CIWA Biodiversity & Conservation Framework

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About CIWA

The Cooperation in International Waters in Africa (CIWA) was established in 2011 and represents a partnership between the World Bank, its African partners, the European Commission, and the governments of Austria, Denmark, 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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Attribution—This framework was prepared by Piet Theron under the guidance of CIWA Program Managers Anders Jägerskog and Ai-Ju Huang. In addition, contributions were made by the following Bank staff and consultants: Catherine Tovey, Maria Angelica Sotomayor, Yogita Mumssen, Charles Gilman, Christine Ochieng, Carine Durand, Tushita Mukherjee, Arik Karani, and Nicolas Salazar-Godoy. Design and typesetting by Joseph Michael Brunton.

Abbreviations

CIWA	Cooperation in International Waters in Africa
COP15	Fifteenth Conference of the Parties
CSO	Civil Society Organization
DPSIR	Drivers-Pressures-State-Impacts-Responses
DSS	Decision Support System
ESIA	Environmental and social impact assessment
FCV	Fragility, conflict, and violence
GBF	Global Biodiversity Framework
GDE	Groundwater Dependent Ecosystems
GDP	Gross domestic product
GESI	Gender equality and social inclusion
GLTFCA	Great Limpopo Transfrontier Conservation Area
ILM	Integrated landscape management
IUCN	International Union for Conservation of Nature
IWRM	Integrated water resources management
LCBC	Lake Chad Basin Commission
MSIOA	Multi-Sector Investment Opportunities Analysis
NBI	Nile Basin Initiative

NBS	Nature-based solutions
NCCR	Nile Cooperation for Climate Resilience
NCORE	Nile Cooperation for Results
OKACOM	Permanent Okavango River Basin Water Commission
OMVS	Senegal River Basin Authority
SADC-GMI	SADC Groundwater Management Institute
SDG	Sustainable Development Goal
SSA	Sub-Saharan Africa
TBNRM	Transboundary natural resource management
TFCA	Transfrontier conservation area
ToC	Theory of Change
VBA	Volta Basin Authority

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Executive Summary

The Cooperation in International Waters in Africa (CIWA) Program is a multi-donor trust fund that supports Sub-Saharan Africa (SSA) to realize sustainable, inclusive, climate-resilient growth by addressing constraints to cooperative management and development of transboundary waters.

Unsustainable patterns of consumption and production are recognized as the root causes of climate change, biodiversity loss, and pollution. These could be mitigated through the implementation of sustainable land use and resource management practices. Women in many developing countries are the principal users and managers of land, as farmers and pastoralists with primary responsibility for household food production and water use. Their role in promoting sustainable land management is an opportunity to achieve the dual objective of sustainable land management and gender equality.[1] Considering these challenges, in FY23 CIWA assessed its biodiversity work, which concluded that CIWA operations support a range of regional biodiversity-related activities. These activities provided both direct and indirect benefits to biodiversity conservation, however, they were largely opportunistic and lacked an explicit agenda and systematic approach to improve transboundary water-related biodiversity conservation (see Annexes B and C).

The objective of the CIWA Biodiversity Framework is to align CIWA's transboundary water cooperation efforts with biodiversity conservation goals, including identifying opportunities at the intersection of transboundary water management and freshwater biodiversity conservation. The vision of the Biodiversity Framework is *improved transboundary water management that supports biodiversity conservation to ensure more climate-resilient communities are better equipped to plan for and mitigate climate-related shocks, support livelihoods, sustain health and life, and improve economies.* The implementation of the CIWA Biodiversity Framework is focused on three inter-connected levels: i) programmatic level, ii) project level, and iii) tools and solutions. The implementation of the Framework will be guided by its Theory of Change (ToC), which outlines the vision, context, key focus areas, and results areas for the CIWA Biodiversity Framework. This effort is a continuation of the World Bank's commitment to supporting the implementation of the Global Biodiversity Framework adopted at the 15th Conference of the Parties of the Convention on Biological Diversity (COP15).

[1] https://blogs.worldbank.org/en/sustainablecities/integrating-gender-and-social-inclusion-nature-based-solutions-way-forward

Enhancing CIWA's Impact in Transboundary Waters, Biodiversity Conservation, and Ecosystem Health

Introduction

CIWA is a multi-donor trust fund that supports SSA to realize sustainable, inclusive, climate-resilient growth by addressing constraints to cooperative management and development of transboundary waters. The program has sought to strengthen water resource development and management and regional cooperation with the aim of increasing access to water resources, security, and sustainability across the region.[2] CIWA works closely with river basin organizations (RBOs), regional economic communities, national governments, and other stakeholders through both Bank-executed and recipient-executed activities, under three modalities of engagements: i) through sustained engagements with priority basins, CIWA helps strengthen foundational elements such as data systems, policy and legal agreements, institutions, and investment and operational plans; ii) strategic engagements contribute to high-impact prospects through analytical activities, capacity building, and technical assistance; and iii) knowledge generation and management initiatives strengthen the evidence base to cooperatively manage international waters.

In FY23, CIWA assessed its biodiversity work, which concluded that CIWA operations support a range of biodiversity-related activities in SSA. These activities provided both direct and indirect benefits to biodiversity conservation, however, they were largely opportunistic and lacked an explicit agenda and systematic approach to improve transboundary water-related biodiversity conservation.

The CIWA program supports a wide range of transboundary water resource management activities, including initiatives that intersect with biodiversity conservation and management. Project examples include the development of a Multi-Sector Investment Opportunities Analysis (MSIOA), which is part of a systematic strategy by the Permanent Okavango River Basin Water Commission (OKACOM), and advanced modelling for improved decision-making for Inner Niger Delta ecosystem services.[3] Other key interventions in support of direct benefits include the implementation of best practice feasibility studies and environmental and social impact assessments (ESIAs), development of integrated watershed management strategies and plans, interventions to support improved water quality in lakes and river systems, river-bank restoration projects, and analytical work to facilitate improved understanding of groundwater dependent ecosystems (GDEs).

Key direct benefits include facilitating integrated and innovative approaches to better understand the linkages between improved ecosystem integrity and connectivity, the role of climate change adaption in current freshwater resource planning and management, and the provision and enhancement of ecosystem services through nature-based solutions (NBSs). NBSs are often the most cost-effective approach to water resource management, disaster risk reduction, and climate change mitigation. To maximize their benefits, it is crucial that NBS programs adopt an inclusive and equitable approach that engages and empowers women and men, especially those who have traditionally been excluded or marginalized.[4]

World Bank approach to biodiversity conservation

Agenda 2023 for Sustainable Development

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a blueprint for peace and prosperity for people and the planet. Seventeen Sustainable Development Goals (SDGs) provide the basis for a global partnership that recognizes that ending poverty requires strategies and policies that support action to improve health and education, reduce inequality, and foster economic growth, among others, while addressing climate change and securing the natural capital that sustains life. The SDGs encompass four key pillars—Social Inclusion (Goals 1 to 7), Economic Growth (Goals 8 to 11), Environmental Responsibility (Goals 12 to 15), and Governance (Goals 16 and 17).

[2] CIWA website: 7, February 2023
[3] https://www.ciwaprogram.org/blog/enhancing-niger-basins-ecosystem-through-modeling-and-improved-decision-making/
[4] https://blogs.worldbank.org/en/sustainablecities/integrating-gender-and-social-inclusion-nature-based-solutions-way-forward

Eradicating poverty through programs and initiatives that are focused on increasing water and food security, diversifying livelihoods, building skills, providing access to education, and improved decision-making, are key to achieving the SDGs. These can be supported through investment in nature-positive economies that provide for the development of sustainable and diversified income sources and livelihood opportunities. However, these are dependent on securing the natural capital and ecosystem services that sustain life on earth, providing for thriving landscapes that are sustainably managed and used to build resilience in local communities to climate change impacts.

The world's water-related ecosystems are being degraded at an alarming rate. Unsustainable patterns of consumption and production are recognized as the root causes of climate change, biodiversity loss, and pollution. These could be mitigated through the implementation of sustainable land use and resource management practices. Women in many developing countries are the principal users and managers of land, as farmers and pastoralists with primary responsibility for household food production and water use. Their role in promoting sustainable land management is an opportunity to achieve the dual objectives of sustainable land management and gender equality.[5]

Global Biodiversity Framework

The Kunming-Montreal Global Biodiversity Framework (GBF) was adopted at the 15th Conference of Parties (COP15) of the Convention on Biological Diversity in December 2022. The GBF[6] comprises four goals and 23 action-oriented targets and sets out an ambitious plan to implement broad-based action to bring about transformation in society's relationship with biodiversity. The 2050 vision of the GBF is "Living in Harmony with Nature," where "by 2050, biodiversity is valued, conserved, restored, and wisely used, maintaining ecosystem services, sustaining a healthy planet, and delivering benefits essential for all people."[7] The GBF states that biodiversity is fundamental to human well-being, a healthy planet, and economic prosperity, including for living well in balance and harmony with nature. Society depends on biodiversity for food, medicine, energy, clean air and water, disaster and risk reduction, and recreation and culture, and it supports all systems of life on Earth. The Framework also outlines how a wide range of tools and solutions must be developed, implemented, and scaled to reduce the multiple threats to biodiversity while ensuring that people's needs can be met by the sustainable use of biodiversity.

Investing in Nature for Green, Resilient, and Inclusive Development

Nature and natural resources are at the core of central development challenges (health, livelihoods, inequality, climate change, food security, fragility, energy). The poorest countries and communities are at the most risk from nature loss. In a scenario where just a few ecosystems services collapse, low-income countries could forego 10 percent in real gross domestic product (GDP) annually by 2030, with women often facing greater negative impacts including higher rates of poverty and hunger. Many of the solutions to nature loss and the climate crisis are embedded in three key sectors—food, land, and water; infrastructure; and energy and extractives. These sectors endanger 80 percent of threatened or near-threatened species, including approximately 30 percent of freshwater fish that are at risk of extinction.[8]

Investing in nature can help reverse its loss and create new opportunities for countries. Climate change and transboundary water management (surface and groundwater) are critical sustainability challenges that require transboundary and often global approaches to tackle their root causes. This will require an inclusive and equitable whole-of-economy approach that places nature at the core of development. This includes the development and implementation of policies and management approaches that shift markets and value chains toward models that conserve and restore natural capital. This shift can create long-term growth, greener and better jobs, and improved water and food security through the implementation of equitable and sustainable natural resource management and land use practices. The World Bank Group is supporting green, resilient, and inclusive development[9] in client countries by integrating protection and restoration of nature into economic policy, development programs, and strategic investments. The World Bank is also a leading multilateral financier of biodiversity and ecosystem conservation.[10] CIWA supports and implements these approaches through its programs, activities, and initiatives.

Integrating Climate and Nature Action

Tackling nature loss and climate change together offers the best hope for preventing their systemic threats to development, economic growth, and the well-being of people and the planet. Climate change and nature loss are critical threats to development, economic growth, and the welfare and health of people and the planet, and are among the biggest challenges humanity faces. The two crises reinforce each other and are pushing the planet toward dangerous and irreversible tipping points.[11]

An effective response to these crises requires equitable and inclusive social and economic transformation and integrated policy action and investment at all levels. Countries need to work together to better connect climate and biodiversity ambitions, as reflected in the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity, respectively, and to ensure their implementation is aligned. At the same time, it is critical to consider and identify measures to respond to obstacles faced by women and vulnerable populations in deriving the same benefits as men. At the country level, policymakers need to ensure nature, climate, and development considerations are included in sector strategies and plans, including as part of national and regional plans to meet climate mitigation and adaptation goals while ensuring that GESI considerations are mainstreamed into these policies. These include Nationally Determined Contributions (NDCs) and biodiversity goals such as National Biodiversity Strategies and Action Plans, which require a reflection of gender considerations to ensure the levelling of the playing field for women and vulnerable populations.[12] CIWA addresses these cross-cutting challenges through its cross-sectoral approach, which includes dealing with aspects linked to GESI, climate adaptation and mitigation, FCV, and biodiversity conservation in an aligned and integrated way.

[5] https://www.oecd-ilibrary.org/sites/131671a1-en/index.html?itemId=/content/component/131671a1-en "Women and SDG 15 – Life on Land: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss."
[6] https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf
[7] https://www.cbd.int/gbf
[8] https://wwf.panda.org/discover/our_focus/freshwater_practice/freshwater_biodiversity_222/
[9] World Bank. Green, Resilient, and Inclusive Development. © World Bank, Washington, DC 2021. http://hdl.handle.net/10986/36322
[10] Ibid.
[11] World Bank. Nature and Development Brief: Integrating Climate and Nature Action. COP 15 2022.IUCN, Convention on Biological Diversity and Integrating
[12] Gender Considerations in National Biodiversity Strategies and Action Plans, November 2016.

CIWA and biodiversity conservation

Biodiversity as a Global Public Good

Biodiversity is a public good at local, national, regional, and global scales. It underpins our lives and well-being and provides multiple essential benefits for all people, including food security, clean water, and disease prevention and cure, climate resilience, and disaster risk protection and mitigation. Biodiversity plays a fundamental, though variable, role in the provision of ecosystem services. Many economic sectors directly rely on the flow of goods and services generated by nature such as food, raw materials, pollination, water filtration, and climate regulation. According to the World Bank's Economic Case for Nature study, the partial collapse of ecosystem services would cost 2.3 percent of global GDP (US$2.7 trillion) in 2030, and some of the poorest countries would suffer the most from this collapse.[13]

The collective way in which society lives, trades, travels, uses resources, and generates waste has consequences for biodiversity, ecosystems, and the services these provide to support human well-being and livelihoods. Key threats to Africa's biodiversity include human encroachment, fragmentation and destruction of habitats, disease, alien species, unsustainable resource use, and pollution. Climate change compounds these and adds its own impact, including more frequent and extreme droughts and floods and an increase in the frequency and extremes of high temperatures and changes in rainfall patterns. The impacts of climate change are evident across all fields and within most species' groups and often amplify the threats posed by other drivers of change. Protecting, restoring, and maintaining healthy ecosystems support natural climate adaptation and mitigation processes, offer increased protection to local communities, and build resilience to climate impacts and natural disasters.

Coordinated and collective efforts are needed to protect and manage global resources. Society does not pay for global public goods such as oceans, tropical rainforests, and freshwater that runs down regional river systems. These are often viewed as open access resources and suffer from the "tragedy of the commons," where regional and global resources such as transboundary water resources are consumed by individuals at the expense of society. This has resulted in unsustainable use, underinvestment, and depletion of resources where access to a public resource by individuals acts to the benefit of their own interest and, in so doing, ultimately depletes the resource.[14]

Options are available that could simultaneously halt and ultimately reverse biodiversity loss, limit climate change, and improve the capacity to adapt to it and meet other goals such as improved water and food security. These pathways to a sustainable future rely on recognizing that bold, interdependent actions are needed across several fronts, each of which is necessary and none of which is sufficient on its own. This provides an opportunity for CIWA to use regional collaboration as a mechanism to greatly step up efforts to conserve and restore biodiversity and address climate change through strengthened transboundary resource management.

Key benefits and threats to freshwater ecosystems

Water, rivers, and other freshwater ecosystems are key to supporting biodiversity and the range of services and benefits associated with healthy, functional natural systems. Rivers play an important role in sediment delivery to maintain riverbanks, floodplains, coastal dunes, and deltas. Wetlands are some of the most biodiverse, rich ecosystems in the world, providing a range of services including flood risk reduction, carbon capture and storage, water purification, and groundwater recharge and supporting sustainable fishing populations. Freshwater fish support 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 are important in maintaining the components, functions, processes, and resilience of aquatic ecosystems to ensure an ongoing provision of goods and services to local communities. A fundamental issue in management of transboundary waters and their biodiversity is ensuring connectivity between elements of land and water bodies from source to coast. This is vital to maintain an appropriate flow of water, nutrients, and sediment that define water resources and the migration and dispersal of species upstream and downstream, laterally with floodplains, and vertically with groundwater and over space and time.

Climate change is having a significant impact on Africa, with increasing occurrence of extreme events such as floods and droughts. This will have a profound effect on the economy and its ability to support a growing population, which will be highly exposed to the vagaries of climate change. Freshwater ecosystems in southern Africa face significant challenges from climate change, with some regions already experiencing reduced precipitation. Addressing the threat posed by climate change will require a coordinated effort between countries, as many watercourses in the region share transboundary river basins. Failure to cooperate in the collaborative management of transboundary water resources could lead to conflict between countries if effective transboundary natural resource management is not achieved.

[13] https://www.worldbank.org/en/topic/environment/publication/the-economic-case-for-nature
[14] https://earth.org/what-is-tragedy-of-the-commons/

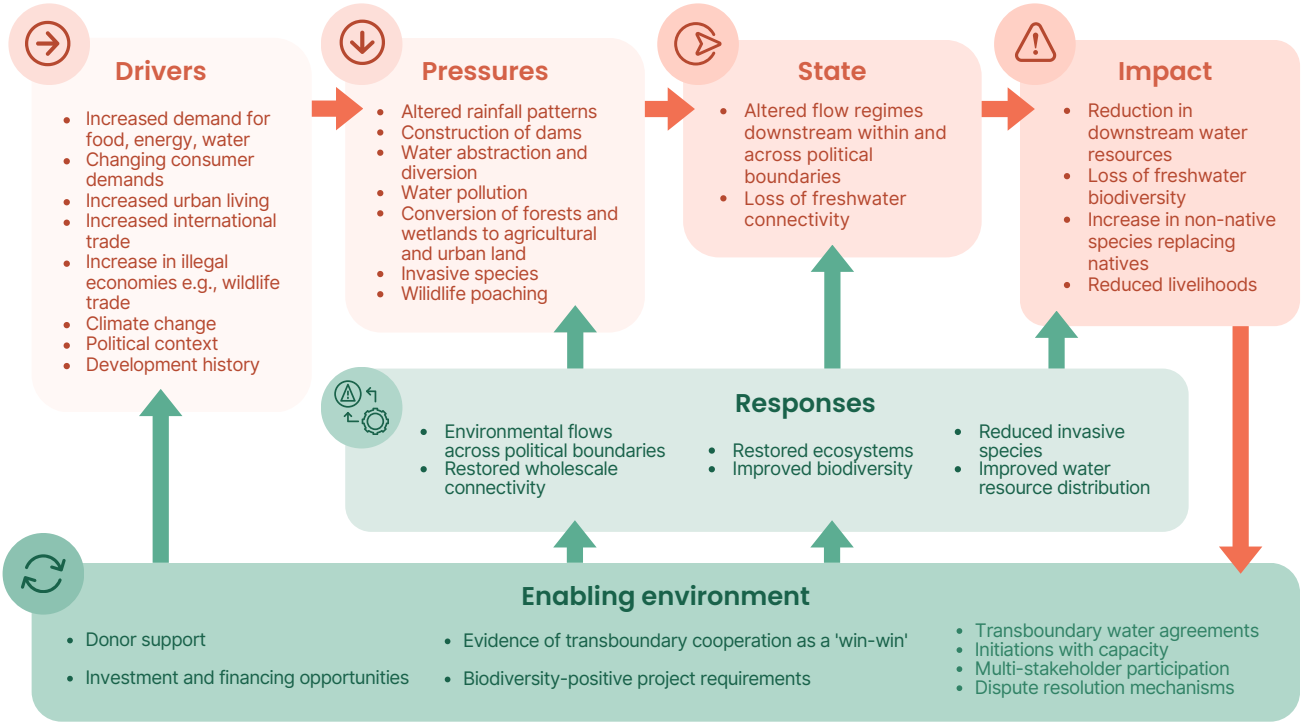

Figure 1: Transboundary Waters & Freshwater Biodiversity—DPSIR Conceptual Flow Diagram (adopted from IUCN 2022)

Rivers and wetlands are the most threatened and least protected ecosystems in Africa. These are important areas for improved protection, management, restoration, and investment. The destruction and degradation of biodiversity and healthy ecosystems leave the land more vulnerable to climate impacts; the protection of these is important to enhance long-term resilience and sustain livelihoods that are dependent on the provision of ecosystem goods and services. Other key pressures on these transboundary waters and biodiversity include increased demand for food, energy, water, changing consumer demands, urbanization, increased international trade (including illicit economies such as the illegal wildlife trade), and climate change. These are illustrated in the Drivers-Pressures-State-Impacts-Responses (DPSIR) Framework (Figure 1).

CIWA's comparative advantage in the transboundary waters—biodiversity conservation nexus

CIWA is very well positioned to support SSA to address biodiversity-related challenges in the transboundary waters management space. CIWA's technical knowledge of transboundary water resource management and development positions the program to support stakeholders to address some of their most complex challenges in water security. CIWA is therefore in an ideal position to play a convening role between key stakeholders to align and coordinate efforts to protect, manage, and restore nature that could sustain critical benefits, including food and water security, sustainable livelihoods, disaster risk reduction, and carbon sequestration. These include food and water security, sustainable livelihoods, disaster risk reduction, and carbon sequestration."

CIWA provides a range of interventions to support the protection and restoration of Africa's biodiversity as key to ensuring its long-term health. The program already strengthens national governments and regional institutions (such as RBOs) and implements a collaborative approach across boundaries that increases the effectiveness of attaining natural resource management and biodiversity conservation goals. CIWA has both the technical expertise and convening power of the World Bank yet is not limited to implementing through government agencies or with IDA financing. This means that, if a strong regional institution exists, CIWA can work in basins where one or more countries have limited capacity to implement standard World Bank projects and can take on small opportunistic operations to catalyze them for larger support.

Through its projects and initiatives, CIWA already supports a range of biodiversity-related activities in Sub-Saharan Africa. Project examples include the development of a MSIOA, which is part of a systematic strategy by the OKACOM, and advanced modelling for improved decision-making for Inner Niger Delta ecosystem services.[15] Other key interventions in support of direct benefits include the implementation of best practice feasibility studies and ESIAs, and the development and implementation of integrated watershed management strategies and plans, including interventions to support improve water quality in lakes and river systems and NBS such as riverbank restoration projects. CIWA also supported diversification of freshwater ecology-dependent livelihoods through sustainable natural resource harvesting, addressing water quality and GESI challenges, and analytical work to facilitate improved understanding of GDEs. Key indirect benefits include strengthening RBOs and national water management agencies, supporting CSOs to strengthen informed decision-making, development of decision-making platforms to share information, and supporting improved rural livelihoods to reduce dependencies on unsustainable natural resource exploitation practices.

[15] https://www.ciwaprogram.org/blog/enhancing-niger-basins-ecosystem-through-modeling-and-improved-decision-making/

CIWA Biodiversity Framework

Biodiversity as a Global Public Good

The main objective of the Biodiversity Framework is to align CIWA's transboundary water cooperation efforts with biodiversity conservation goals, including identifying opportunities at the intersection of transboundary water management and freshwater biodiversity conservation.

Objectives include:

- Develop a more structured, integrated approach to embedding biodiversity conservation considerations into the planning, design, and implementation of CIWA's activities and initiatives. This includes the development and uptake of a clear set of indicators to measure CIWA's outcomes.
- Further complement the World Bank's efforts to mainstream nature considerations into economic policy, development programs, and strategic sectoral investments.
- Contribute to expanding the knowledge base on transboundary waters management, biodiversity conservation, and sustainable natural resource management.
- Facilitate reporting and communication efforts to Bank teams, CIWA donors, and partners on how CIWA is contributing to biodiversity conservation through its projects and initiatives.

Theory of Change—Desired Outcomes and Key Thematic Impact Areas

The ToC (Figure 2) outlines the vision, context, key focus areas, and CIWA result areas for the CIWA Biodiversity Framework. The vision of the CIWA Biodiversity Framework is improved transboundary water management that supports biodiversity conservation to ensure more climate-resilient communities are better equipped to plan for and mitigate climate-related shocks, support livelihoods, sustain health and life, and improve economies.

The ToC aims to explain how this vision will be achieved and how it aligns with and supports the implementation of the three Is. It is also aligned with the CIWA 2.0 ToC, and the new World Bank Group Scorecard for FY24 to FY30.

The CIWA Biodiversity Framework aims to implement its vision through the following approach that will be transformed into thematic impact areas/outputs and activities for implementation:

- **Actions**: support the implementation of key actions linked to the three as part of the further development of the program.
- **Influence**: using its comparative advantage, influence specific outcomes as part of other programs funded by the World Bank and partners.

Cross-cutting Themes

Individual Actions and Areas of Influence are outlined in the description of the ToC for the Biodiversity Framework in Figure 2 below. In addition, the following three cross-cutting themes consistently inform the further design and implementation of the CIWA Biodiversity Framework:

- Climate change mitigation, adaptation, and a just transition
- Transboundary water resources management
- Gender equity and social inclusion

Implementation

Approach

The implementation of the CIWA Biodiversity Framework is focused on three inter-connected levels: i) programmatic level, ii) project level, and iii) tools and solutions (Figure 3).

Programmatic level

On a programmatic level, the implementation of the CIWA Biodiversity Framework will include the following strategies:

- Mainstream and embed biodiversity conservation considerations and targets in the new CIWA pipeline. Guided by the CIWA Biodiversity Framework for Action, the new CIWA project pipeline should also include support for the implementation of a systematic approach to biodiversity baseline and ecosystem inventories to monitor, assess, and respond effectively to existing anthropogenic pressures together with the additional pressures that climate change presents.

Theory of Change

Biodiversity and Conservation

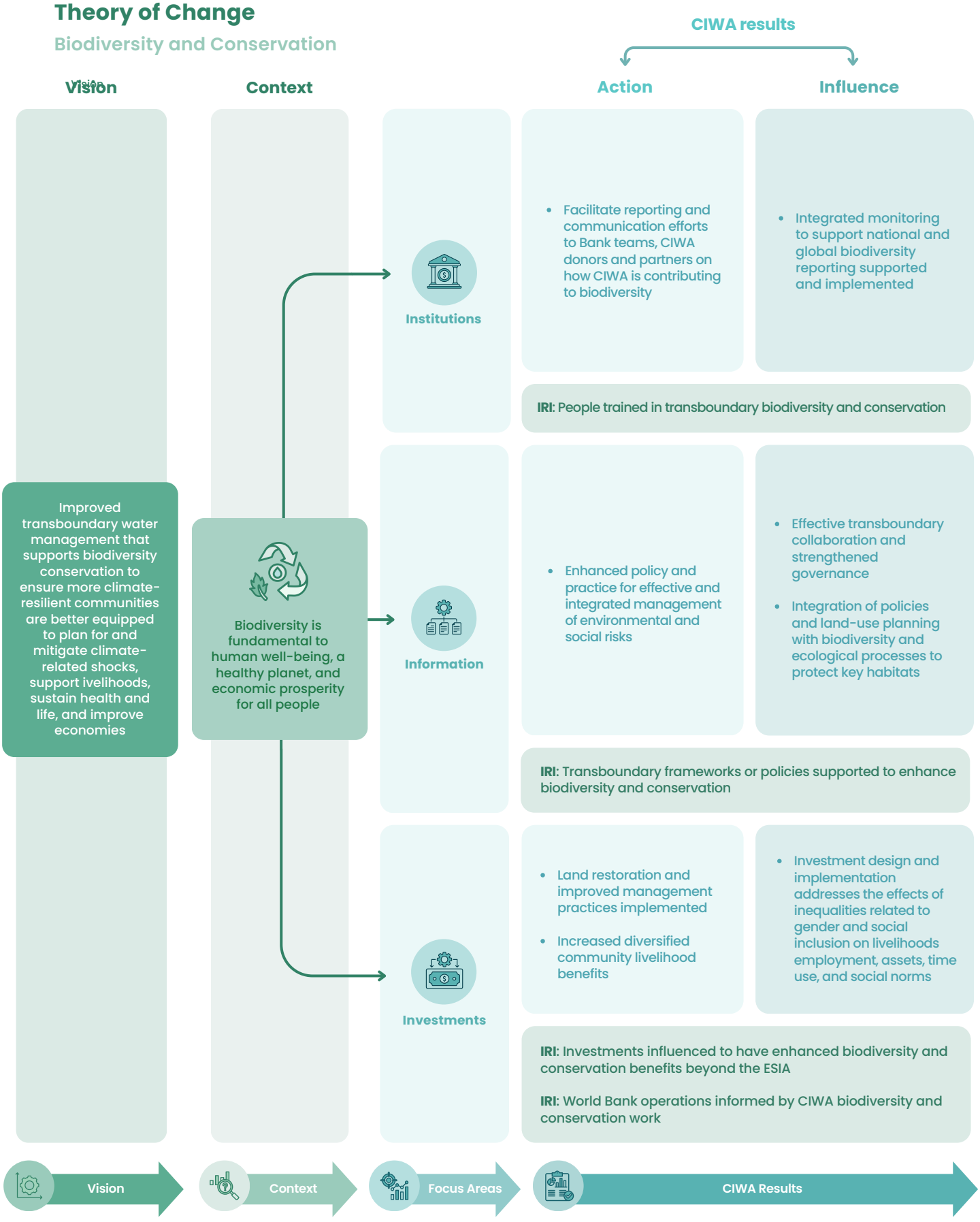

Figure 2: ToC—Desired Outcomes and Outputs of the CIWA Biodiversity Framework

- Support the implementation of an integrated landscape management approach to natural resource management in transboundary settings to reduce land-use conflicts, empower women and men in communities, address climate change, improve water and food security, and achieve development objectives at the landscape level. This could include (i) investing in natural capital and nature-based solutions as a cost-effective approach to ecosystems management, disaster risk reduction, and climate change mitigation; (ii) implementing a natural resource management approach in riparian restoration to build ecosystems and socio-economic resilience; (iii) developing and implementing partnerships to support more diverse and resilient biodiversity economies in rural landscapes adjoining protected areas, providing for a range of nature-based financing and income-generating opportunities; (iv) water towers as areas important for the production of relatively large volumes of runoff to sustain local and regional economies; (v) transboundary natural resource management through support for the establishment and implementation of new or existing transfrontier conservation areas; and (vi) key biodiversity areas and other geographical considerations such as protected area expansion and restoration potential.

Project level

On a project level, the implementation of the CIWA Biodiversity Framework should include the following approaches:

- Support to implement the CIWA Biodiversity Framework's ToC and its vision, key focus areas, and results areas.
- Development and implementation of a set of biodiversity indicators as part of the CIWA Monitoring and Evaluation system that is designed that is designed to improve programmatic performance and strengthen learning.
- Integration of biodiversity considerations into project design, planning, and implementation. This should not only be aimed at protecting and conserving environmental safeguards, but also procedures to enhance biodiversity as part of development projects, working at an appropriate scale to address all cumulative effects of development and to achieve biodiversity-positive outcomes.

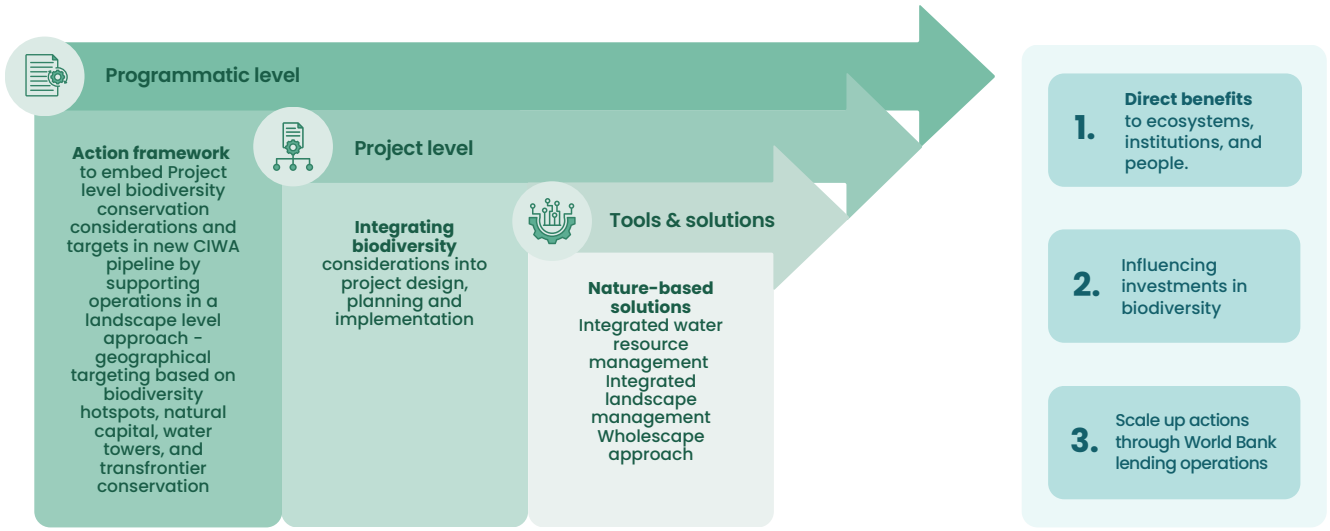

Figure 3: Implementation Approach—CIWA Biodiversity Framework

Tools and solutions

As described above, the Global Biodiversity Framework ToC outlines how a wide range of tools and solutions must be developed, implemented, and scaled to reduce the multiple threats to biodiversity while ensuring that people's needs are met through the sustainable use of biodiversity. These actions are supported by enabling conditions, adequate means of implementation—including financial resources, capacity, and technology—and are underpinned by the principles of responsibility and transparency. Some of these tools and solutions are outlined in Annex A.

Framework for Action

The implementation of the Framework will be guided by the development of a Framework for Action. Key focus areas are proposed for each of the thematic areas, which in turn could be transformed into activities, sub-activities, timeframes for implementation, and roles and responsibilities.

Application

The CIWA Biodiversity Framework will be applied primarily to new programs, projects, and initiatives as a means to embed biodiversity conservation considerations in a more structured way into the design and implementation of activities and initiatives.

Annex A

Tools and Solutions

Integrated Water Resources Management

IWRM promotes the coordinated development and management of water- and land-related resources to maximize economic and social welfare in an equitable manner without compromising the sustainability of ecosystems. The process promotes the coordinated development and management of water, land, and related resources to maximize economic and social welfare in an equitable manner, without compromising the sustainability of vital ecosystems and the environment. IWRM is a cross-sectoral policy approach designed to replace the traditional, fragmented sectoral approach to water resources management that has led to poor services and unsustainable resource use. IWRM is based on the understanding that water resources are an integral component of the ecosystem, a natural resource, and a social and economic public good.[16]

Integrated Landscape Management / Wholescape Approach

Transboundary natural resource management (TBNRM) is an important tool in broad landscape approaches to sustainable natural resource management and biodiversity conservation. TBNRM is defined as any process of collaboration across boundaries that increases the effectiveness of attaining natural resource management or biodiversity conservation goals.[17] Ecological opportunities include maintaining or restoring linkages and ecosystems in ecological landscapes across borders, reducing transboundary threats to promote sustainable use of natural resources, renewal of cooperation and cultural ties among communities severed by colonial borders, increased welfare and development opportunities for populations, the development of a regional economic base through tourism, improved access and linkages, and economies of scale.

Integrated Landscape Management (ILM) is an increasingly popular and innovative approach to land management that reduces land-use conflicts, empowers communities, addresses climate change, supports water and food security, and achieves development objectives at the landscape scale. ILM refers to long-term collaboration among different groups of land managers and stakeholders to achieve the multiple objectives required from the landscape built on the principles of participation, negotiation, and cooperation.[18] ILM has the best chance of succeeding when policies, markets, and financial conditions support it. Through long-term collaboration among different groups of stakeholders, ILM supports the achievement of multiple objectives required from the landscape, such as agricultural production; delivery of ecosystem services; provision of ecosystem services (e.g., water flow regulation and quality, pollination, climate change mitigation and adaptation, cultural values); protection of biodiversity, landscape beauty, identity, and recreation value; and inclusivity of local livelihoods, human health, and well-being.[19]

ILM also supports integration across sectors and scales, increasing coordination. Similarly, it ensures the harmonization of planning, implementation, and monitoring processes at the landscape, sub-national, and national levels. By coordinating strategies and encouraging synergies between different levels of government, ILM can create cost efficiencies at multiple levels. Given that ILM supports an inclusive, participatory process that engages all stakeholders in collaborative decision-making and management, it can also empower local communities.

A wholescape approach[20] provides a framework that integrates and supplements current practices so that they best support conservation and restoration of freshwater biodiversity. A fundamental issue in management of transboundary waters and their biodiversity is ensuring connectivity between elements of the land and water bodies from source to coast. This is vital to maintain an appropriate flow of water, nutrients, and sediment that define water resources, the migration and dispersal of species upstream and downstream, laterally with floodplains, vertically with groundwater, and over time. A second key issue is that while many ecosystems have a role in the hydrological cycle, the nature of this influence changes between ecosystems and with their location within the landscape. A wholescape approach should underpin transboundary water strategies and projects, including the use of NBS and monitoring programs, and expose the dependencies and provide cohesion between nations sharing water.

Natural capital and nature-based solutions

Natural capital can be defined as the world's stock of natural assets, which include geology, soil, air, water, and all living beings and things. Humans derive a wide range of services, often called ecosystem services, from natural capital, which make human life possible. The most obvious ecosystem services include food, water, plant materials used for fuel, building materials, and medicines. There are also many less visible ecosystem services such as the climate regulation and natural flood defenses provided by forests, the billions of tons of carbon stored by peatlands, and the pollination of crops by insects. Even less visible are cultural ecosystem services such as the inspiration taken from wildlife and the natural environment.[21]

Poorly managed natural capital becomes not only an ecological liability, but also a social and economic liability. Working against nature by overexploiting natural capital can be catastrophic not just for biodiversity loss, but also for humans as ecosystem productivity and resilience decline over time and some regions become more prone to extreme events such as floods and droughts. Ultimately, this makes it more difficult for communities to sustain themselves, particularly in already stressed ecosystems, potentially leading to hunger or starvation, conflict over resource scarcity, and displacement of populations.[22]

Nature-based solutions are often a cost-effective approach to water resource management, disaster risk reduction, and climate change mitigation.[23] Although there is no internationally agreed definition of NBS, the International Union for Conservation of Nature (IUCN) Global Standard for Nature-based Solutions is used here: "actions to protect, sustainably manage, and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits."

[16] https://www.unep.org/explore-topics/disasters-conflicts/where-we-work/sudan/what-integrated-water-resources-management#:~:text=Integrated%20Water%20Resources%20Management%20(IWRM,the%20sustainability%20of%20vital%20ecosystems.
[17] Ibid.
[18] Thaxton, M., Shames, S., and Scherr, S.J. EcoAgriculture Partners. UNCCD. Global Land Outlook Working Paper. Integrated Landscape Management.
[19] Scherr, S.J., Shames, S., and Friedman, R., EcoAgriculture Partners 2013. Defining Integrated Landscape Management for Policy Makers.
[20] https://www.cambridge.org/core/journals/global-sustainability/article/resilient-rivers-and-connected-marine-systems-a-review-of-mutual-sustainability-opportunities/925D17EE3A761A169549CE4FE17036A9
[21] http://www.naturalcapitalforum.com/what-is-natural-capital
[22] Ibid.
[23] Browder et al., 2019.

NBS can be implemented across terrestrial and marine ecosystems, with the overall mitigation potential being the highest in forests, then in grasslands, with peatlands and coastal wetlands representing a very high potential per hectare, but a lower overall potential due to their smaller area. This understanding is broadly reflected in NDCs, which more frequently put forward solutions for mitigation centered on forests, grasslands, and agriculture than for other ecosystems.

Annex B

Results of the 2023 CIWA Biodiversity and Conservation Assessment

Background

In 2023, CIWA conducted a desk study to identify the range of biodiversity-related activities that the program has supported over the last 10 years in Sub-Saharan Africa. This assessment analyzed every CIWA operation to date. CIWA collaborated with the IUCN to establish the impact of potential transboundary water activities and biodiversity conservation efforts.

The assessment identified examples of key benefits to water, rivers, freshwater ecosystems, and biodiversity of CIWA operations. The assessment took a broad view of the range of services and benefits associated with healthy, functional ecosystems and the potential threats to these ecosystems. Results from the assessment were used to formulate CIWA's comparative advantage in the sector and identify missed opportunities that could be addressed by CIWA 2.0.

A methodology was established to assess CIWA program activities in terms of their contributions to biodiversity conservation. Finally, recommendations were formulated in a conceptual framework for action.

The assessment concluded that CIWA's support of biodiversity-related activities provides both direct and indirect benefits to biodiversity conservation efforts. Key direct benefits include facilitating integrated, innovative approaches to better understand the linkages between improved ecosystem integrity and river connectivity, the role of climate change adaptation in freshwater resource planning and management, and the provision of ecosystem services. The assessment also highlighted the opportunity to develop a more structured, integrated approach to embedding biodiversity conservation considerations into the design and implementation of activities and initiatives. CIWA developed a draft conceptual framework for action on transboundary waters and biodiversity conservation.

Project interventions that support direct benefits include the development of an MSIOA, which is part of an OKACOM strategy, and the advanced modelling for improved decision-making for Inner Niger Delta ecosystem services.[24] Other key interventions include the implementation of best practice feasibility studies and ESIAs; development of integrated watershed management strategies and plans; support for improved water quality in lakes, river systems, and river-bank restoration projects; and analytical work to facilitate improved understanding of GDEs. Key indirect benefits include strengthening RBOs and national water management agencies, supporting CSOs to enhance informed decision-making, developing platforms to share information, and supporting improved rural livelihoods to reduce dependency on unsustainable natural resource exploitation practices.

Methodology

The methodological framework (Table 1) of the review defined that an activity is deemed to provide direct benefits to biodiversity if it either contributes to protecting and restoring the natural resource base or leads to improved water quality results, an improved ecosystem, aquatic health, or fish populations or species diversity. Indirect benefits to biodiversity correspond to improved governance, more resilient rural livelihood practices, or reduced dependencies on unsustainable natural resource exploitation practices.

Table 1: Methodological Framework of Biodiversity Assessment

Thematic Area	Biodiversity Action	Direct Impact – Biodiversity Conservation	Indirect Impact - Biodiversity Conservation
Governance	Improved / strengthened governance & transboundary collaboration	X	X
	Improved ecosystem-based policies, planning & regulations (including dam planning / grey infrastructure)		X
	Environmental, social and governance safeguards		X
Protection & restoration of natural resource base	Natural capital & provision of ecosystems services	X	
	Improved ecosystem integrity, species diversity & connectivity	X	
	Groundwater protection & recharge	X	
	Groundwater & surface water environmental flows	X	

[24] https://www.ciwaprogram.org/blog/enhancing-niger-basins-ecosystem-through-modeling-and-improved-decision-making/

Improved knowledge base	Data gathering, inventories, analytical & technical support	X	X
	Decision-making tools	X	X
	knowledge-sharing and exchange	X	X
Climate change resilience	Role of climate change adaption in current freshwater resource planning and management	X	X
Sustainable livelihoods and natural resource harvesting	Sustainable agricultural practices		X
	Sustainable resource harvesting		X

Summary of Recommendations

The assessment identified four potential opportunities for enhanced transboundary waters and biodiversity conservation work. They include (i) improvement of the overall environmental, human, and economic health of Lake Victoria and its surrounding communities through a holistic, cost-effective, long-term basin-wide sanitation approach; (ii) increased flood resilience in selected areas of South Sudan and Sudan with a potential focus on NBS to mitigate flood risk; (iii) resilient investments for pro-poor livelihoods aimed at increasing benefits to men and women that consider gender differences in economic opportunities and access to, and control over, land, biodiversity resources, and other productive assets; decision-making power; and vulnerability to biodiversity loss, climate change, and natural disasters in the Cubango-Okavango River Basin; and (iv) determination of potential options for a sustainable institutional mechanism to support cooperative transboundary management of the Senegal-Mauritanian Aquifer Basin. CIWA also identified four potential thematic focus areas for a future framework. These include (i) integration of freshwater biodiversity into the development planning cycle; (ii) investments in NBS as a cost-effective approach to WRM, disaster risk reduction, and climate change mitigation; (iii) protection and sustainable management of water towers as important areas that produce relatively large volumes of runoff to sustain downstream lowland areas; and (iv) transfrontier conservation areas as large conservation and development landscapes that are important for integrated WRM, climate resilience, and food security.

Key findings

East Africa

Information

In East Africa, the Nile Basin Decision Support System (DSS) was enhanced through technical and operational support[25] along with technical helpdesk services for the DSS user community. Technical analysis was also conducted to explore climate change impacts on Nile Basin water resources and development of climate change-resilient water resources management options.

A shared information base informing trade-offs related to hydropower, agriculture, and flood control and basin scale was built through a basin-wide hydromet network. Furthermore, flood preparedness and early-warning activities were enhanced and scaled through regional flood forecasts in the Eastern Nile. Both activities are linked indirectly to biodiversity through knowledge-sharing and exchange. Flagship knowledge and communications products such as the Nile Basin Water Resource Atlas and strategic and planning documents including the Wetlands Strategy[26] contributed both directly and indirectly through data gathering, inventories, analytical and technical support, and knowledge-sharing and exchange. The Horn of Africa Groundwater Initiative contributed directly and indirectly to biodiversity through its expansion of the knowledge base on regional groundwater resources.

Institutions

Feasibility and ESIA studies for water infrastructure projects for irrigation, hydropower, and watershed management contributed directly to biodiversity action through environmental, social, and governance safeguards. Under NCORE and the Nile Cooperation for Climate Resilience (NCCR), basin-wide activities to facilitate riparian cooperation improved NBI linkages to relevant institutions, increased support to NBI for hosting strategic dialogues, and strengthened networks of environmental and social specialists assisting the Eastern Nile Technical Regional Office, while engagement with inter-ministerial mechanisms contributed indirectly to biodiversity action through improved and strengthened governance and transboundary collaboration. On the other hand, strengthened regional inter-sectoral coordination, support for strategic fora such as policy dialogues, and development of Catchment Management Plans in Middle Malakisi in the Sio Malaba Malakisi sub-basin and Ol Choro Lemek in the Mara sub-basin linked indirectly to biodiversity action through improved ecosystem-based policy planning and regulations.

Investments

Feasibility studies and ESIA assessments for four transboundary-relevant investments contributed directly to biodiversity action through the linkage of environmental, social, and governance safeguards.

[25] This work was supported by both the NCORE and NCCR projects.
[26] https://nilebasin.org/sites/default/files/2023-09/43_NBI_Wetland%2520Management%2520Strategy.pdf

Preparation, delivery, and implementation with NCORE financing of four Eastern Nile **watershed management projects** and the promotion of climate-resilient catalytic and transformative investment opportunities contributed indirectly to biodiversity action through both increased natural capital of ecosystems services and improved ecosystem integrity, species diversity, and connectivity. Some specific activities include capacity building of Nile Equatorial Lakes riparian member states on water resources allocation, dam safety, and reservoir operations and implementation of Catchment Management Plans.

West and Central Africa

Information

At the regional level, CIWA supported the Sahel Groundwater Initiative, which strengthened the foundation for enhanced groundwater knowledge and management capacity in the Western Sahel, including GDEs. Following a gap analysis and typology on GDEs in FY21, the technical assistance in FY22 highlighted the economic importance of these ecosystems and identified how groundwater resource management that considers GDEs can contribute to equitable and sustainable development. The GDE analytics are being extended to SSA and were included in a World Bank groundwater flagship report, The Hidden Wealth of Nations: The Economics of Groundwater in Times of Climate Change.

An advanced model for ecosystem services was developed in the Inner Niger Delta, which will derive the water height over time as a function of inflow. The Lake Chad Basin started implementing an integrated approach to the development of a water security program, considering NBS as a key instrument. These two activities linked both directly and indirectly to biodiversity through knowledge generation and sharing and improved ecosystem integrity.

The Lake Chad Basin Commission (LCBC) enhanced its hydrological data, forecasting, and tools to enable informed decision for optimal water use at the basin level. LCBC and riparian states convened a Lake Chad Dialogue to exchange knowledge on the lake's characteristics and dynamics. CIWA funding enabled the Volta Basin Authority (VBA) to disseminate knowledge products to support decision-making. These activities indirectly contributed to biodiversity action through data gathering and exchange, analytical and technical support, and provision of decision-making tools.

Institutions

The World Bank conducted feasibility studies, including ESIAs, for Kandadji, Taoussa, Soukuru, and Fomi dams to evaluate and minimize social and environmental risks, which directly contributed to biodiversity protection. The significant environmental and social risks identified with the location of the Fomi dam in Guinea led to a decision to find a new site. The Senegal River Basin Authority (OMVS) updated the Senegal River Master Plan, an essential tool for the shared development and allocation of basin water resources. The Master Plan emphasized environmental priorities introduced by the 2002 Senegal River Water Charter. The activity produced both indirect and direct biodiversity linkages through improved transboundary cooperation and ecosystem-based policies.

A range of CIWA activities in the Volta River Basin yielded direct and indirect biodiversity benefits. The Volta River Basin Strategic Action Plan Implementation Project strengthened VBA capacity to improve transboundary water resources management. The Action Plan provided direct environmental and livelihood benefits through the implementation of priority actions and institutional development. The VBA facilitated capacity building, communication, and monitoring with national institutions to ensure a sustainable implementation of the Action Plan. The Council of Ministers approved a CIWA-facilitated Water Charter to strengthen the legal and institutional framework for sustainable management of water and environmental resources. VBA trained over 200 CSOs across six countries and provided small grants to projects in forestry, biodiversity, and other environmental sciences.

The Climate Resilience Investment Plan, which was endorsed by Heads of States of the Niger River Basin in November 2015 and presented at COP21 in Paris, helped Niger Basin Authority (NBA) states raise more than US$300 million for climate resilient investments. This activity provided indirect biodiversity benefits such as enhanced transboundary collaboration and the inclusion of climate change adaptation in freshwater resource planning.

OMVS and NBA conducted smaller-scale activities indirectly linked to biodiversity action to keep member countries engaged in the shared management of water resources alongside capacity building for staff, activities on information tools, and international legal instruments for shared water management. Finally, the Improving Water Resources Management in West and Central Sahel technical assistance produced indirect biodiversity benefits through enhanced transboundary collaboration.

Investments

Investment projects aiming to restore degraded land through agroforestry interventions and clearance of invasive aquatic species contributed directly to biodiversity protection by improving sustainability of resources harvesting and agriculture practices. Small-scale investments in fishery and aquaculture aiming to improve livelihoods and food security provided similar benefits. In the Senegal Basin, the rehabilitation of 20,000 hectares of irrigated land helped 60,000 farmers, contributing to food security while also improving agriculture practices.

The Lake Chad Development and Climate Resilience Action Plan secured multiple investments and enhanced regional cooperation. This activity brought indirect biodiversity benefits such as strengthened transboundary collaboration, inclusion of climate change adaptation in resource planning, and decision-making tools.

Southern Africa

Information

In Southern Africa, OKACOM's MSIOA identified joint actions in climate-resilient livelihoods enhancement, enhancing eco-tourism and joint infrastructure development in member states. The MSIOA contributed both directly and indirectly to biodiversity by facilitating data gathering and knowledge-sharing, informing decision-making, safeguarding natural capital, improving ecosystem integrity, and integrating climate change adaptation in water resources management.

SADRI conducted analytical work on water resources in the Pafuri-Sengwe Node of the Great Limpopo Transfrontier Conservation Area (GLTFCA), with activities including the mapping of flood plains and wetland systems, assessing water demand and usage, understanding the role of wetlands in community livelihoods support and climate resilience, and evaluating governance practices to manage water resources. Key biodiversity benefits of this activity include inventories, analytical and technical support, knowledge-sharing, provision of ecosystem services, improved ecosystem integrity, sustainable agricultural and resource harvesting practices, and groundwater protection.

SADC Groundwater Management Institute (SADC-GMI) supported the development of the Groundwater Information Portal and the Groundwater Grey Literature Archive, which contains publicly available data on groundwater resources. The institute also produced core guidelines and gap analyses to support the evidence base for cooperation on transboundary aquifers. Both activities are indirectly linked to biodiversity through their focus on groundwater protection and recharge, creation of decision-making tools, and knowledge-sharing.

Institutions

SADC-GMI implemented five joint activities to generate knowledge on national and transboundary groundwater. A water resources management research project was conducted in the Shire River Basin, a transboundary diagnostic analysis and an action plan are under development for the Tuli Karoo, and preparatory work is under way in the Eastern Kalahari, Ramotwsa, and Strampriet River Basins. These activities provide key direct and indirect benefits to biodiversity action through groundwater protection and recharge, provision of ecosystem services, improved species diversity and connectivity, data generation, knowledge-sharing, and decision-making tools.

Additional SADC-GMI activities enabled data gathering, analytical and technical support, and decision-making support. The institute led the Groundwater Governance Working Group at the African Ministers' Council on Water to implement the Pan-African Groundwater Program (APAGroP). It opened project-based positions for young professionals of member states related to the expansion of the SADC Groundwater information portal. SADC-GMI produced Gap Analysis Reports for each member state, guidelines for groundwater management, roadmaps for institutional frameworks in Eswatini and Tanzania, and three strategic analyses to support the evidence base for cooperation. Finally, the institute participated in eight international research platforms where it disseminated research results pertaining to groundwater management.

Investments

The Zambezi River Basin Development Project supported detailed feasibility, environmental, and social studies to prepare for the infrastructure development of the Batoka Gorge Hydroelectric Power Station project. While large-scale water infrastructure projects such as dams carry substantial risks to biodiversity, the studies aimed to minimize those risks to the extent possible.

Current Project Examples

Enhancing Niger Basin's Ecosystem through Modelling and Improved Decision-making

The Inner Niger Delta, a vast floodplain within the arid and semi-arid Sahel region, is the second largest wetland in Africa and rich in natural resources. It is vitally important to the 900,000 people in Mali who depend on its waters for fishing, agriculture, crafts, tourism, and other livelihoods. During the rainy season, water levels can rise by as much as four meters in just 100 days, sustaining the local population and hundreds of thousands of birds and livestock. Designated a Ramsar Wetland of International Importance, the Delta is crucial for protecting biodiversity, promoting sustainable development, and ensuring food security. However, it faces significant strain from climate change, reduced flooding, an upstream dam, sand extraction for construction, and water extraction for irrigation.

CIWA's analytical support has helped the NBA develop an advanced model for Delta ecosystem services, improving the prediction of impacts of upstream structures and enabling informed decision-making regarding various water release patterns of planned infrastructure investments. This model will aid in conserving the region's biodiversity. Additionally, CIWA financed a decision-making process concerning the environmental and social risks of the proposed Fomi dam in Guinea, which led to the selection of a new site. CIWA has also been strengthening the overall capacity of the NBA, particularly in biodiversity conservation.

Analytical Work to Fill Knowledge Gaps in Water Production, Use, and Governance in the GLTFCA Pafuri-Sengwe Node (SADRI)

The project provided technical support to the GLTFCA to enhance understanding of water governance and use in the Pafuri-Sengwe Node, thereby informing community-level drought preparation and mitigation measures. The analytical work focused on key water systems, including the Limpopo, Mwenezi/Nuanetsi, Luvuvhu, and Bubye Rivers, directly supporting and improving governance within the GLTFCA. A critical component of this effort was to enhance water resources knowledge and data management, particularly baseline information on wetlands, groundwater, and their interactions with surface water resources.

The project's objectives were to determine the extent of water availability in targeted aquifers, wetlands, and river systems; assess water demand and usage among communities in the Pafuri-Sengwe Node; evaluate governance practices for water management; and, based on these assessments, identify, develop, and recommend near- and medium-term actions and investment opportunities for water management that enhance community drought resilience.

Annex C - Desktop Assessment

Assessment – East Africa

Information

Thematic Area	CIWA Activity	Link - Biodiversity Action	Linkages - Direct	Linkages - Indirect
Information	Improve the **knowledge and analytical foundation for developing a shared understanding** of the Nile Basin issues and cooperative water resources development and management options in the Basin	• Data gathering, inventories, analytical & technical support		X
	Technical analyses to **explore impacts of climate change on Nile Basin water resources** and **development of climate change resilient water resources management options**.	• Role of climate change adaption in current freshwater resource planning and management	X	
	Technical and operational support to **enhance application of the Nile Basin Decision Support System (DSS)**, and technical Help Desk services for the DSS user community	• Decision-making tools	X	
	Basin-wide hydromet network to build a **shared information base that can inform evaluation of trade-offs** related to hydropower, agriculture, and flood control at basin scale	• knowledge-sharing and exchange		X
	Great Lakes Water Quality, including **analyzing the drivers of water pollution and how they intersect with fragility, human capital, and climate resilience** using remotely sensed data on water quality	• Improved ecosystem integrity and connectivity. • Groundwater protection & recharge	X	
	Technical support in improving dam safety in the Eastern Nile, including **building technical capacity and establish national and regional dam safety norms**.	• Data gathering, inventories, analytical & technical support		X
	Regional flood forecasts in the Eastern Nile region**, improving and scaling up flood preparedness and early warning activities.**	• knowledge-sharing and exchange		X
	Flagship **knowledge and communications products**, such as the Nile Basin Water Resources Atlas; strategic and planning documents, including the Gender Mainstreaming Policy and Strategy, **Wetlands Strategy**, Financing Strategy 2018 – 2022, and the Resource Mobilization Action Plan	• Data gathering, inventories, analytical & technical support knowledge-sharing and exchange	X	X
	The Horn of Africa Groundwater Initiative aims to expand the **knowledge base on regional groundwater resources**, including evidence-based joint planning and decision-making about natural resources including livestock and crops, and water resources management.	• Data gathering, inventories, analytical & technical support Decision-making tools knowledge-sharing and exchange Groundwater protection & recharge • Groundwater & surface water environmental flows	X	X

Institutions

Thematic Area	CIWA Activity	Link - Biodiversity Action	Linkages - Direct	Linkages - Indirect
Institutions	Facilitate **basin-wide cooperative activities**, including events for governance bodies and stakeholders to facilitate riparian awareness-building, dialogue, cooperation, and resource mobilization.	• Improved / strengthened governance & transboundary collaboration		X
	Improve **NBI linkages to relevant national and other regional / international-level institutions**	• Improved / strengthened governance & transboundary collaboration		X
	Undertaking feasibility, **ESIAs**/RAP studies for water infrastructure projects prioritized by the riparian countries	• Environmental, Social and Governance Safeguards	X	

Institutions	Feasibility studies, detailed designs and tender documents preparation in irrigation, hydropower and **watershed management and the associated ESIAs**	Environmental, Social and Governance Safeguards	x	
	Strengthening regional inter-sectoral coordination with national Sector-Wide Approach to Planning (SWAP);	Improved ecosystem-based policies, planning & regulations		x
	Supporting the NBI to **host Strategic Dialogues**, including the Annual Nile Day and the Nile Basin Development Forum	Improved / strengthened governance & transboundary collaboration		x
	Supporting strategic fora such as policy dialogues, which helped harmonize fishery legislation and relations between Uganda and the DRC	Improved ecosystem-based policies, planning & regulations		x
	Networks of environmental and social specialists that have been assisting ENTRO **strengthened through an intensive training program**	Improved / strengthened governance & transboundary collaboration		x
	Support **engagement with inter-ministerial mechanisms** at the national level on these issues	Improved / strengthened governance & transboundary collaboration		x
	Support 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	Improved ecosystem-based policies, planning & regulations		x

Investments

Thematic Area	CIWA Activity	Link - Biodiversity Action	Linkages - Direct	Linkages - Indirect
Investments	Four Eastern Nile **watershed management projects** were prepared to the design phase, delivered to the countries, and implemented with NCORE financing	Natural capital & provision of ecosystems services Improved ecosystem integrity, species diversity & connectivity		x
	Promoting **climate resilient catalytic and transformative investment opportunities**. Specific activities included capacity building of the NEL riparian member states in general and basin water offices specifically (or water management zones and basin water boards) on: i) **water resources allocations**; ii) **dam safety and reservoir operations**; iii) **flood management**; and iv) **implementation of Catchment Management Plans (CMPs).**	Natural capital & provision of ecosystems services, Improved ecosystem integrity, species diversity & connectivity		x
	Support feasibility study preparation, **ESIA**/RAP assessments, and detailed designs and tender documents for 4 transboundary-relevant investments	Environmental, Social and Governance Safeguards	x	
	Facilitating **more holistic approaches to preparing and operating water investments, to better take into consideration environmental and social issues**	Natural capital & provision of ecosystems services Improved ecosystem integrity, species diversity & connectivity	x	
	Fund the preparation of future **cooperative investments in watershed management**. Through its Cooperative Regional Assessment in Watershed Management, ENTRO has already identified the most **critical high erosion hot spots in the region, which are experiencing the most extensive degradation and are causing downstream sediment management issues.**	Natural capital & provision of ecosystems services Improved ecosystem integrity, species diversity & connectivity	x	

Assessment – West & Central Africa

Information

Thematic Area	CIWA Activity	Link - Biodiversity Action	Linkages - Direct	Linkages - Indirect
Information	Expansion and rehabilitation of **water-related observation networks, and related information systems**, and the development of **decision-making tools**.	• Data gathering, inventories, analytical & technical support		x
	The Sahel Groundwater Initiative strengthens the foundation for **enhanced groundwater knowledge and management capacity** in the Western Sahel, including **groundwater-dependent ecosystems**.	• Data gathering, inventories, analytical & technical support Decision-making tools knowledge-sharing and exchange Improved ecosystem integrity, species diversity & connectivity Groundwater protection & recharge Groundwater & surface water environmental flows	x	
	Development of an **advanced model for ecosystem services** in the Inner Niger Delta. The model will make it possible to infer the evolution of water height over time as a function of inflow, including when influenced by an upstream reservoir (such as a large dam).	• Data gathering, inventories, analytical & technical support Decision-making tools knowledge-sharing and exchange Natural capital & provision of ecosystems services Improved ecosystem integrity, species diversity & connectivity	x	x
	CIWA funding enabled VBA to disseminate a **multitude of knowledge products to support decision-making**.	• Decision-making tools		x
	Lake Chad **Dialogue** helped member states and LCBC **better understand the lake's characteristics and dynamics.**	• knowledge-sharing and exchange		x
	Technical assistance to LCBC enabled riparian member states to make **informed decisions for optimal resource utilization** at the basin level and **build and improve hydrological data, forecasting, knowledge, and tools**.	• Data gathering, inventories, analytical & technical support Decision-making tools		x
	CIWA supports the **implementation of an integrated approach to the development of a water security program** in the Lake Chad Basin. This includes looking at the potential for **Nature-Based Solutions (NBS)** as a key instrument for such an integrated approach.	• Data gathering, inventories, analytical & technical support Decision-making tools knowledge-sharing and exchange Natural capital & provision of ecosystems services Improved ecosystem integrity, species diversity & connectivity	x	

Institutions

Thematic Area	CIWA Activity	Link - Biodiversity Action	Linkages - Direct	Linkages - Indirect
Institutions	Long-term **strengthening of river basin organizations** in Niger and Senegal Basins, including staff training, **information and decision-support tools and transboundary legal instruments to promote shared water development and management.**	• Improved / strengthened governance & transboundary collaboration Improved ecosystem-based policies, planning & regulations		x
	Financing feasibility studies (including ESIAs) to **minimize the social and environmental risks inherent to large infrastructure development projects**. This included the financing of a decision-making process on the significant environmental and social risks associated with the location of the Fomi dam in Guinea, which led to a decision to find a new site.	• Environmental, Social and Governance Safeguards	x	

Institutions	Feasibility studies up to detailed design, including E**SIA**, for Kandadji, Taoussa, Fomi and Soukuru dams.	• Environmental, Social and Governance Safeguards	**X**	
	Smaller-scale investments contribute to strengthening the legitimacy of OMVS and NBA, respectively, and keeping member countries committed to actively participating in the **shared development and management of basin water resources.**	• Improved / strengthened governance & transboundary collaboration		**X**
	Development, adoption and implementation **of essential tools for the shared management and development of the basin water resources**, including financing the Senegal River Master Plan. It is the key mechanism for countries to agree upon the future multisectoral water development and allocation in the basin, and update of the 10-year Master Plan, which includes addressing the **environmental priorities introduced by the 2002 Water Charter**.	• Improved / strengthened governance & transboundary collaboration Improved ecosystem-based policies, planning & regulations	**X**	**X**
	CIWA facilitated the preparation and validation process of the **Water Charter** and several of its Annexes, complementing the **rules of the game for transboundary water management in the basin**.	• Improved / strengthened governance & transboundary collaboration		**X**
	Climate Resilience Investment Plan (CRIP) which was endorsed by Heads of States in November 2015 and presented at COP21 in Paris and helped basin countries raise more than $300m financing for climate resilient investments.	• Improved / strengthened governance & transboundary collaboration Role of climate change adaption in current freshwater resource planning and management • Decision-making tools		**X**
	The Volta River Basin Strategic Action Plan Implementation Project was launched in 2015 to improve VBA's capacity **to promote transboundary water resources management**. The Strategic Action Plan was developed to **provide direct environmental and livelihood benefits through the implementation of priority actions and institutional development**.	• Improved / strengthened governance & transboundary collaboration Improved ecosystem-based policies, planning & regulations	**X**	**X**
	VBA facilitated ratification of a Water Charter to **strengthen the legal and institutional framework for sustainable management of basin water and associated environmental resources**.	• Improved / strengthened governance & transboundary collaboration Improved ecosystem-based policies, planning & regulations	**X**	**X**
	VBA helped **build the capacity of national institutions to sustainably implement** the Strategic Action Plan by facilitating dialogue, communication, and project monitoring.	• Improved / strengthened governance & transboundary collaboration		**X**
	VBA imparted **knowledge and built capacity** by training over 200 CSOs across six countries and offering **mini-grants to projects in forestry, biodiversity, and other environmental sciences**.	• Improved / strengthened governance & transboundary collaboration • Improved ecosystem-based policies, planning & regulations • knowledge-sharing and exchange	**X**	**X**
	LCBC has secured multiple investments for basin development and set the stage for a regional cooperation platform. Enabling this progress was **the Lake Chad Development and Climate Resilience Action Plan**, prepared and disseminated at the 2015 Conference of the Parties, or COP 21 meeting, in Paris.	• Improved / strengthened governance & transboundary collaboration • Role of climate change adaption in current freshwater resource planning and management • Decision-making tools		**X**
	CIWA is developing a framework and a series of replicable methods for **creating a cohesive water management policy and a pipeline of investments for the region**. The Improving Water Resources Management in West and Central Sahel Technical Assistance initiative is designed to strengthen water resources management in the region by identifying pragmatic investments and policy actions.	• Improved / strengthened governance & transboundary collaboration=		**X**

Investments

Thematic Area	CIWA Activity	Link - Biodiversity Action	Linkages - Direct	Linkages - Indirect
Investments	Smaller-scale structural and non-structural investments for generating quick, tangible benefits to the basins' stakeholders—mostly focused on irrigated agriculture (including flood recession irrigation), **fishery and aquaculture with the aim of improving livelihoods and food security**, and contributing to a reduction in poverty and malnutrition.	• Sustainable agricultural practices • Sustainable resource harvesting		X
	Small-scale structural and non-structural investments for **reducing environmental degradation, including watershed management, river bank restoration and protection.**	• Natural capital & provision of ecosystems services • Improved ecosystem integrity, species diversity & connectivity	X	
	Investments on the ground significantly benefitted the basin's population, including **increases in rural incomes and food security through the rehabilitation/modernization** of 20,000 ha of irrigated land benefitting 60,000 farmers.	• Sustainable agricultural practices		X
	Restoration of degraded land restored through agroforestry and other interventions; control and **clearance of invasive aquatic species** which has boosted the development of the fisheries sector at these locations, in addition to better supplying downstream irrigation schemes.	• Sustainable agricultural practices • Sustainable resource harvesting • Improved ecosystem integrity, species diversity & connectivity	X	X
	LCBC has secured multiple investments for basin development and set the stage for a regional cooperation platform. Enabling this progress was **the Lake Chad Development and Climate Resilience Action Plan**, prepared and disseminated at the 2015 Conference of the Parties, or COP 21 meeting, in Paris.	• Improved / strengthened governance & transboundary collaboration • Role of climate change adaption in current freshwater resource planning and management • Decision-making tools		X

Assessment – Southern Africa

Information

Thematic Area	CIWA Activity	Link - Biodiversity Action	Linkages - Direct	Linkages - Indirect
Information	Development of the Multi-Sector Investment Opportunities Analysis (MSIOA). The MSIOA is part of a systematic strategy by the Permanent Okavango River Basin Water Commission (OKACOM). The joint actions identified through the MSIOA inform the **Sustainable and Equitable Climate Resilient Investment Program** and are structured around the following three key areas: **climate-resilient livelihoods enhancement**, **enhancing eco-tourism**, and joint infrastructure development.	• Data gathering, inventories, analytical & technical support • Decision-making tools • knowledge-sharing and exchange • Natural capital & provision of ecosystems services • Improved ecosystem integrity, species diversity & connectivity • Role of climate change adaption in current freshwater resource planning and management	X	X

Information	SADC-GMI supported the development of the **SADC Groundwater Information Portal and Groundwater Grey Literature Archive** to provide publicly available water resource data.	• Decision-making tools • knowledge-sharing and exchange • Groundwater protection & recharge		X
	SADC-GMI facilitated the process to **develop core guidelines and conduct gap analyses** for member states. The regional strategic analyses are being produced to support the **evidence base for cooperation on shared aquifers**.	• Decision-making tools • knowledge-sharing and exchange • Groundwater protection & recharge		X
	Pillar 3 (Livelihoods and Food Security) of the SADRI supports analytical work to develop a **better understanding of the water resources available** and how they are being utilised in the Pafuri-Sengwe Node of the Great Limpopo Transfrontier Conservation Area (GLTFCA). Activities include the **mapping of flood plains and wetland systems** associated with the four river systems in the node, **assessing current water demand and usage**, understanding the **role of wetlands in community livelihoods support and climate resilience**, and **evaluating governance practices** that are in place to manage water resources.	• Data gathering, inventories, analytical & technical support • Decision-making tools • knowledge-sharing and exchange • Natural capital & provision of ecosystems services • Improved ecosystem integrity, species diversity & connectivity • Sustainable agricultural practices • Sustainable resource harvesting • Role of climate change adaption in current freshwater resource planning and management • Groundwater protection & recharge	X	X

Institutions

Thematic Area	CIWA Activity	Link - Biodiversity Action	Linkages - Direct	Linkages - Indirect
Institutions	Development of the Multi-Sector Investment Opportunities Analysis (MSIOA). The MSIOA is part of a systematic strategy by the Permanent Okavango River Basin Water Commission (OKACOM). The joint actions identified through the MSIOA inform the **Sustainable and Equitable Climate Resilient Investment Program** and are structured around the following three key areas: **climate-resilient livelihoods enhancement**, **enhancing eco-tourism**, and joint infrastructure development.	• Link - Biodiversity Action • Data gathering, inventories, analytical & technical support • Decision-making tools • knowledge-sharing and exchange • Natural capital & provision of ecosystems services • Improved ecosystem integrity, species diversity & connectivity • Role of climate change adaption in current freshwater resource planning and management	X	X

Institutions	SADC-GMI is working with the African Ministers' Council on Water (AMCOW) to implement the AMCOW Pan-African Groundwater Program (APAGroP) and is leading the **Groundwater Governance Working Group** to implement APAGroP.	• Data gathering, inventories, analytical & technical support • Decision-making tools • knowledge-sharing and exchange		X
	SADC-GMI hosted project- based internships for young professionals from member states. The projects were related to **collecting and managing data**, **expanding the SADC Groundwater Information Portal**, and broadening the Groundwater Grey Literature Archive. The project has helped **strengthen SADC GMI's institutional capacity by forging strategic partnerships** with regional and international water institutions.	• Data gathering, inventories, analytical & technical support • Decision-making tools • knowledge-sharing and exchange		X
	The SADC-GMI implemented five joint activities to **advance knowledge on transboundary and national groundwater**. The institute contracted the International Water Management Institute (IWMI) to implement the **Conjunctive Water Resources Management Researc**h project on the Shire River Basin. A Transboundary Diagnostic Analysis and Strategic Action Plan are under development for the Tuli-Karo, **which includes work on GDEs**. Other preparation work is under way regarding the Eastern Kalahari, Ramotwsa, and Strampriet TBAs.	• Data gathering, inventories, analytical & technical support • Decision-making tools • knowledge-sharing and exchange • Natural capital & provision of ecosystems services • Improved ecosystem integrity, species diversity & connectivity • Groundwater protection & recharge	X	X
	SADC-GMI produced **Gap Analysis Reports** for each member state, **guidelines for groundwater management, roadmaps for institutional frameworks** in Eswatini and Tanzania, and three strategic analyses to support the **evidence base for cooperation** (an SADC Drought risk assessment, a Big Data Transboundary Water Cooperation study, and an OKACOM Groundwater Assessment)	• Data gathering, inventories, analytical & technical support • knowledge-sharing and exchange		X
	SADC-GMI participated in eight regional or international research platforms where it **disseminated research results pertaining to groundwater management** in SADC member states.	• Data gathering, inventories, analytical & technical support • knowledge-sharing and exchange		

Investments

Thematic Area	CIWA Activity	Link - Biodiversity Action	Linkages - Direct	Linkages - Indirect
Investments	Development of the Multi-Sector Investment Opportunities Analysis (MSIOA). The MSIOA is part of a systematic strategy by the Permanent Okavango River Basin Water Commission (OKACOM). The joint actions identified through the MSIOA inform the **Sustainable and Equitable Climate Resilient Investment Program** and are structured around the following three key areas: **climate-resilient livelihoods enhancement**, **enhancing eco-tourism**, and joint infrastructure development.	• Data gathering, inventories, analytical & technical support • Decision-making tools • knowledge-sharing and exchange • Natural capital & provision of ecosystems services • Improved ecosystem integrity, species diversity & connectivity • Role of climate change adaption in current freshwater resource planning and managemenT	X	X
	The Zambezi River Basin Development Project supported preparation for infrastructure development, including detailed feasibility, **environmental, and social studies**, and provided transaction advisory services for the Batoka Gorge Hydroelectric Power Station, a 2,400 MW project on the Zambezi River upstream of the Kariba Dam.	• Environmental, Social and Governance Safeguards	X	

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