER EQUALITY CASE STUDY

FIGHTING TO INVOLVE WOMEN IN CÔTE D'IVOIRE'S WATER SECTOR

To Kone Saramatou, it's only logical to involve women in the water field. "It is women who collect water in Africa, so they must be involved to make their contributions to the management and development of these resources," says Madame Saramatou, director of hydrology in Côte d'Ivoire's Ministry of Hydraulics.

But it's not easy.

"We need to get them to understand the challenge that water resources represent for the future," she says. And "we need to be able to train them."

What's more, there is a need to push back against harmful gender stereotypes that keep women out of the water sector.

"We must be able to demonstrate that a woman has her place in the management of water resources and knows how to do as much as a man," Madame Saramatou says. "Don't let men dominate us. Pass the baton to women."

Côte d'Ivoire, on the coast of West Africa, has enjoyed robust and stable economic growth but also faces increasingly longer and more severe droughts, flooding, and decreasing quality of water resources.

"Farmers are facing delays in the start of the agricultural season and disruptions in production cycles, and rural communities are forced to turn to unsafe water sources due to the depletion of sources used to produce drinking water," she says.

The climate disruptions were not as much of a problem when Madame Saramatou graduated as a hydraulic engineer in 1982. But the gender problem was even worse back then than it is today.

"At the time of my training, and even today, there were not many women in hydrology," she says. "But we are fighting to try to bring young girls with us in the hydraulics sector, especially in the field of water resources management."

"They must be able to take over (and) replace me when I am gone."



"We must be able to demonstrate that a woman has her place in the management of water resources and knows how to do as much as a man"

KONE SARAMATOU



Women benefiting from access to clean, safe water.

INVOLVING COMMUNITIES IN WATER PROJECTS IS A WIN FOR ALL



For large infrastructure projects to succeed, everyday people who will be affected need a seat at the table.

Consider the Rusumo Falls hydropower plant being built on the Kagera River on the border of Rwanda and Tanzania, a US\$470 million project that is being developed by the governments of Burundi, Rwanda, and Tanzania.¹³

“There was considerable stakeholder participation” in the project’s development, addressing issues such as how people would be compensated, says Emerita Mugorewicyeza, a regional stakeholder participation specialist at the Nile Basin Initiative (NBI). “We’ve been able to mobilize all sorts of people: elders, women, and youth. People want to know the benefits of projects such as hydropower. If you don’t work with the people and people cannot see the benefits, the project will not be successful,” she says.

Without the participation of communities, project benefits can be limited or inequitably distributed. And with increasing floods and droughts, connecting governments and regional institutions with residents is even more important to building communities’ climate resilience.

CIWA’s engagements in six basins—the Nile, Niger, Lake Chad, Lake Victoria, Southern Africa Development Community region, and Zambezi—have contributed to increased climate data and water development information that the public can access and use.

In West Africa, a CIWA-funded program helped improve the Volta Basin Authority’s (VBA) capacity

on transboundary water resources management. The VBA, in turn, helped build the capacity of 200 civil society organizations (CSOs) in six countries, offered small grants for projects in forestry, biodiversity, and environmental sciences, and facilitated dialogue and project monitoring. It also conducted rural radio outreach to keep local stakeholders informed about key water issues.

WITHOUT THE PARTICIPATION OF COMMUNITIES, PROJECT BENEFITS CAN BE LIMITED OR INEQUITABLY DISTRIBUTED

Hoping to bring its successful civil society work in the Nile through the Nile Basin Discourse (NBD) to West Africa, CIWA has conducted a diagnostic study of CSOs in the G5 Sahel countries. The study found that while CSOs are numerous throughout the Sahel, the depth and sufficiency of their legal operating environment vary widely, and the participation of civil society in policy development is insufficient in all countries except Burkina Faso.

The final report is likely to recommend a recipient-executed program of civil society engagement in the Sahel, bringing the benefits of civic engagement to another region.

¹³ [Bringing citizen voices to Nile Basin development](#). CIWA, July 2016

Photo (left): Community women demonstrating their daily use of water, which includes washing hands and cooking.

COMMUNITY CASE STUDY

LEAVING NO ONE BEHIND IN WATER DIALOGUE IN THE NILE

CIWA has been at the forefront of ensuring that everyday people have a voice in how water resources are managed in the Nile River Basin.

“CIWA is always keen to ensure the inclusion of all stakeholders for transboundary water management and that governments are engaging with non-state stakeholders, particularly civil society,” says Donald Kasongi, secretary general of the Board of the Nile Basin Discourse (NBD), which represents 600 civil society organizations (CSOs) from 11 countries in the Nile River Basin.

CIWA has supported the NBD with financial and technical assistance to engage in participatory processes at the local, regional, national, and transboundary levels.

NBD is making sure that “no one is left behind in the dialogue” in a basin where “water is the most important resource for sustainable livelihoods,” Kasongi says.

CIWA support has enabled NBD to improve its communications outreach, monitoring and evaluation, and resource mobilization.

CIWA has also supported the NBD to involve people historically left out of the conversation around water resources—women, young people, and other marginalized groups.

“Our main effort is for women and youth to make proactive use of citizen data in sustainable management of water resources, so that they know which data they can leverage to influence policy-making,” says Hellen Natu, NBD regional manager.

Natu also noted CIWA’s valuable contributions to getting CSOs involved in promoting climate resilience: “We have received a lot of guidance from the technical team and consultants in how to implement the project the right way, how to monitor results, and how to mobilize more resources.”

For example, CIWA is supporting the training of CSOs on how to share flood data via radio, magazines, and leaflets in flood-prone riparian states to ensure that people are as prepared as possible for oncoming floods.

“CIWA has been so supportive,” Natu says. “They have brought together communities that are sharing water resources. CIWA is very valuable to NBD.”



“CIWA is always keen to ensure the inclusion of all stakeholders for transboundary water management”

DONALD KASONGI



The Nile River in Egypt: Green farmland marks a distinct boundary between the Nile floodplain and the surrounding harsh desert.

YOUTH

MOTIVATING AND EMPOWERING YOUTH TO ENTER THE WATER SECTOR



The future of water resources management in sub-Saharan Africa may depend on young people.

Africa has the largest concentration of young people in the world. With the right education, training, and opportunities, they can become catalysts for solving critical issues like the water crisis.

But first the water sector needs to step up its game in attracting talented and motivated young people, especially women, to the field.

Recognizing the need to foster the next generation of water professionals, CIWA supports the Young Professionals program in the Nile Basin and the Southern African Development Community (SADC).

The Young Professionals program creates an understanding of the potential, risks, and future of shared waters and supports a new generation of water professionals to acquire skills, form regional collaborations, and develop a basin perspective.

Cooperation in water management “is really about relations between people; if they start to work together at an early age in their career, they will be able to form relationships that will benefit cross-border communities later,” says Anders Jagerskog, CIWA senior water resources management specialist.

These are essential requirements for strengthening a basin’s resilience to climate change and other shocks and stressors.

“It’s a major capacity-building program for young professionals,” says Ethiopia Bisrat, who attended Young Professionals in 2018 and is now an environmental engineer. “It improved my intellectual abilities, my social skills and broadened my network. Modern problems require modern solutions, and it’s

a value-add by targeting the younger demographic.”

In SADC, the Young Professionals program “is one of our prides,” says James Sauramba, SADC-Groundwater Management Institute’s (GMI’s) executive director. “We believe it is a very high-impact intervention, and we hope that the young professionals will become champions of groundwater management.”

**“WE HOPE THAT
THE YOUNG
PROFESSIONALS
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CHAMPIONS OF
GROUNDWATER
MANAGEMENT”**

JAMES SAURAMBA



In the Sahel, CIWA is conducting a study to assess the state of groundwater expertise among young people. The study will determine why some students abandon their studies in groundwater management to pursue other specialties and will also outline curriculum changes.

As Amna Omer of Sudan, who completed Young Professionals and is now a water resources engineer at the Eastern Nile Technical Regional Office (ENTRO), puts it, “Reaching out to the next generation of professionals is critical to the transition from inter-generational conflicts to a new era of cooperation.”

Photo (left): Alumni 2018 posing in front of the Eastern Nile Technical Regional Office building in Addis Ababa, Ethiopia.

YOUTH CASE STUDY

TRAINING YOUNG PROFESSIONALS: VITUMBIKO MWAUSEGHA OF MALAWI



As a hydrogeological research officer in the groundwater section of Malawi's Ministry of Agriculture, Irrigation and Water Development, Vitumbiko Mwausegha conducts research on groundwater and supervises pumping tests, drilling, and construction of groundwater infrastructure.

On weekends, he sometimes helps UNICEF and World Vision with technical assistance on their projects to use solar power to pump groundwater into taps in schools and health centers.

Mwausegha, 32, learned a lot about the importance and technical aspects of groundwater as a 2018 intern in the CIWA-funded Young Professionals program in South Africa. He was schooled in geographical information systems (GIS)—computer programs that can store and edit spatial and non-spatial data, analyze spatial information output, and visually share the results by presenting the data on maps.

He says he also learned how to help communities be resilient to drought and other climate change stressors.

The program, housed at the Southern Africa Development Community-Groundwater Management Institute (SADC-GMI), "helped us a lot," Mwausegha says. "It was a great experience."

He was given assignments that were applicable to his home country; for example, he did a situation analysis on groundwater in Malawi, including the gaps in data and how to bridge them.

In addition to helping youth develop skills, Young Professionals stresses the importance of communication and cooperation across countries sharing river basins.

Young Professionals stress the importance of communication and cooperation across countries sharing river basins

"I met a lot of other young professionals," he says. "We came together and learned a lot from each other in terms of the challenges in different countries. We discussed issues about transboundary water and how to resolve conflicts."

"The organization is very important because it helps us interact to discuss ideas and innovations to improve the groundwater, ecosystems and challenges we face," he says. "It's a really great program."

Mwausegha has come a long way from his childhood in Rumphi District, where the community tap sometimes grew dry, forcing residents to walk five kilometers to fetch water from a borehole.

“It was really challenging growing up,” he says. He wants to help people in communities today to have access to safe water that never dries up—and he just might succeed.



The Chimbiya community tasting fresh and safe water from one of the SADC-GMI's projects, the Chimbiya Water Supply Project, in March 2020, in Dedza District, approximately 60 km from Lilongwe, Malawi.



The Cooperation in International Waters in Africa (CIWA) was established in 2011 and represents a partnership among 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.

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