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IDA/R2022-0179/1

May 12, 2022

Closing Date: Wednesday, June 1, 2022 at 6:00 p.m.

FROM: Vice President and Corporate Secretary

Kenya, Ethiopia, Somalia, Intergovernmental Authority on Development (IGAD), Djibouti, and South Sudan

Horn of Africa Groundwater for Resilience Project

using the Multiphase Programmatic Approach

Project Appraisal Document

Attached is the Project Appraisal Document regarding a proposed IDA financing envelope using a Multiphase Programmatic Approach (MPA), which includes a proposed credit to Kenya and proposed grants to Ethiopia, Somalia, and Intergovernmental Authority on Development (IGAD) in Phase 1 and IDA financing to Djibouti and South Sudan in Phase 2, for a Horn of Africa Groundwater for Resilience Project. (IDA/R2022-0179), which is being processed on an absence-of-objection basis.

Distribution:
Executive Directors and Alternates
President
Bank Group Senior Management
Vice Presidents, Bank, IFC and MIGA
Directors and Department Heads, Bank, IFC, and MIGA

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Report No: PAD4544

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT
ON

A PROPOSED CREDIT
IN THE AMOUNT OF EUR 121.7 MILLION (US$135 MILLION EQUIVALENT)
TO THE REPUBLIC OF KENYA

A PROPOSED GRANT
IN THE AMOUNT OF SDR 150.6 MILLION (US$210 MILLION EQUIVALENT)
TO THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

A PROPOSED GRANT
IN THE AMOUNT OF SDR 21.6 MILLION (US$30 MILLION EQUIVALENT)
TO THE FEDERAL REPUBLIC OF SOMALIA

A PROPOSED GRANT
IN THE AMOUNT OF SDR 7.2 MILLION (US$10 MILLION EQUIVALENT)
TO THE INTERGOVERNMENTAL AUTHORITY ON DEVELOPMENT

FOR A

HORN OF AFRICA - GROUNDWATER FOR RESILIENCE PROJECT
AS PHASE I OF THE MULTI-PHASE PROGRAMMATIC APPROACH

WITH AN OVERALL FINANCING ENVELOPE OF US$455 MILLION EQUIVALENT

May 10, 2022

Water Global Practice
Eastern and Southern Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective. February 28, 2022)

Currency Unit =	
US$1 =	EUR 0.89
US$1 =	SDR 0.72

FISCAL YEAR
January 1 - December 31

Regional Vice President:	Hafez M. H. Ghanem
Country Director:	Boutheina Guermazi
Acting Regional Director:	Catherine Signe Tovey
Practice Manager:	Fook Chuan (Acting), Maria Angelica Sotomayor
Task Team Leader:	Victor Vazquez Alvarez

ABBREVIATIONS AND ACRONYMS

AAD&MP	Aquifer Assessment, Development and Management Plans
ASALs	Arid and Semi-Arid Lands
AU	African Union
CDD	Community Driven Development
CERC	Contingent Emergency Response
CIWA	Cooperation in International Waters in Africa
CPF	Country Partnership Framework
CPS	Country Partnership Strategy
CSA	Climate Smart Agriculture
DA	Designated Account
DRDIP	Development Response to Displacement Impacts Project in the HOA
DSBN	Drought-Response Strategic Boreholes Network
DSS	Decision Support System
EAFS	External Assistance Fiduciary Section
EFA	Economic and Financial Analysis
EHSG	Environmental Health and Safety Guidelines
EIRR	Economic Rate of Return
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
E&S	Environmental and Social
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FCV	Fragility, Conflict and Violence
FM	Financial Management
FMS	Federal Member State
FS	Feasibility Study
FY	Fiscal Year
HYCOS	Hydrological Cycle Observation System
IFR	Interim Financial Report
IGAD	Intergovernmental Authority on Development
IMS	Information Management System
INWRMP	Inland Water Resources Management Program
IPCC	Intergovernmental Panel on Climate Change
IPF	Investment Project Financing
GBV	Gender-based Violence
GDP	Gross Domestic Product
GEMS	Geo-Enabling initiative for Monitoring and Supervision
GHG	Greenhouse Gas
GIS	Geographic Information System
GoE	Government of Ethiopia

GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
CSA	Climate Smart Agriculture
GW	Groundwater
GWC	Groundwater Center
GW4R	Groundwater for Resilience
GW4RP	Groundwater for Resilience Program
HoA	Horn of Africa
HoAI	Horn of Africa Initiative
ICPAC	IGAD Climate Prediction and Applications Centre
ICPALD	IGAD Center for Pastoral Areas and Livestock Development
ICT	Information and Communication Technology
IDA	International Development Assistance
IDP	Internally Displaced Persons
IDDRSI	Drought Disaster Resilience and Sustainability Initiative
IGAD	Intergovernmental Authority on Development
IGAD-GWC	IGAD Groundwater Centre
IWU	IGAD Water Unit
MAR	Managed Aquifer Recharge
MoF	Ministry of Finance
MoILD	Ministry of Irrigation and Lowlands Development
MoWE	Ministry of Water and Energy
MoU	Memorandum of Understanding
MoEWR	Ministry of Energy and Water Resources
MoWIE	Ministry of Water, Irrigation and Energy
MoWSI	Ministry of Water, Sanitation and Irrigation
MPA	Multiphase Programmatic Approach
MS	Member State
MTR	Midterm Review
M&E	Monitoring and Evaluation
NFG	National Focus Group
NEDI	North Eastern Development Initiative
NGWC	National Groundwater Centre
NGWMSC	National Groundwater Management Steering Committee
NGO	Non-governmental Organization
NPV	Net Present Value
OP	Operational Policy
OWNP	ONEWASH National Programme
O&M	Operation and Maintenance
P-ASA	Programmatic Advisory Services and Analytics
PDO	Project Development Objective
PrDO	Program Development Objective
PFM	Public Financial Management
PIU	Project Implementation Unit
PCMU	Project Coordination and Management Unit

POM	Project Operations Manual
PPSD	Project Procurement Strategy for Development
PSC	Project Steering Committee
RBO	River Basins Organizations
SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
SESA	Strategic Environmental and Social Assessment
SH	Sexual Harassment
SPC	Social Price of Carbon
SSAHUTLC	Sub-Saharan African Historically Underserved Traditional-Local Communities
STEM	Science, Technology, Engineering and Mathematics
TA	Technical Assistance
TAC	Technical Advisory Committee
TB	Transboundary
TBA	Transboundary Aquifer
TDAs	Transboundary Diagnostic Analyses
ToR	Terms of Reference
TPM	Third-Party Monitoring
UCS	Use of Country Systems
UNHCR	United Nations High Commissioner for Refugees
WASH	Water, Sanitation & Hygiene
WASHCOMs	WASH Committees
WBG	World Bank Group
WRA	Water Resources Authority
WRM	Water Resources Management
WRUAs	Water Resources Users Associations
WSP	Water Service Provider
WSTF	Water Sector Trust Fund
WU	Water Unit
WUAs	Water Users Associations

TABLE OF CONTENTS

DATASHEET

BASIC INFORMATION

Country(ies)	Project Name
Horn of Africa, Ethiopia, Kenya, Somalia	Horn of Africa - Groundwater for Resilience Project

Project ID	Financing Instrument	Environmental and Social Risk Classification
P174867	Investment Project Financing	High

Financing & Implementation Modalities

[✓] Multiphase Programmatic Approach (MPA)	[✓] Contingent Emergency Response Component (CERC)
[ ] Series of Projects (SOP)	[✓] Fragile State(s)
[ ] Performance-Based Conditions (PBCs)	[ ] Small State(s)
[ ] Financial Intermediaries (FI)	[✓] Fragile within a non-fragile Country
[ ] Project-Based Guarantee	[ ] Conflict
[ ] Deferred Drawdown	[ ] Responding to Natural or Man-made Disaster
[ ] Alternate Procurement Arrangements (APA)	[ ] Hands-on Enhanced Implementation Support (HEIS)

Expected Project Approval Date	Expected Project Closing Date	Expected Program Closing Date
01-Jun-2022	31-Dec-2028	31-Dec-2029

Bank/IFC Collaboration

No

MPA Program Development Objective

To increase the sustainable access and management of groundwater in the Horn of Africa's borderlands.

MPA Financing Data (US$, Millions)

MPA Program Financing Envelope	455.00

Proposed Project Development Objective(s)

To increase the sustainable access and management of groundwater in the Horn of Africa's borderlands.

Components

Component Name	Cost (US$, millions)
Component one: Delivery of inclusive groundwater services to priority areas	293.00
Component two: Generating groundwater information and strengthening regional and national GW institutions	62.00
Component three: Support for project management, knowledge & operations.	30.00
Component four: CERC	0.00

Organizations

Borrower:	Federal Republic of Somalia Federal Democratic Republic of Ethiopia Republic of Kenya Intergovernmental Authority on Development (IGAD)
Implementing Agency:	Somalia - Ministry of Energy and Water Resource (MoEWR) Ethiopia - Ministry of Water and Energy (MoWE) Kenya - The Ministry of Water, Sanitation and Irrigation (MOWSI) Intergovernmental Authority on Development (IGAD)

MPA FINANCING DETAILS (US$, Millions)

MPA Program Financing Envelope:	455.00
of which Bank Financing (IBRD):	0.00
of which Bank Financing (IDA):	455.00
of which other financing sources:	0.00

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	385.00
Total Financing	385.00
of which IBRD/IDA	385.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Development Association (IDA)	385.00
IDA Credit	135.00
IDA Grant	250.00

IDA Resources (in US$, Millions)

	Credit Amount	Grant Amount	Guarantee Amount	Total Amount
Ethiopia	0.00	210.00	0.00	210.00
National PBA	0.00	70.00	0.00	70.00
Regional	0.00	140.00	0.00	140.00
Kenya	135.00	0.00	0.00	135.00
National PBA	45.00	0.00	0.00	45.00
Regional	90.00	0.00	0.00	90.00
Somalia	0.00	30.00	0.00	30.00
National PBA	0.00	10.00	0.00	10.00
Regional	0.00	20.00	0.00	20.00
Horn of Africa	0.00	10.00	0.00	10.00
Regional	0.00	10.00	0.00	10.00
Total	**135.00**	**250.00**	**0.00**	**385.00**

Expected Disbursements (in US$, Millions)

WB Fiscal Year	2022	2023	2024	2025	2026	2027	2028	2029
Annual	10.00	10.00	20.00	50.00	70.00	80.00	85.00	60.00
Cumulative	10.00	20.00	40.00	90.00	160.00	240.00	325.00	385.00

INSTITUTIONAL DATA

Practice Area (Lead)

Water

Contributing Practice Areas

Agriculture and Food, Fragile, Conflict & Violence, Social Sustainability and Inclusion

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	High
2. Macroeconomic	Substantial
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Substantial
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Substantial
7. Environment and Social	High
8. Stakeholders	High
9. Other	
10. Overall	High
Overall MPA Program Risk	Substantial

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

[ ] Yes [✓] No

Does the project require any waivers of Bank policies?

[ ] Yes [✓] No

Environmental and Social Standards Relevance Given its Context at the Time of Appraisal

E & S Standards	Relevance
Assessment and Management of Environmental and Social Risks and Impacts	Relevant
Stakeholder Engagement and Information Disclosure	Relevant
Labor and Working Conditions	Relevant
Resource Efficiency and Pollution Prevention and Management	Relevant
Community Health and Safety	Relevant
Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Relevant
Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Relevant
Cultural Heritage	Relevant
Financial Intermediaries	Not Currently Relevant

NOTE: For further information regarding the World Bank's due diligence assessment of the Project's potential environmental and social risks and impacts, please refer to the Project's Appraisal Environmental and Social Review Summary (ESRS).

Legal Covenants

Sections and Description

Somalia - Schedule 2, Section I. A.1.(a)

The Recipient shall establish by no later than one month after the Effective Date, and thereafter maintain throughout the period of Project implementation, a high-level Project steering committee ("Project Steering Committee"): (i) chaired by the director general in the MoEWR, and comprised among others director general (or a person delegated by the director general) from Ministry of Finance, the national project coordinator and two representatives of each FMS-MoEWR and meeting quarterly each calendar year throughout the Project duration; and (ii) vested with such powers, functions and competencies, acceptable to the Association as further detailed in the Project Operations Manual, as shall be required to: (A) provide policy direction and guidance to the NPCU for the carrying out of the Project including identifying and resolving policy and regulatory issues; (B) promote inter-agencies and federal collaboration, coordination, and cooperation for Project activities and resolve cross-sectoral and cross-ministerial Project implementation issues; (C) review Project progress including Project Reports; and (D) review and approve the Annual Work Plans and Budgets.

Sections and Description

Ethiopia - Schedule 2, Section IV. 1.

No later than thirty (30) days after the Effective Date, the Recipient shall communicate to IGAD: (a) the institutional location for its National Groundwater Center; and (b) the designated members of its National Focal Group.

Sections and Description

Somalia - Schedule 2, Section I.E.4.

Without limitation upon the provisions to, and in accordance with Environmental and Social Standards, if ninety (90) days prior to the Closing Date, the Association determines that there are measures and/or actions specified in the ESCP, and/or in the safeguard documents ancillary thereto, which will not be completed by the Closing Date, the Recipient shall, or if the Association so determines, shall cause Somaliland (as per the Somaliland Subsidiary Agreement), to: (a) by not later than sixty (60) days before the Closing Date, prepare and present to the Association, an action plan satisfactory to the Association on the outstanding measures and/or actions, including a timetable and budget allocation for such measures and/or actions (which action plan shall deemed to be considered an amendment of the ESCP); and (b) thereafter, carry out said action plan in accordance with its terms and in a manner acceptable to the Association.

Sections and Description

Somalia- Schedule 2, Section IV.1.

No later than thirty (30) days after the Effective Date, the Recipient shall communicate to IGAD: (a) the institutional location for its National Groundwater Center; and (b) the designated members of its National Focal Group.

Sections and Description

Kenya - Schedule 2, Section I. B.6.

To facilitate the carrying out of Part 1.1 and 2.2 of the Project, the Water Resources Authority shall enter into (and comply with) a memorandum of understanding with each NEDI County, under terms and conditions and in a timeline acceptable to the Association, as detailed in the Project Operations Manual.

Sections and Description

IGAD - Schedule 2, Section I. E.

The Recipient shall, not later than five (5) months after the Effective Date, recruit under the terms of reference satisfactory to the Association a third party monitoring consultant and thereafter maintain such consultant for the purpose of assisting in: (i) developing and enhancing the capacity of IGAD and the Participating IGAD Member States in monitoring including in survey design, data analysis, and data use; and (ii) monitoring implementation of this Project (as well as Participating IGAD Member States respective projects associated with this Project) including ensuring that the proceeds of the Financing (and the Association's financings for Participating IGAD Member States' respective projects) are used for their intended purposes and assessing the achievement of the Project development objectives.

Sections and Description

Kenya - Schedule 2, Section I. A.1.

Not later than six months after the Effective Date, the Recipient shall establish and thereafter maintain, throughout the implementation of the Project, a national project steering committee to be chaired by the Principal Secretary in MoWSI, with composition, mandate, powers and resources acceptable to the Association.

Sections and Description

Kenya - Schedule 2, Section I. A.1.

Not later than six (6) months after the Effective Date, the Recipient shall establish and thereafter maintain, throughout the implementation of the Project, a project technical committee with terms of reference, composition and resources acceptable to the Association, to be responsible for, inter alia, (a) providing technical guidance, (b) resolve any Project coordination and implementation bottlenecks that may arise.

Sections and Description

Kenya - Schedule 2, Section I. B.5.

To facilitate the carrying out of Part 2.1 (e) of the Project, the Recipient through the Ministry of Water, Sanitation and Irrigation shall enter into (and comply with) a memorandum of understanding with the Regional Center for Groundwater, under terms and conditions and in a timeline acceptable to the Association, as detailed in the Project Operations Manual.

Conditions

Type	Financing source	Description
Disbursement	IBRD/IDA	Ethiopia: No withdrawal shall be made under Category (1) until; (i) the Recipient has established the

		Project's organizational structures referred to in Sections I.A.2, I.A.3 and I.A.4 of Schedule 2 to this Agreement; (ii) the Recipient has established procurement sections, each at the Ministry of Irrigation and Lowlands and at the Ministry of Water and Energy to handle procurement management activities in their respective ministries; (iii) the Recipient has prepared, consulted upon, adopted and publicly disclosed the Labor Management Procedures and the Gender-Based Violence/ Sexual Exploitation, Abuse and Harassment Action Plan; (iv) the Recipient has prepared and adopted the Security Risks Assessment and the Security Management Plan; (v) the Recipient has prepared a Social Assessment; and (vi) the Recipient has established and operationalized the Project's grievance redress mechanism, all of the above in a manner and substance satisfactory to the Association;
Type Disbursement	Financing source IBRD/IDA	Description Ethiopia: No withdrawal shall be made under Category (4) until: (i) the Recipient's relevant authority has declared a disaster, emergency or catastrophic event; (ii) the Association and the Recipient have agreed in writing to address such disaster, emergency or catastrophic event under Part 4 of the Project and in accordance with the provisions of this Agreement; (iii) the Recipient has ensured that all environmental and social management instruments required for said activities have been prepared and disclosed, and the Recipient has ensured that any actions which are required to be taken under said instruments have been implemented, all in accordance with the applicable provisions of the Contingency

		Emergency Response Manual; (iv) the Coordinating Agency in charge of coordinating and implementing the CERC has/ have adequate staff and resources, for the purposes of said activities; and (v) the Recipient has adopted an Contingency Emergency Response Manual in accordance with the provisions of Section I.B.3 of Schedule 2 to this Agreement.
Type Effectiveness	Financing source IBRD/IDA	Description Ethiopia: Recipient has prepared and adopted the Project Operations Manual, in accordance with the provisions of Section I.B.1 of Schedule 2 to this Agreement.
Type Effectiveness	Financing source IBRD/IDA	Description Somalia: At least two Subsidiary Agreements have been duly executed in the form and substance satisfactory to the Association.
Type Disbursement	Financing source IBRD/IDA	Description Somalia: No withdrawal shall be made under Category (3) until and unless Somaliland has: (i) executed the Somaliland Subsidiary Agreement setting forth implementation arrangements for Somaliland's Respective Activities under the Project (including the flow of funds out of the Financing proceeds), and all Somaliland's internal requirements for the agreement to be binding upon Somaliland in accordance with its terms have been duly obtained/secured; (ii) prepared and formally adopted a Project operation manual for its Respective Activities under the Project; and (iii) established the institutional arrangements set forth in the

		forgoing manual, as shall be required to carrying out its Respective Activities under the Project, in a manner and substance satisfactory to the Association.
Type Disbursement	Financing source IBRD/IDA	Description Somalia: No withdrawal shall be made under Category (2) until; (i) the Recipient has established the National Project Coordination Unit pursuant to Section I.A.1(b) of Schedule 2 to this Agreement; (ii) the Recipient has prepared, consulted upon, adopted and publicly disclosed the Labor Management Procedures and the Sexual Exploitation, Abuse and Harassment Prevention and Response Plan; (iii) the Recipient has contracted a security risk management firm to assist in preparing security risks assessment and security management plan; (iv) the Recipient has prepared and adopted the Security Risks Assessment and the Security Management Plan; and (v) the Recipient has established and operationalized the Project's grievance redress mechanism, all of the above in a manner and substance satisfactory to the Association.
Type Disbursement	Financing source IBRD/IDA	Description Kenya: No withdrawal shall be made under Category (1) made to any Participating County unless and until: (i) the Participating County has met the Minimum Eligibility Criteria; and (ii) the Participating County (and its corresponding Water Service Provider) have duly entered into a PBG Agreement with the Water Sector Trust Fund, in the form and substance satisfactory to the Association.

Type	Financing source	Description
Disbursement	IBRD/IDA	Kenya: No withdrawal shall be made under Category (5) until: (i) the Recipient's relevant authority has declared a disaster, emergency or catastrophic event in an area within one or more Participating Counties; (ii) the Association and the Recipient have agreed in writing to address such disaster, emergency or catastrophic event under Part 4 of the Project and in accordance with the provisions of this Agreement; (iii) the Recipient has ensured that all environmental and social management instruments required for said activities have been prepared and disclosed, and the Recipient has ensured that any actions which are required to be taken under said instruments have been implemented, all in accordance with the applicable provisions of the Contingent Emergency Response Implementation Plan; (iv) the Coordinating Agency in charge of coordinating and implementing the CERC has/ have adequate staff and resources, for the purposes of said activities; and (v) the Recipient has adopted a Contingent Emergency Response Implementation Plan in accordance with the provisions of Section I.C.3 of Schedule 2 to this Agreement.
Type	Financing source	Description
Effectiveness	IBRD/IDA	Kenya: Recipient has entered into Subsidiary Agreements with the Water Resources Authority and Water Sector Trust Fund under the terms of conditions acceptable to the Association as reflected at Section I.B.1 of Schedule 2 to this Agreement.

Type	Financing source	Description
Disbursement	IBRD/IDA	Kenya: No withdrawal shall be made under Categories (1), (2) and (3) until: (i) the Recipient has established the Project Coordination Unit and Project Implementation Units pursuant to provisions of Sections I.A.3 and I.A.4 of Schedule 2 to this Agreement; (ii) the Recipient has prepared, consulted upon, adopted and publicly disclosed the Sexual Exploitation, Abuse and Harassment Prevention and Response Plan and the Labor Management Procedures; (iii) the Recipient has established and operationalized the Project's grievance redress mechanism; all of the above in a manner and substance satisfactory to the Association.

I. STRATEGIC CONTEXT

1. **This document describes a Regional Program in the Horn of Africa (HoA) to increase sustainable access and management of groundwater as a key contribution to strengthening the climate resilience of targeted communities, using the Multiphase Programmatic Approach (MPA).**[1] Three countries, the Federal Democratic Republic of Ethiopia, the Republic of Kenya, and the Federal Republic of Somalia, as well as the Intergovernmental Authority on Development (IGAD), are included in phase I of this Regional Program, which uses a horizontal multi-country MPA. The Republic of Djibouti and the Republic of South Sudan have also expressed interest in participating, and as these countries demonstrate readiness in joining the Program, they will be included in two or more phases of the MPA. The Program follows the World Bank's people-centric approach for the HOA region. The Program's primary target groups are vulnerable communities in the borderland areas of the HoA. It is estimated that Phase I of the Program will reach 3.3 million direct beneficiaries, of which at least 50 percent are women, through interventions designed to increase access to water supply and reduce vulnerability to climate change impacts, in particular drought and floods. The Program will also contribute to improving food security in a region undergoing a severe drought, with South-eastern Ethiopia, Northern Kenya and Somalia being particularly affected. This Program has one overarching development objective and a common structure for the connected projects, corresponding to the three participating countries and IGAD (Annex 1).

A. Regional Context

2. **The HoA is one of the most vulnerable regions of the world, characterized by complex development challenges and varying degrees of conflict and fragility, food crises, and social, political, and economic conditions.** High poverty levels are most prevalent in the northern parts of Kenya, Somalia, and Sudan. A large portion of households remain vulnerable to poverty, with consumption levels only marginally exceeding the poverty line. Food crises remain ubiquitous across the region, with pockets of famine particularly in countries like Somalia. Food insecurity in the HoA is primarily driven by armed conflict and violence, economic shocks and macroeconomic challenges, climate change-induced erratic or below-average rainfall, and desert locust.[2]

3. **The HoA is home to a rapidly growing population of over 190 million people, with a combined Gross Domestic Product (GDP) estimated at US$170 billion.** Approximately 70 percent of the population live in rural areas and exhibit high levels of poverty, ranging from 68.6 percent in Somalia, to 17 percent in Djibouti. The region's population is also growing rapidly and is expected to reach 250 million by 2030. Most of the population relies on rainfed agriculture for its livelihood and is highly exposed to the impacts of climate change and variability, including

[1] For the purposes of this Program, climate resilience refers specifically to the capacity of entities or communities to absorb, adapt and/or transform in the face of climate change impacts, being short term shocks (e.g., droughts, floods) or long-term stresses (e.g., temperature changes). It involves novel forms of social engagement, which enable the achievement of long-term development goals. World Bank (2017) "Operational Guidance for Monitoring and Evaluation (M&E) in Climate and Disaster Resilience-Building Operations", Resilience M&E (ReM&E) initiative.

[2] WFP and FAO. 2021. Hunger Hotspots. FAO-WFP early warnings on acute food insecurity: August to November 2021 outlook. Rome.; FSIN, 2021. 2021 Global Report on Food Crises, Global Network Against Food Crisis, Food Security Information Network (FSIN), *https://www.fsinplatform.org/sites/default/files/resources/files/GRFC%202021%20050521%20med.pdf*

irregular and unpredictable rainy seasons and recurrent droughts.[3] High rates of youth unemployment increase young people's susceptibility to illicit activities and high-risk behavior.[4]

4. **The region is characterized by high levels of fragility, conflict, and violence (FCV).** According to the World Bank Group (WBG), Somalia is experiencing a high intensity conflict, and Ethiopia is experiencing medium-intensity conflict.[5] Kenya and Djibouti are heavily affected by FCV-associated stresses. The current situation in Ethiopia's Tigray region with its spillover effects over neighboring countries, and the tensions between Kenya and Somalia around the Beled-Hawo area, add additional challenges to the region's growth and development pathway. As a consequence of these conflicts, but also due to key climate risks (i.e., drought and floods), the HoA is home to a large number of forcibly displaced people. Transboundary spillover effects from local conflicts can trigger a further increase in forced displacement.[6]

5. **Most of the challenges described above are particularly acute in the HoA's borderlands (Box 1), areas that have long been associated with socio economic marginalization and chronic poverty, but also with economic opportunities and trade.** Characterized by semi-arid lands and perennial water shortages, the HoA borderlands are home to highly vulnerable communities that include nomadic and pastoralist populations.[7] Most of the inhabitants in these areas depend on a combination of nomadic livestock-keeping and subsistence farming for survival. Mobility is central to their livelihoods, as they often cross-country boundaries in search of pastures, water, and markets. Yet, this nomadic lifestyle has been a source of conflict over scarce resources (e.g., water and rangelands).[8] Existing at the margins of state control, the borderlands often face low agricultural productivity, environmental and land degradation, unemployment and under-employment, conflict and violence, and forced displacement.[9] Food insecurity, a significant proxy for wider vulnerabilities, remains high, with millions undernourished and at risk of famine.[10] These areas have a low presence of formal institutions and are characterized by the lack of basic services, which deepens inequality and perpetuates poverty traps (deeply gendered) and insecurity. Yet, the borderlands also serve as important conduits for trade and pastoralism. Even at the periphery of state control, they remain connected to circuits of global commerce, offering economic opportunities associated with formal and informal trade linked to cross-border price differentials. Local institutions play a key role in regulating and facilitating economic activity and managing conflict.

[3] IPCC, 2022: *Climate Change 2022: Impacts, Adaptation, and Vulnerability.* Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press. In Press.

[4] Vemuru, V., Sthephens, M., Sarkar, A., Roberts, A., Baare, A. (2020), *From Isolation to Integration: The Borderlands of the Horn of Africa*, World Bank, Washington D.C. 2020.

[5] *https://www.worldbank.org/en/topic/fragilityconflictviolence/brief/harmonized-list-of-fragile-situations*

[6] In 2020, the Population of Concern to the United Nations High Commissioner for Refugees (UNHCR) in these five countries reached 7,025,025, a figure that includes refugees, asylum-seekers, returnees, internally displaced persons (IDPs) and stateless persons. Ethiopia and Kenya are also home to various SSAHUTLC. (UNHCR, 2020. Global Trends – Forced Displacement in 2019. Geneva)

[7] The pastoralist population in Ethiopia, Somalia, Kenya, Djibouti and South Sudan constitutes, on average, 38 percent of the total population of these countries. United Nations. Economic Commission for Africa (2017-03). 'New fringe pastoralism: conflict and insecurity and development in the Horn of Africa and the Sahel'. Addis Ababa: UN. ECA

[8] https://hoainitiative.org/building-economic-growth-and-resilience-in-the-borderlands-of-the-horn-of-africa/

[9,10] World Bank. (2020) From Isolation to Integration: The Borderlands of the Horn of Africa, World Bank, Washington DC, 2020Ibid

[10]Ibid,

Box 1. HoA Borderlands

In the context of the HoA, the term "*borderlands"* refers to closely interconnected areas around porous physical borders, characterized by high mobility/flow of people and commodities across space, and by entrenched marginalization. The definition is flexible, as borderlands may have variable geometry depending on the country. The HoA Groundwater for Resilience Program (GW4R) will focus on borderlands as priority areas for community led interventions, as areas with high levels of fragility, socio-economic vulnerability (including low levels of service delivery/water access), and high exposure to climate impacts (e.g., drought and floods). The Program will also include other vulnerable areas in response to participating countries' priorities and demand.

6. **Climate change and variability constitute the main drivers of this regional Program: disrupted climatic patterns, changes in the water source and increased uncertainty have elevated the urgency for building resilience and for tapping into stable groundwater resources to cope with drought, among other shocks and stressors**. The region has been affected by longer dry periods since the second half of the 20th century. Climate shocks are key sources of vulnerability, and act as a threat multiplier in FCV situations. In 2011, the East Africa drought killed more than 250,000 people, displaced almost one million, and devastated the agriculture and livestock sectors.[11] Average temperatures in the region could rise by up to 1.5°C in the next 20 years, and up to 4.3°C by the year 2080 due to climate change.[12] Droughts are expected to intensify in the 21st century with longer dry spells and increased evaporation, while a greater proportion of precipitation will come in heavy rainfall events.[13] As recognised by the United Nations Convention to Combat Desertification, climate impacts are also heightening the region's desertification, land degradation and drought, as it relates to soil carbon loss. These shocks are going to be felt more deeply in the borderlands, due to their high level of vulnerability.

7. **Climate shocks in the HoA's borderlands are contributing to food insecurity, to increased tensions over scarce natural resources, particularly over water and land, and to heightened risks to public health.** Disputes among farmers and pastoralists or refugees and host communities are more likely to occur in borderlands with difficult access to water. Climate impacts on pasture and water availability could alter pastoral mobility, exacerbating tensions over land and water resources, and worsening cases of gender-based violence. Drought years in Ethiopia's Borana Zone, for example, are linked to an increase in violent conflict over grazing areas, water points, cattle theft, and boundary disputes. [14] Projected increases in flood and drought occurrence also heighten challenges related to unsafe drinking water and inadequate sanitation, which remain critical health concerns in the HoA. The number of forcibly displaced people can also increase due to these events. The average number of internal climate migrants expected by 2050 in sub-Saharan Africa is 71.1 million, the largest number among six regions.[15]

8. **There is a trajectory of institutional efforts across the region to reduce vulnerability and build resilience.** IGAD was established in 1996 to combat desertification and mitigate the effects of drought. Nowadays, it is leading

[11] World Bank Climate Change Knowledge Portal, https://climateknowledgeportal.worldbank.org/country/sudan/climate-data-historical
[12] IPCC (2015) Climate Change 2014: Impacts, Adaptation and Vulnerability, Global Water Partnership Eastern Africa and the IPCC, 2015.
[13] USAID (2020) *Climate Risk Profile East Africa*, United States Agency for International Development, https://www.climatelinks.org/sites/default/files/asset/document/2020_USAID_ATLAS_CRP-East-Africa-Regional.pdf
[14] Op. cit. USAID (2020)
[15] World Bank. 2021. *Groundswell Part 2: Acting on Internal Climate Migration*. World Bank, Washington, DC. World Bank.

the coordination of the region's response to key challenges at the intersection of climate resilience, water resources, and fragility, and is playing a key role facilitating regional dialogue and knowledge exchange.[16] In addition to regional strategies, HoA countries are developing agendas to address climate change at the national level. Kenya, Ethiopia, and Djibouti have submitted two National Communications to the United Nations Framework Convention on Climate Change, and Somalia and South Sudan submitted their first in 2019.[17] The Comprehensive Africa Agricultural Development Programme, affirmed as the "Malabo Declaration" by Heads of State and Governments of the African Union (AU), provides a framework for mainstreaming and upscaling sustainable land and water management in Africa.

9. **In line with the growing importance of regional integration goals to combat fragility, five countries (Djibouti, Eritrea, Ethiopia, Kenya and Somalia) launched the Horn of Africa Initiative (HoAI) in 2019 to forge closer economic ties in the sub-region**. Subsequently, Sudan also joined the HoAI**.** Highlighting the importance of regional cooperation in resilience building, the initiative includes four pillars: (i) Regional Infrastructure Networks; (ii) Trade and Economic Integration; (iii) Resilience; and (iv) Human Capital. Developed with support from the African Development Bank, the European Union (EU), and the World Bank, the HoAI agreed on priority projects and programs for the region (requiring financing of up to US$15 billion). This Program supports the Resilience Pillar of the HoAI.[18] At the HoAI Ministerial meeting held in October 2021, countries requested further emphasis to be placed on the Resilience Pillar considering the heightened fragility risks faced by the subregion.

10. **The effects of the COVID-19 pandemic and other shocks have exacerbated the region's development challenges, including the vulnerability of borderlands.** These impacts compound the already precarious living conditions of vulnerable households through job loss, price shocks, increased food insecurity, and weakened human capital, among other adverse effects. Borderlands are especially vulnerable to the negative impacts of disease control measures, in particular those that restrict movement and hinder informal trade.[19] The overall demand for water, sanitation and hygiene (WASH)-related purposes has also increased in the region, adding pressure on scarce resources and service provision.[20] Exacerbating the effects of COVID-19, the impact of the 2019-2021 locust infestation is threatening the food supply across the HoA.[21] The confluence of these factors heightens the urgency of enhancing resilience, of building trust and collaboration towards regional solutions, and of supporting national strategies for "building back better".

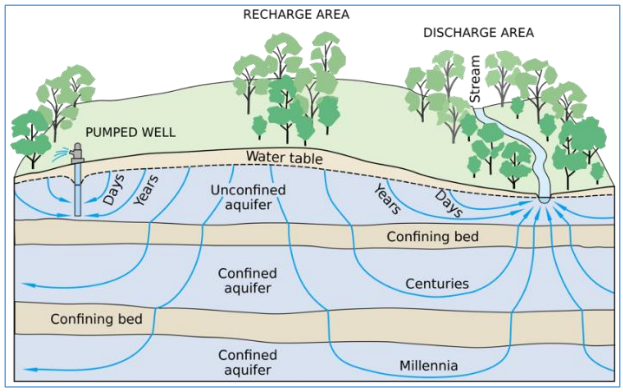
B. Sectoral and Institutional Context

11. **Groundwater plays an important role in building drought resilience in the borderlands of the HoA, although, due to the complexity and lack of knowledge about the resource, it remains neglected and largely untapped.** In a region where surface water is scarce due to high temperatures and evapotranspiration rates,

[16] Regional responses include IDDRSI, the IGAD Support Platform for refugees, IGAD'S Livestock Policy Initiative, increased regional collaboration in response to the desert locust crisis, and IGAD's multi-country projects directed at building resilience of pastoral and agro-pastoral communities in cross-border areas.
[17] https://unfccc.int/non-annex-I-NCs
[18] Strengthening resilience to climatic shocks including recurrent droughts, floods, and the current locust crisis, and to conflict and displacement including the borderland areas. Source: https://hoainitiative.org/
[19] Uta Steinwehr, "Africa: When closed borders become a problem," May 02, *https://www.dw.com/en/africa-when-closed-borders-become-a-problem/a-53311669*.
[20] IOM, 2021: East and Horn Covid 19 Response. Situation Report 41. 27 January 2021. IOM
[21] FAO, 2021. '*Desert Locust Upsurge: Progress report on the response in the Greater Horn of Africa and Yemen*', January-April 2021. FAO, http://www.fao.org/3/cb4925en/cb4925en.pdf

groundwater is often the most reliable source of a stable water supply for domestic, agriculture and livestock use, contributing to cope with and adapt to climate change and variability. Once tapped appropriately, it constitutes a natural buffer against climate variability and change, being available in times of drought when other surface or sub-surface resources are scarce. In vulnerable and exposed areas to high climate variability like the HoA, sustainable groundwater development constitutes a key adaptation measure to climate change. However, groundwater dynamics are complex and difficult to understand, and its potential to mitigate drought impacts is underutilized. Flow pathways vary greatly in length, depth, and travel time from points of recharge to points of discharge in the groundwater system, making it complex to monitor (Figure 1). Good quality groundwater is often available at depths between 100 and 300 meters, protected against man-made pollution.[22] In the HoA, unlike many other parts of the world where groundwater has been long overexploited, this resource remains largely untapped.

Figure 1. Representation of aquifer typologies.[23]



12. **Transboundary Aquifers (TBAs) constitute a crucial resource for vulnerable livelihoods in the HoA's borderlands.** The region is known to have 11 TBAs, located along cross-border areas of HoA countries.[24] In these areas, groundwater constitutes the main source of drinking water, in addition to being key for rural livelihoods and livestock rearing, and used for urban water supply.[25] Countries like Ethiopia, which shares borders with most HoA countries (Eritrea, Sudan, South Sudan, Kenya, Somalia and Djibouti) and has seven TBAs, play a key role in the region's borderlands dynamics and in efforts to foster integrated regional solutions.

13. **The HoA's groundwater's potential is mainly constrained by challenges related to inclusive community-level use of the resource, groundwater information, infrastructure and institutions (the 'Four I's'),** particularly in the region's borderlands, as highlighted below:

- ***Inclusion:*** **Local readiness and community inclusion are key to ensuring that vulnerable communities are effectively engaged and prepared to play an active role in the sustainable management and use of**

[22] Van del Gun, J. (2012) "Groundwater and global change: Trends, opportunities and challenges", United Nations Educations, Scientific and Cultural Organization, UNESCO, Paris, France.
[23] T.C. Winter, J.W. Harvey, O.L. Franke, and W.M. Alley - Ground Water and Surface Water A Single Resource. U.S. Geological Survey Circular 1139, Figure 3.
[24] A. M. MacDonald et al., 2012 Quantitative maps of groundwater resources in Africa, Environ. Res. Lett. 7 024009. Transboundary aquifers in the HoA are estimated to cover more than 187,000 km2 in area and vary in size from 10,000 to 50,000 km2.
[25] Nijsten, G.J., Journal of Hydrology: Regional Studies (2018), https://doi.org/10.1016/j.ejrh.2018.03.004.

groundwater resources. This involves the sustainable use of the resource as drinking water, for irrigation purposes, for the promotion of Climate Smart Agriculture (CSA), and for livestock use, as well as increased involvement of women and other vulnerable groups in local planning and monitoring of the resource. Women and girls in rural areas play a leading role in providing water for the household and spend a disproportionate amount of time fetching water from public surface and groundwater sources.[26] Yet, women are underrepresented in groundwater-related decision-making institutions at the community, local, national and transboundary levels. The Community Driven Development (CDD) approach is particularly relevant in FCV contexts and can work effectively with traditionally marginalized groups, including those excluded from groundwater decision making.

- ***Infrastructure*: Investments needed to extract and distribute groundwater remain low, and existing infrastructure face serious sustainability challenges that contribute to the under-utilization of the resource in vulnerable communities.** Challenges include the lack of /or inadequacy of boreholes and access roads, steep technical requirements to identify and exploit the resource due to the aquifers' depth, and the deficient operation and maintenance (O&M) of the infrastructure.[27] These challenges contribute to the fragility of the systems that cannot withstand stress factors, and ultimately end up failing.

- ***Institutions:* While there is heterogeneity in institutional structures and capacities related to groundwater management across the HoA, groundwater governance systems are still incipient.** Few countries globally have come together with endorsed strategies and joint institutions dedicated to the sustainable management and use of transboundary aquifers. In the HoA, even national level groundwater governance systems are fledging, at best. Legal and policy instruments related to water management rarely include groundwater. Institutional and technical capacities to monitor, assess and manage groundwater also remain low, including the integration of climate considerations in decision making processes.

- ***Information:* The HoA lacks systematic data and information on the resource, and the systems currently used for gathering, collating, and analyzing groundwater information are inadequate[28].** The region also lacks targeted groundwater monitoring to support the management and regulation of water allocation and use. Reasons include the absence of clear institutional arrangements and responsibilities, insufficient resourcing, lack of technical expertise, and a disconnect between database management and retrieval systems.

14. **Experience shows that gaining knowledge on aquifers, building trust around shared groundwater resources, and jointly developing groundwater management mechanisms among countries, involve a long-term trajectory that needs to be approached gradually, where the role of a regional institution is key to achieving synergies and economies of scale.** In this context, the Program's long-term vision consists of three stages:

a***. In the short term:*** Delivering resilient, inclusive and low-carbon groundwater services to the region's borderlands, which constitutes a low-hanging fruit that can foster buy-in and engagement. Developing small scale infrastructure and tapping mostly national aquifers allows for dispersed low-cost service provision (i.e.,

[26] Nigussie, L.; Barron, J.; Haile, A. T.; Lefore, N.; Gowing, J. 2018. Gender dimensions of community-based groundwater governance in Ethiopia: using citizen science as an entry point. Colombo, Sri Lanka: International Water Management Institute (IWMI).
[27] In Kenya, up to 50 percent of boreholes fail in the first years of use, and are associated to high O&M costs, highly dependence on diesel pumps. The non-functionality rate of rural water supply schemes in Ethiopia is estimated as 19 percent (National WASH Inventory, 2019) due to similar challenges.
[28] In some cases, information systems have been implemented but are not digitalized nor coordinated among the relevant institutions.

water supply for humans and livestock and small-scale irrigation) in remote, sparse communities, contributing to address poverty traps and climate change impacts on health, and to promote cross-border dynamics (i.e., trade and pastoralism). Yet, this approach needs to be fully embedded in robust local service delivery provision to overcome sustainability challenges. In this initial stage, data gathering and processing on aquifer dynamics, and training and capacity building on sustainable groundwater management, are also considered.

b. ***In the medium term:*** Larger scale infrastructure could be developed, and more complex aquifers exploited, given the availability of a more robust knowledge base on the resource (the foundations of which would be built during the previous stage). These aquifers could be tapped to support the development of small towns and larger scale irrigation. In this stage, the regional institution has become stronger and is able to provide high value added to countries in the region, particularly in terms of information to foster dialogue on transboundary aquifers. This enhanced dialogue will contribute to build trust among countries, so they can consider joint transboundary aquifer management solutions in a future stage.

c. ***In the long term****:* Ultimately, transboundary groundwater management in the HoA will require more sophisticated aquifer analysis and solid institutional management structures at the national and regional levels. In this stage, countries take advantage of the regional institution's strong capacity on complex aquifer dynamics, and are able to develop shared groundwater management projects with mutual benefits and economies of scale. Strengthening IGAD's role is key in the achievement of the Program's long-term vision, and in helping HoA governments advance towards regional groundwater management and collaboration, while fully recognizing that progress on transboundary endeavors takes time.

15. **In developing this strategy, the Program focuses on the initial stage: the short-term building blocks that will enable the medium and long-term agenda of improving transboundary water management in the HoA.** The Program´s central goal is to provide sustainable access to groundwater resources in the borderlands of the HoA through medium/small scale infrastructure, as a basis to start building the climate resilience of vulnerable communities in these areas, in particular to drought. At the same time, the Program places emphasis on developing information and knowledge on regional aquifers, and on building institutional capacity on groundwater management and governance as key building blocks to foster trust among countries towards regional cooperation (in the medium and long term). Both objectives are closely interrelated: while increasing access in this initial stage involves relatively small groundwater abstractions, and as capacity to manage groundwater increases, it is important to simultaneously enhance the countries' understanding of aquifer dynamics and develop robust governance systems to ensure the aquifers' sustainability.

16. **IGAD plays a central role as the main promoter and facilitator of this long-term regional strategy, including data and information sharing.** As part of the Program, IGAD will undertake activities that are the basis for enhanced trust and collaboration, including promoting information sharing in the region, creating value added through data analysis and aquifer studies, building a groundwater knowledge base that serves to inform decision making on infrastructure development and sustainable groundwater exploitation, building institutional capacity on sustainable and low-carbon groundwater management, and creating a platform for dialogue and collaboration around groundwater issues. As a regional institution that is facing an increasing demand from its Member States (MS) to facilitate, among others, knowledge exchange and joint planning on shared resources, IGAD can add value to regional integration efforts by achieving economies of scale in groundwater management, helping address the uneven capacity among countries in the region through both tailored and coordinated solutions.

C. Relevance to Higher Level Objectives

17. **The Program is consistent with the WBG's Africa Regional Integration and Cooperation Assistance Strategy Update (FY21-FY23)**[29]**, 2020-2025 WBG Strategy for FCV, 2016-2023 WBG Gender Strategy, and the WBG Climate Change Action Plan 2021-2025.** Mainstreaming climate change and addressing climate resilience constitute key priorities in the World Bank's 2025 climate change targets. The Action Plan outlines a strong commitment to improve the planning and implementation of interventions to address more robustly and systematically climate-related risk through the WBG's Green, Resilient, and Inclusive Development approach. Under its 'Reinforcing Resilience' thematic pillar, the World Bank's Africa Regional Integration Strategy seeks to enhance resilience to shocks, including drought, and to promote effective management of cross-boundary challenges. The HoA is among the priority FCV regions.

18. **The Program is also aligned with the WBG's Country Partnership Strategies (CPS) of participating countries.** The CPS and engagement frameworks of Ethiopia, Kenya, and Somalia include a strong focus on water, and recognize the role of water access, sustainable management, and improved governance in achieving economic cooperation goals, as outlined below:

a) **Water is one of the main areas of focus of Ethiopia's Country Partnership Framework (CPF)** FY18- 22. Water is addressed in one of the main CPF targets, as follows: "*the number of people with access to improved water sources will increase by one fifth*". Increased access to safe water is one of the main objectives of the CPF Focus Area 2- Building Resilience and Inclusiveness (CPF FY18-22, Report No. 115135-ET).

b) **The Kenya CPS addresses water security as a main topic under Domain 1**: "*Competitiveness and Sustainability -- Growth to Eradicate Poverty*". At the same time, improved water sources development is a key outcome of Domain 2: "*Protection and potential*". Clean water delivery is considered essential for human development in Kenya. Special emphasis is made on improving access to water services in urban areas as engines of growth (CPS FY14-20, Report No. 88940v2). The CPF under preparation also includes an objective of greater productivity and preservation of Kenya's natural capital, needed to safeguard future growth and social welfare against climate change for which Kenya's main challenge is water security.

c) **The Somalia CPF** includes selected activities based on the three filters: (a) building on the WBG comparative advantage in Somalia; (b) addressing conflict drivers (climate change being one of the leading stressors of conflict in the region); and (c) managing access and security. Investing in water infrastructure, environmental management, and agricultural innovation to diversify and strengthen resilience of dry-land rural communities, were specifically integrated into the CPF (Objective 2.4) under its second area of focus, which aims at restoring economic resilience and opportunities (CPF2019–2022, Report No. 124734-SO).

19. **The Program will also contribute to improving food security in a region undergoing a severe drought, with South-eastern Ethiopia, Northern Kenya and Somalia being particularly affected.**[30] The Program will address food insecurity through the development of sustainable groundwater access and use of groundwater for irrigation and water supply in critical districts along the borderlands in these three countries. Promoting and sustaining irrigation

[29] WBG (2020) '*Supporting Africa's Recovery and Transformation: Regional Integration and Cooperation Assistance Strategy Update,* FY21-FY23.
[30] *https://reliefweb.int/report/ethiopia/east-africa-food-security-alert-december-29-2021*

and CSA, like in the case of Ethiopia, is in line with medium to longer term International Development Association (IDA) objectives of improving climate resilience, addressing drivers of food insecurity, and building back better.[31]

20. **The Program's objectives and approach are also aligned with IGAD's Drought Disaster Resilience and Sustainability Initiative (IDDRSI).** This initiative promotes cross-border cooperation and articulated solutions, while recognizing that individual IGAD MS may have their own specificities and areas of emphasis.[32] The Program will integrate activities in selected transboundary areas that coincide with IGAD's areas of focus or 'clusters' (identified based on demonstrated importance in terms of human and animal cross-border movement, and on the need for regional cooperation).

21. **The Program has strong linkages and alignment with other HoA projects, including those supported under the HoAI.** The Program will build on the experience and results of similar World Bank regional initiatives, to the extent possible. These include the Development Response to Displacement Impacts Project in the HOA (DRDIP-II) (P161067) (Kenya, IGAD and Somalia) and (DRDIP-I) P152822 (Djibouti, Ethiopia, Uganda and IGAD); the Pastoralism and Stability in the Sahel and Horn of Africa Project (P153713); the Regional Pastoral Livelihoods Resilience Project (P129408); the North and North Eastern Development Initiative (NEDI) in Kenya[33], and the Nile Cooperation for Results Project (P130694). Building on ongoing collaboration (e.g., Emergency Locust Response Project, P174546), this operation will further IGAD's role in IDA-financed regional integration efforts. The Program will coordinate with World Bank initiatives supporting borderlands, community engagement, or climate smart investment prioritization in the region (e.g., Financing Locally-led Climate Action Program, P173065; Kenya Climate Smart Agriculture project, P154784; and the Food Systems Resilience Program for Eastern and Southern Africa, P178566), as required.[34] Additionally, the Program is in line with the Strategy Note '*Assessment of Groundwater Challenges & Opportunities in Support of Sustainable Development in Sub-Saharan Africa*',[35] aimed at supporting groundwater development and management of investments in the region, including renewable energy to reduce energy costs for irrigation. The Program's support to IGAD will be coordinated with other ongoing and planned World Bank regional projects through close collaboration across the WBG to ensure strong synergy, complementarity and use of common arrangements to optimize capacity building efforts.

D. Multiphase Programmatic Approach

(i) Rationale for using MPA

[31] WB (2020), Responding to the Emerging Food Security Crisis, International Development Association (IDA), November 26th, 2020, https://documents1.worldbank.org/curated/en/775981606955884100/pdf/Responding-to-the-Emerging-Food-Security-Crisis.pdf

[32] IDDRSI's cross-border cooperation is structured around a cluster approach through multi-sectoral interventions guided by the priority intervention areas (PIAs) of the IDDRSI Strategy. *https://resilience.igad.int/.* Additionally, the Program can contribute to IDDRSI's objective of '*increasing water use efficiency in the region',* which can translate into sustainable groundwater management and use, including reduced energy related GHG emissions and buildup of soil carbon stocks.

[33] https://documents1.worldbank.org/curated/en/556501519751114134/pdf/NEDI-Boosting-Shared-Prosperity-for-the-North-and-North-Eastern-Counties-of-Kenya.pdf

[34] Potential project overlapping in investment zones will be further avoided through a geo-referenced inventory and prioritization criteria, as part of projects' coordination efforts to ensure efficiencies. In Kenya, the project will further enhance the capacity of established Water Resources Users Associations (WRUAs), and Community Water Users Associations/Water Committees, and incentivize their performance through project funds.

[35] Wijnen, M., Marinus P., Barghouti, S., Cobbing, J., Hiller, Bradley T., Torquebiau, R.(2018) *Assessment of groundwater challenges & opportunities in support of sustainable development in Sub-Saharan Africa (English).* Washington, D.C: World Bank Group.

22. **The MPA is the most suitable modality for channeling IDA support to the regional Groundwater for Resilience Program,** for the following reasons:

a. **The MPA provides a flexible regional platform for countries to address common challenges more effectively.** Project experience indicates that a long-term perspective is needed to build resilience, as well as to capitalize on cooperative management of transboundary water as a regional public good. The MPA is an appropriate approach for HoA countries to build the collective, regional platform needed to address shared challenges such as drought, to leverage lessons learned, and to engage more effectively with bilateral and multilateral development partners. The MPA's flexibility is particularly relevant given the HoA's rapidly changing context and frequency of shocks (climatic, but also political, economic, and social).

b. **The MPA's approach can help mitigate the region's fragility, security and political risks.** It can help improve coherence across interventions and strengthen strategic focus. By integrating elements of dialogue that would otherwise be confined to individual operations, the MPA can strengthen the coherence of associated projects, avoiding a fragmented approach to country assistance, and contributing to a common strategy.

c. **The MPA allows a Program that is regional in scope whilst reflecting national perspectives, permitting countries to join when they are ready, as they subscribe to the common Program Development Objective (PrDO), and adopt the same overall approach**. The phased approach of the MPA is useful for achieving regional integration objectives in the HoA, as it facilitates the required gradual approach for capacity building, cooperation and coordination, particularly around transboundary water resources.

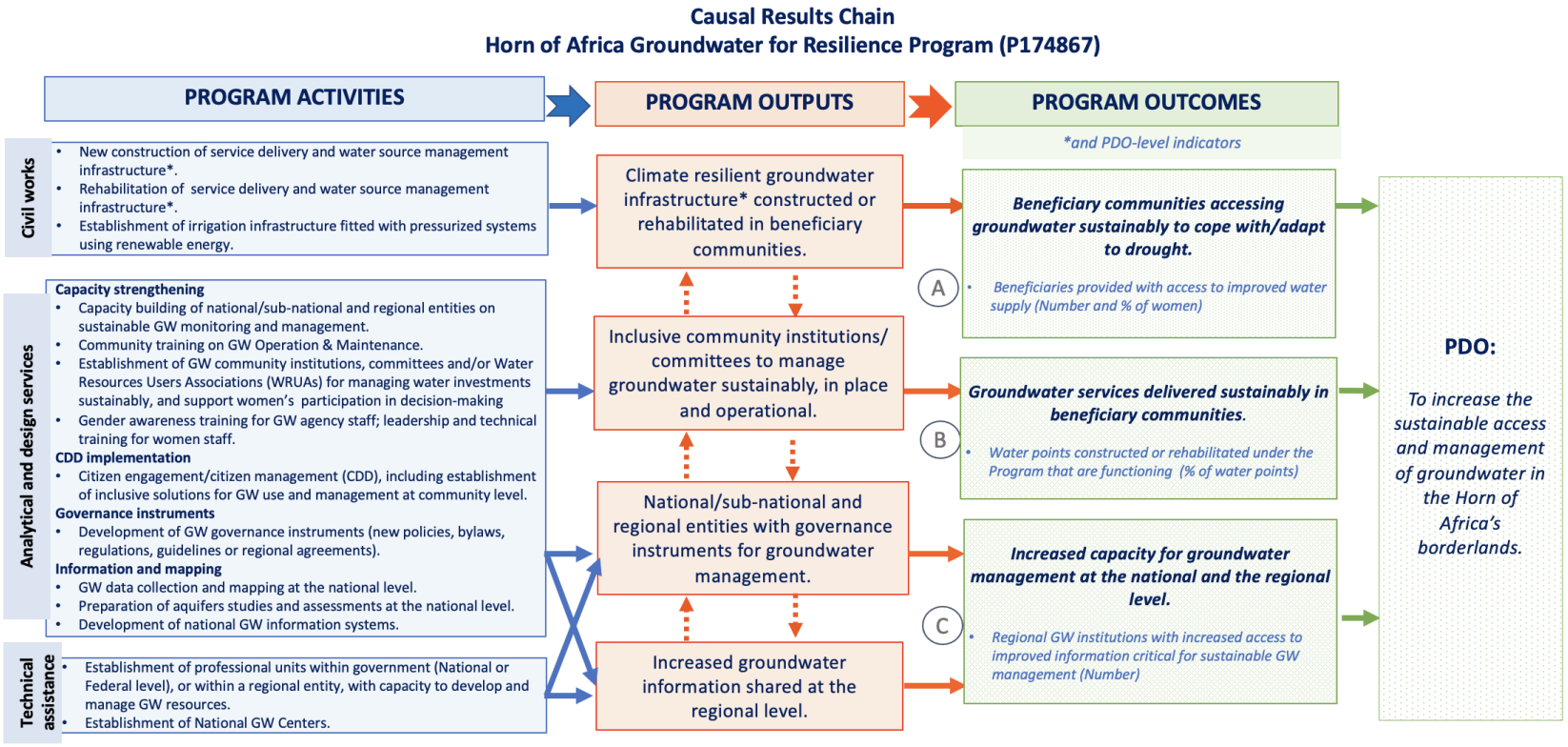
d. **The MPA allows the proposed Program activities to custom fit the country needs, commensurate with their implementation capacity.** Considering the different capacities of countries in the region is key to ensure impact. Composition of future phases will depend on country readiness (e.g., institutional capacity, IDA allocation, and project proposal preparedness, including readiness of Environmental and Social Framework - ESF- instruments).

e. **Setting a robust learning agenda is at the core of the MPA's approach.** This is critical to inform future investments in the sector leveraging a common platform for information and knowledge exchange. The MPA provides an opportunity for experience sharing and considerable learning on best practices at the regional level (see Annex 5). This design also allows for testing interventions before rolling them out in subsequent phases, and for adaptive learning.

(ii) Program Results Chain

23. **The Program is envisioned as a multi-country engagement with a common PrDO/Project Development Objective (PDO) among participating countries and IGAD, and across phases.** The Program's Causal Results Chain is presented in Figure 2. The achievement of the PrDO will contribute to build long term climate resilience of HoA borderland communities and to foster transboundary cooperation through interventions across regional, national, and community levels. Sustainability will be addressed by supporting key activities needed to ensure continuity at the service delivery level, including groundwater planning, operation and maintenance, management, conservation, and financing.

Figure 2. Causal Results Chain of the HoA Groundwater for Resilience Program.



***Climate resilient groundwater infrastructure** involves design that seeks robustness and flexibility to address uncertainty (1). The Program includes (a) *service delivery infrastructure* for human consumption, livestock and irrigation (typologies to be included in the OM), and (b) *water source management infrastructure* for the sustainability of the source, including Managed Aquifer Recharge (MAR) and injection wells, among others.
(1) WB (2020) Resilient Water Infrastructure Design Brief, World Bank, Washington, DC.

Critical Assumptions:
***A)** Feasibility studies / mapping inform the development of context-specific infrastructure solutions.*
***B)** National entities willing to engage in data collection and information sharing across levels; community buy-in regarding sustainable GW access and management.*
***C)** Countries demonstrate willingness for regional information sharing.*

(iii) Key PrDO/PDO Indicators

24. **The PrDO/PDO is *"To increase the sustainable access and management of groundwater in the Horn of Africa's borderlands*".** This PrDO addresses the need for tapping into and managing the HoA's groundwater resources sustainably as a way to cope with and adapt to drought, among other climate shocks and stressors impacting the region. Progress towards the PrDO/PDO will be measured through the following PDO-level indicators:

PrDO level Outcome Indicators	Baseline	Program Target
1. *Beneficiaries provided with access to improved water supply (number and percentage of women)**	0	3.3 M[36]
2. *Water points constructed or rehabilitated under the Program that are functioning* (percentage of water points)*	0	90 percent
3. *Regional groundwater institutions with increased access to improved information critical for sustainable GW management (number)**	0	4

**The terms 'improved water supply', 'functioning' and 'increased access' are detailed in the Project Operations Manual (POM), which also provides a list of information that is considered critical for sustainable GW management.*

(iv) Program Framework

25. **Participating countries will join the Program in different phases, based on their readiness.** Currently, the Program is designed to propose two or more overlapping phases over a 7.5-year planning horizon (2022–2029), with three countries—Kenya, Ethiopia and Somalia— and IGAD ready to start in the first phase. Djibouti and South Sudan have expressed interest in joining the program in subsequent phases. A summary overview of country and IGAD projects for phase I of the MPA is presented in Annex 1.

26. **Country proposals share a common structure around two main program components[37]: (1) *delivering inclusive groundwater services in the borderlands of the HoA* (Box 2), and (2) *generating groundwater information and strengthening regional and national groundwater institutions*.** These two components will be closely linked. While all phases of the Program will share the same components, their scope and targets will be different in each country, and will be tailored to their specific priorities.

[36] Corresponds to 1.5 M Ethiopia, 1.5 M Kenya and 350,000 Somalia. The baseline for PDO indicators (1) and (2) is zero, as they will measure new Program beneficiaries and new service delivery arrangements.

[37] Component 3 addresses project management, knowledge and operation aspects, while Component 4 corresponds to the Program's Contingent Emergency Response (CERC) mechanism, applicable to Kenya and Ethiopia.

Table 1. MPA Financing Table:

Phase #	Project ID	Sequential or Simultaneous	Countries	IPF or PforR	Estimated IBRD Amount (US$ million)	Estimated IDA Amount (US$ million)	Estimated Other Amount (US$ million)	Estimated Approval Date	Estimated Environmental & Social Risk Rating
1	P174867	Simultaneous	Ethiopia, Kenya, Somalia, IGAD	IPF	0.00	385.00	0.00	May 27,2022	High
2	----	Simultaneous	Djibouti, South Sudan	IPF		70.00		FY23	
Total					0.00	455.00	0.00		
Revised Financing Envelope					**US$**455.00				
Board Approved Financing Envelope					**US$**455.00				

27. **Future Program phases will depend on the borrowers' needs, their readiness/capacity, and on the overall program implementation performance.** Readiness criteria includes sound level of technical preparation of project proposals, alignment with program objectives, and adequate ESF and fiduciary arrangements. The World Bank will work closely with the governments of participating countries and with IGAD to monitor and document lessons learned from this phased approach, implementing a robust learning agenda and state-of-the-art monitoring with the support of the Cooperation in International Waters in Africa (CIWA) Program.

(v) Learning Agenda

28. **The Program will provide valuable lessons to inform the future management of TBAs in borderlands**. The learning agenda will aim at strengthening the capacity of Program stakeholders, including national and local institutions, by better equipping them to cope with climate shocks through the sustainable management and use of groundwater. The learning approach will use a strategy of Adaptive Learning through the identification of interventions that could be scaled up in selected aquifers, whilst solidifying implementation in other locations, based on the countries' capacity and readiness.

29. **The Program's learning agenda will focus on gaining knowledge on key aspects related to groundwater management and use in the HoA region, sharing information on selected aquifers, ensuring the sustainability of investments, and moving gradually towards increased regional collaboration in TBA.** Specific social, economic and technical areas where learning is needed, which will be supported through assessments and studies, are identified in Annex 5. The Program's learning agenda will be supported by CIWA[38] through a robust monitoring system and a series of studies to document and apply lessons learned on the key areas outlined above, in close collaboration with participating countries and IGAD. State-of-the-art remote monitoring tools (e.g., Geo-Enabling initiative for

[38] Through a US$5 million Bank-Executed trust fund grant

Monitoring and Supervision, GEMS) will be used to capture and analyze data in real-time, and will be complemented with rigorous documentation methods.

II. PROJECT DESCRIPTION

30. **The proposed project structure (Components 1-3) is strongly rooted in the need for solutions to build climate resilience of borderland communities, through interventions across scales (at the local, sub-national, national and regional level).**[39] Components remain technically the same for all participating countries, but differ in terms of their scope, targets, and investments required in each country (see Annex 1 and 2). The Program is structured around two main components described below (with a third component related to project management, knowledge, and operation). Two of the Phase I countries (Kenya and Ethiopia) will include a fourth project component, the Contingent Emergency Response (CERC) mechanism.

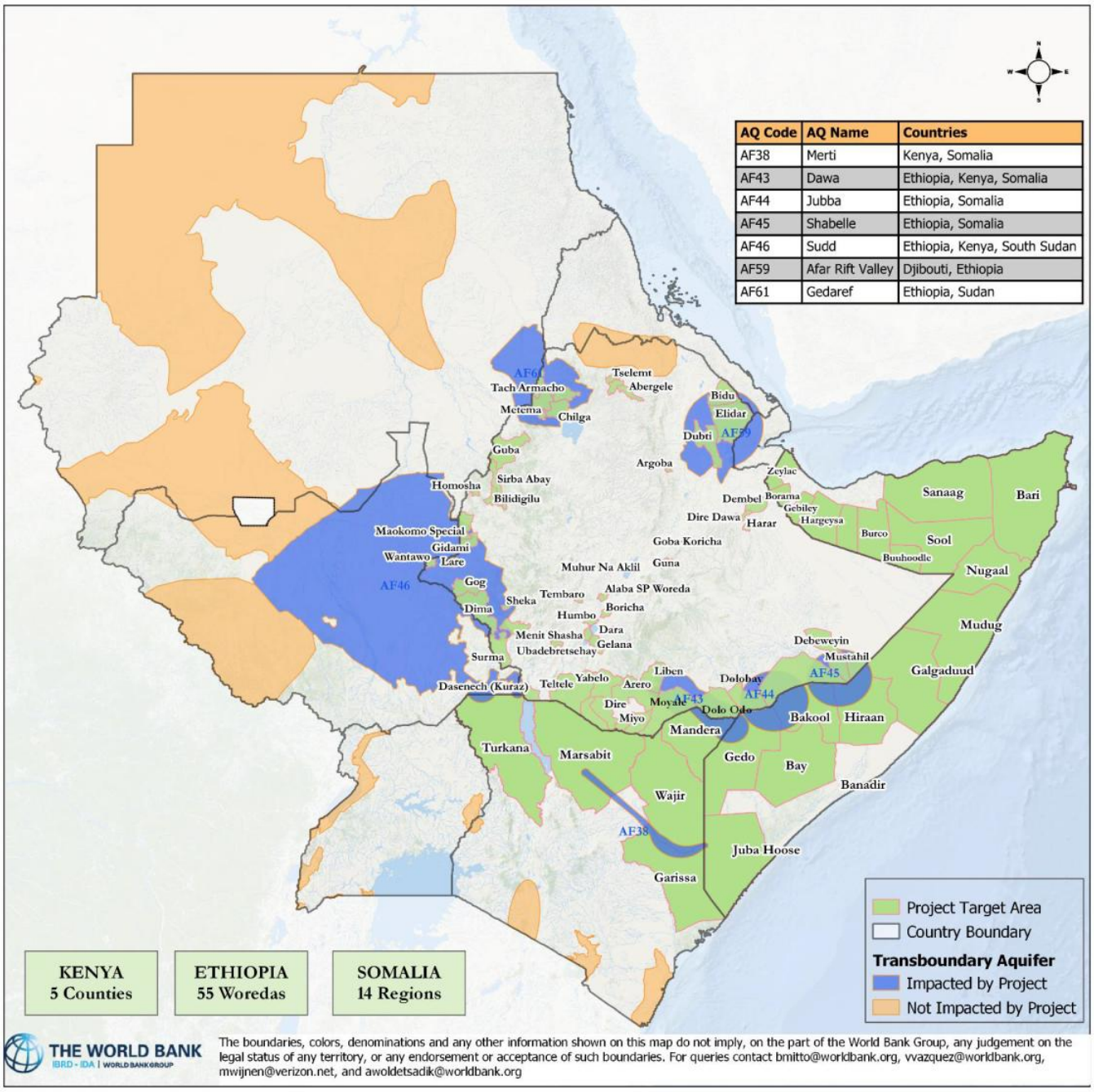
31. **The following eligibility criteria applies to investments under Component 1:**

- **Geographic location of investments:** The focus on borderlands is integral to the Program's regionality. That being said, the definition of borderlands will remain country specific. Participating countries may, exceptionally, include other areas that are also characterized by high levels of fragility, low levels of service delivery, and high exposure to climate impacts such as droughts and floods (Figure 3)[40].
- **Scale of investments for service delivery:** Investments to enhance service delivery in the borderlands will be small to medium scale, with specific definitions varying per country. In general, it involves water schemes aimed at a maximum of 5,000 people, and irrigation schemes smaller than 250 hectares. Particular consideration will be given to local institutional capacities to implement these activities, where possible through existing programs, including the ability to manage environmental and social risks.
- **Types of services:** The Program will focus on water supply services (for livestock and human consumption). Irrigation could be considered if it is small scale, as per the definition above, and is community-driven, ensuring that the implementation arrangements rely on known structures without adding complexity.
- **Type of aquifer:** The majority of the Program's investments will tap into national aquifers, even if interventions are in the borderlands. However, there are also investments planned in TBAs. Therefore, the construction, rehabilitation or abstraction of water will require a previous assessment or study to establish that such activities will not affect the sustainability of the aquifer, nor have any environmental or social impacts on the other side of the border beyond those included in the notification process to riparian countries associated to the application of the WB's Operational Policy 7.50 policy on Transboundary Waters. These criteria will be reflected in the Program´s Environmental and Social Management Framework (ESMF), Environmental and Social Commitment Plans (ESCPs), and POM, as appropriate.

[39] While the Program's working definition of resilience includes transformative capacity, the scope of activities is mainly focused on contributing to enhanced absorptive/coping capacity to climate change, in particular drought and flood impacts, and on adaptive capacity to those impacts, recognizing that transformation takes place in the long-term / beyond the Program's timeframe.

[40] While conflict is not an exclusion criterion for the location of investments under the project, the areas being identified as part of program preparation to meet the program design criteria, are not currently including zones in conflict.

Figure 3 – Location of Project Areas and Transboundary Aquifers in IGAD (UNESCO-IGRAC, 2015)



A. Project Components

32. **Component 1. Delivery of inclusive groundwater services to priority areas. (US$293 million IDA equivalent).**[41] This component will support small/medium scale infrastructure development and inclusive

[41] US$14 million Somalia, US$87 million Kenya, US$192 million Ethiopia.

community-level access to groundwater in the borderlands of the HoA, with a strong focus on the sustainability of service delivery. This focus entails the empowerment of local communities and local levels of government, and prioritizes the use of cost-efficient renewable energy sources, including climate-resilient design elements, in the construction of new infrastructure. Physical investments are aimed at increasing and diversifying access to reliable water sources and increasing storage to buffer climate variability and drought, considering resilience-based design principles.[42]

33. **Activities supported under this component include**

1.1 ***Rehabilitation or construction of new, climate resilient groundwater infrastructure for human consumption and livestock***. After the corresponding aquifer sustainability assessments are conducted, the program will invest in the drilling of new boreholes or rehabilitation of existing ones, as well as in the development or retrofitting of water systems for human consumption and for livestock. Groundwater extraction will use, when feasible, solar pumping with the purpose of substituting unsustainable and expensive fuel and contributing to reduction in greenhouse gas (GHG) emissions. Investments and O&M arrangements will focus on enhancing the system's robustness to climate shocks by ensuring that service delivery is resilient to climate impacts (e.g., drought, floods), and/or to increased water demand.

1.2 ***Small-scale irrigation infrastructure*** **to promote CSA practices, contributing to soil conservation and aquifer recharge**. These investments are currently being considered in the area of Borena, Ethiopia, in the border with Kenya. This activity will help farmers switch from rainfed agriculture to irrigated agriculture, enabling adaptation to changing rainfall patterns and drought events in the lowlands. Irrigation schemes will be fitted with pressurized systems that will utilize renewable energy for water lifting and distribution.

1.3 ***Infrastructure to support aquifer sustainability (recharge) and flood mitigation***. This type of infrastructure will also contribute to enhance water supply during extreme drought (e.g., sand dams, a cost-efficient storage mechanism constructed in dried riverbeds that contributes to retain soil moisture and concentrate water in the dry months), and to mitigate the peaks of high runoff during heavy rains. Other nature-based solutions that will be implemented for enhanced groundwater recharge are ecosystem-based approaches, rainwater harvesting, afforestation, and soil and water conservation measures to avoid erosion and land degradation. The Program will also promote embedding these interventions in river basin plans, as part of broader water resources management strategies.

1.4 ***Focus on robust service delivery models to ensure sustainability of the investments***. Countries under the Program are considering different models for service delivery, from local public utilities/systems ran by local water departments, to community-managed systems or mechanisms that involve the private sector. Yet, a common approach consists of working closely with users' organizations and strengthening structures at the community and local government level. This CDD approach, which includes supporting the active participation of women (particularly in decision-making capacities), is crucial to ensure high levels of ownership and sustainability. It will be conducted building on previous project experiences, and on proven pre-existing institutional arrangements that can be reinforced through the Program.

[42] The World Bank's *Resilient Water Infrastructure Design Brief (2020*) and *Building the Resilience of WSS Utilities to Climate Change and Other Threats: A Road Map (2018)* provide guidance on the principles that will be used in design of resilient infrastructures.

1.5 ***Digital Information and Decision Management Systems.*** The Program will also develop capacity to monitor relevant information on local service delivery using digital technologies to enhance transparency and accountability. This includes the geo-localization of each water point (including information on groundwater depth and quality of the resource), as well as other indicators related to the quality of service delivery in terms of O&M. This will serve to inform decisions to improve service delivery, and/or to enhance local preparedness and response to climate shocks (e.g., floods and drought).

34. **At the regional level, the activities undertaken by IGAD (under Component 2) will complement national and local efforts to provide sustainable groundwater services by strengthening national capacity on groundwater management.** This includes support by IGAD's Water Unit (IWU) to fully characterize and assess selected transboundary aquifers, capacity building programs, guidelines and tools for sustainable groundwater exploration and management, and the facilitation of cross-country dialogue, among other activities explained below.

35. **Component 2. Generating groundwater information and strengthening regional and national groundwater institutions. (US$62 million IDA equivalent).**[43] Activities will focus on generating essential data and information needed for informed decision making on sustainable groundwater management, and at the same time, will strengthen the capacity of key regional and national entities that play a role in the management of the resource, while building trust and fostering collaboration. IGAD will be leading most of the activities under this Component through regional-level efforts that will be articulated with country activities at the national level (Annex 1). Participating countries have agreed on the need for data sharing in order to achieve the joint activities included as part of IGAD's GW4R project. A list of data required to undertake the Program's joint regional activities was validated by participating countries and included in IGAD's POM. Component 2 includes:

2.1. ***Groundwater data and value-added information.***

- ***Regional Groundwater Center (IGAD-GWC) and network of National Groundwater Centers (NGWC).*** The creation and operationalization of the IGAD-GWC is central to the achievement of the Program's objectives. This Center aims to fill key gaps in the region related to the lack of valuable information on transboundary aquifers, and to the low capacity of countries to develop legally binding bilateral and/or regional agreements and arrangements on joint groundwater management. The proposed IGAD-GWC will support MS to enhance sustainable management and utilization of groundwater through resource mobilization, data sharing, and capacity building through a network of NGWC, located in MS, to be established and operationalized by the Program.

- ***IGAD Platform for Groundwater Collaboration (I-PGWC).*** Regional knowledge generation and capacity building activities, joint studies and transboundary case studies will be implemented through the I-PGWC, for which IWU will fulfill the role of secretariat. The Platform will serve as a key mechanism for IGAD and MS to agree on and prioritize joint groundwater activities, scope, and modalities, and support the implementation of regional actions. IGAD will also facilitate the establishment and operationalization of Groundwater National Focal Groups (GW-NFGs) in the MS, established as a governmentally convened working groups to serve and augment existing groundwater management structures in the countries.

- ***Development of joint Regional Studies and Assessments***. Under IGAD's leadership and in close collaboration with participating countries, the Program will contribute to the generation of new knowledge

[43] IDA US$5 M Somalia, US$45 M Kenya, US$8 M Ethiopia, and IGAD US$4.1 M.

at a regional scale. In coordination with the IWU and the NGWCs, the IGAD-GWC will identify priority topics for a regional study or assessment. Examples of topics include groundwater risks and threats, assessment of natural groundwater recharge/discharge dynamics and artificial recharge potential to better understand the role of groundwater as a buffer against drought, groundwater pollution and degradation, and socioeconomics of groundwater. Further details provided in Annex 1 and in the POM.

2.2. ***Capacity building and institutional development for groundwater management.***

- **The Program includes intensive capacity building at the national and regional levels on a wide range of topics related to sustainable groundwater management.** Examples include the integration of groundwater management into river basin organizations (RBOs), climate informed groundwater management, groundwater data collection, analysis and management, and principles of data sharing and data compatibility across countries, RBOs, Non-Governmental Organizations (NGOs), and other interested parties. Women's representation in decision-making positions in groundwater management institutions will be supported through leadership and technical training for female agency staff, and gender awareness training for groundwater agency staff to support female employment, among others.

- **The Program will also support the development of policy instruments for sustainable groundwater exploration and management in the HoA**. These include national strategies, policies, guidelines, standards and/or regulations, depending on the case, for sustainable groundwater management. At the regional level, IGAD will contribute by providing guidance on the establishment of borehole drilling and testing guidelines and professional standards, water point O&M guidelines, establishment of groundwater protection zones, pollution impact and economic assessment, flood and drought cost impacts, among other key topics.

2.3. ***Transboundary Collaboration on Groundwater Management.***

- **The Program will develop a regional groundwater policy and strategy, and consolidate a sustainable institutional and policy framework for TBA aimed at achieving Ministerial level endorsement by the Program's participating countries**. This activity will address the lack of institutional, legal and policy mechanisms in relation to trans-boundary aquifers through the support of gender aware Transboundary Diagnostic Analyses (TDAs) and the development of Strategic Action Plans. The Program will also support trans-boundary dialogue and collaboration on groundwater issues among IGAD MS.

- **Feasibility Studies (FS) for joint planning in three TBAs of the HoA.** IGAD will support countries in characterizing the complexity of two or three TBAs, as well as in the preparation of joint cooperation mechanisms, such as bilateral/regional agreements and arrangements, including aquifer development and management plans. This will build on the experience of the World Bank financed HoA Groundwater Initiative (HOA-GWI) (P169078), an initiative supporting a Feasibility Study (FS) for the Merti Aquifer, including a complete aquifer mapping, a socio-economic assessment, and a bankable investment project, as well as an Environmental and Social Impact Assessment (ESIA). The FS, in consultation with the governments of Kenya and Somalia, is expected to provide options for joint or bilateral developments. It is expected that interventions taking place in both sides of the border as part of Component 1, will be guided by the collaboration mechanisms proposed by this FS.

36. **Component 3. Support for project management, knowledge, and operations (US$30 million IDA equivalent)[44].** This component will finance the operational costs of the Project Implementing Units (PIUs) in participating countries and IGAD, as well as provide project coordination and fiduciary support. This component will also strengthen the capacity of IGAD's Water Unit. The component includes the project's' Monitoring and Evaluation (M&E), knowledge management and learning, and evidence-based policy input. It also covers security arrangements and contingencies, and Third Party Monitoring (TPM) for the entire program for an amount of US$ 3.7 million.

37. **Component 4. Contingent Emergency Response Component (CERC) (US$ 0m). This will be integrated in the projects of Kenya and Ethiopia.** A CERC is included in the Program, under Kenya and Ethiopia financing agreements. This will allow for rapid reallocation of uncommitted funds under corresponding credit and grant in the event of an eligible crisis or emergency.[45] The respective POMs will include provisions to guide CERC activation and implementation. For the CERC to be activated, and financing to be provided: (a) the Recipient's relevant authority has to declare a disaster, emergency or catastrophic event; (b) the Association and the Recipient have to agree in writing to address such disaster, emergency or catastrophic event under the Project and in accordance with the provisions of respective Financing Agreement; (c) the Recipient has to ensure that all environmental and social management instruments required for said activities have been prepared and disclosed, and the Recipient has to ensure that any actions which are required to be taken under said instruments have been implemented, all in accordance with the applicable provisions of the respective CERC Manual; (d) the Coordinating Agency in charge of coordinating and implementing the CERC must have adequate staff and resources, for the purposes of said activities; and (e) the Recipient has to adopt a CERC Manual.

B. Project Beneficiaries

38. **The Program's primary target groups are (a) vulnerable communities in selected borderlands of the HoA, and (b) selected national, sub-national and regional entities involved in groundwater management.** It is estimated that Phase I of the Program will reach 3.3 million direct beneficiaries, of which at least 50 percent are women, through interventions designed to increase access to water supply and reduce vulnerability to climate change impacts, in particular drought and floods. At the institutional level, Program beneficiaries include institutions responsible for groundwater management at the regional, national and subnational levels, including line Ministries, government agencies, national authorities, and agencies at the national and sub-national levels.

C. Rationale for Bank Involvement and Role of Partners

39. **The World Bank is well-positioned to respond to these needs in an integrated and regional manner given its global, cross-sectoral expertise, combined with its understanding of country and context-specific conditions and priorities.** The World Bank has had a long-standing commitment to global and regional development priorities. The World Bank is also uniquely positioned to contribute to the HoA's resilience through the enhanced management and use of groundwater resources. Part of the World Bank's offer and value added resides in its extensive experience and lessons learned through decades of engagement and collaboration with countries and regional institutions, including the efforts towards joint governance and resilience supported by the CIWA Program. The World Bank is

[44] IDA US$11 million Somalia*, US$3 million Kenya, US$10 million Ethiopia, US$5.9 million IGAD (including US$3.7 million for Third Party Monitoring). *For Somalia, the amount includes E&S, security and contingency costs.

[45] An eligible emergency is defined as an event that has caused, or is likely to imminently cause, a major adverse economic and/or social impact associated with natural or man-made crises or disasters. Such events include a disease outbreak.

also uniquely positioned to address groundwater needs at the scale required by countries in the region, in addition to offering its convening power, both nationally and regionally, to achieve TBA dialogue and collaboration.

D. Lessons Learned and Reflected in the Project's Design

40. **The Program builds on previous activities that the World Bank has supported in the HoA region,[46] and lessons learned from those experiences were used to shape the Program´s scope and design**. The analytical work conducted as part of the Strengthening Resilience in the Horn of Africa (P172358), a Programmatic Advisory Services and Analytics (P-ASA) product that provided evidence on the role of groundwater management in the resilience to climate change of borderlands communities. It also builds on the experience and achievements of the HoA Groundwater Initiative (P169078), which has built IGAD's technical capacity on groundwater management to strengthen its role as a key convener at the regional level.

41. **The Program will incorporate lessons learned from World Bank's groundwater investments in the Africa and Middle East and North Africa regions, in which communities were actively involved.** Specifically, the project will build on lessons from the Groundwater and Soil Conservation Project (P074413), the DRDIP (P161067), and the Regional Pastoral Livelihoods Resilience Project (P129408). Building on these experiences will help address local readiness and community inclusion. Lessons from knowledge products such as the World Bank report 'From Isolation to Integration: The Borderlands of the Horn of Africa',[47] and from a stocktaking of World Bank resilience investments in the HoA[48] (Strengthening Resilience in the Horn of Africa P-ASA, P172358), were also key in the preparation. The Program will also draw lessons from existing World Bank investments to ensure the sustainable access and use of groundwater resources.

III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

42. **Institutional arrangements have been designed to tackle service delivery challenges in the most efficient manner.** Implementation arrangements at the country level rely on experiences and lessons learned from previous water projects in rural areas. District and local governments are essential in the provision of sustainable water services in countries with a decentralized governance model, and they are incorporated as part of the institutional arrangements of the project. Capacity building activities at these levels will also be essential. At the central level, all the country implementing agencies and IGAD have previous experience, albeit varied, with projects financed by the World Bank and other development partners. When possible, opportunities to align with existing national programs and World Bank implementation arrangements will be identified to minimize duplication and enhance complementarity.

43. **The implementing agencies of the Program's Phase I countries and IGAD are detailed in Annex 1.**

[46] Among them, the P-ASA Strengthening Resilience in the HoA (P172358), which supported a study on groundwater management for resilience in the region, used to inform the project's design and scope.
[47] World Bank. (2020) *From Isolation to Integration: The Borderlands of the Horn of Africa*, World Bank, Washington DC, 2020.
[48] World Bank (2021), *Invisible Bonds: Transboundary Resilience Building in the Horn of Africa: Lessons from World Bank Regional Projects and ASAs*, World Bank, Washington D.C.

44. **At community level, the Program will use robust service delivery models and build on existing community-level management structures to ensure sustainability of the investments**. While countries under the Program will use existing models for service delivery (e.g., legally recognized WASH Committees, or WASHCOMs in Ethiopia, or Water Service Providers or WSPs in Kenya) or adapt new and more professionalized structures, a common approach consists on working closely with users' organizations and strengthening structures at the community and local government level. This CDD approach[49] will build on lessons learned from available experiences, and on proven institutional arrangements that will be reinforced.

45. **The regional activities will be implemented by IGAD's Water Unit (IWU), launched by the Ministers of Water Affairs in 2015 to support IGAD MS in activities that are the core of water resources management and use in the region, a mandate strongly aligned with the Project's objectives**. The Unit also provides technical support to IGAD's cross-border 'clusters'. IWU will be strengthened to actively manage and implement the project activities. Current capacity gaps that the project seeks to fulfil include qualified staffing of the Unit, so as to ensure that at the end of the program it is adequately equipped to continue its regional mandate. The Unit will work closely with the Technical Advisory Committee (TAC), a long standing Committee on water matters with senior representatives from the MS that reports to the respective Water Ministers. The Project will benefit from the already existing Project Steering Committee (PSC) for the HoA-GWI for approving Work Plans and Budget, as well as providing inputs on behalf of the countries.

B. Results Monitoring and Evaluation Arrangements

46. **The national/entity PIUs will be primarily responsible for M&E in their respective countries and will report the progress of the respective project activities and associated project indicators, as presented in the Results Framework in section VII.** The M&E reports will be presented as part of the regular progress reports. National/entity PIUs will collect and present data and reports for respective national institutions responsible for project implementation, in conjunction with World Bank implementation support missions. A midterm review will be conducted to evaluate implementation progress and identify potential issues in need of attention and resolution, including lessons learned during implementation that could help inform the preparation of future phases. A midterm impact assessment will be conducted to identify the program's progress in key areas, strengthening the existing M&E systems and the availability of quality M&E data on groundwater management and use in the region. Additional metrics to the indicators in the Results Framework could be covered in the assessments, including, among others: (a) area covered by new aquifer assessments, (b) volume of water annually harvested using project-built or rehabilitated infrastructure, (c) livestock benefiting from clean water as a result of the Program, (d) hectares gazetted for protection/conservation due to groundwater recharge potential, as well as (e) area under management as part of groundwater management plans.

47. **Third Party Monitoring (TPM) and remote supervision tools will be key elements for Program oversight and selected expenditure control.** Given the complexity of the HoA region, the risk and the scope of the Program, M&E will be strengthened with the GEMS, launched by the FCV Group to systematically enhance M&E and supervision

[49] A CDD approach implies community participation in a) infrastructure development (i.e., identification and prioritization of investments including low carbon considerations, paid or unpaid support to low-scale infrastructure development etc.), as well as in b) the management and maintenance of investments (i.e., definition of norms/guidelines for operation, consolidation of committees/groups for maintenance/sustainability, accountability, women's roles, including in decision-making, etc.). The Program will include capacity building and facilitation to promote strong participation in these stages, as well as knowledge sharing on sustainable aquifer management practices, to enhance climate resilience in vulnerable populations.

through TPM in FCV settings. The approach will leverage field-appropriate, low-cost and open-source technology for digital real-time data collection and analysis, using a customized digital M&E system to enhance the transparency and accountability of implementation across the project cycle. The TPM will implement GEMS' platforms for remote supervision, real-time risk and environmental and social (E&S) monitoring, and portfolio mapping for coordination across projects and partners, which is seen as key to ensure the effectiveness of the regional Program. TPM will independently verify results on the ground and help ensure funds are used for the intended purposes. It will be also able to provide technical guidance on the reliability of government M&E systems. The TPM will be financed under the IGAD regional component through regional IDA funding. The role of the TPM firm(s) will include a capacity building / technical assistance (TA) component.

C. Sustainability

48. **Critical to the sustainability of sub-projects under the proposed MPA is the sustained ownership and strengthened capacity by the various stakeholders involved in groundwater management, coupled with strong political support and inclusive mechanisms.** The key to ensuring the sustainability of the investments relies on empowering and strengthening local governments and community organizations, as well as finding adequate service delivery models. Building on past project experiences, the Program will need to establish or strengthen, in many cases, community institutions, committees and/or Water Resources Users Associations (WRUAs) for the O&M of groundwater infrastructure, in collaboration with local governments, water service providers and even private operators. The Program will also address the difficulties that local, county and national institutions encounter in sustaining core staff and operations after programs close. Towards that goal, the Program will build capacity on the sustainable use and management of the resource across levels, including the creation of professional units within governments units, with capacity to develop and manage the resource. The Program will build national level water service delivery projects to leverage existing sustainability initiatives such as legalization of community committees, promotion of fast-moving spare parts, training of small-scale private operators, and enhancing supply chain for O&M of built infrastructure.

49. **The Program will contribute to an enhanced enabling environment for sustainable groundwater management in the region through the development of new policies, bylaws, regulations, guidelines, and regional agreements.** Activities to generate information on aquifer dynamics will also contribute to ensure that all groundwater infrastructure is deemed to extract water at sustainable rates, but also that recharge rates and areas are understood and protected. The Program will also support enhanced monitoring of groundwater quantity and quality, helping to inform decisions on the sustainable use and management of the resource in the region.

50. **Borrower commitment is ensured by the strong alignment between the country project's (and the Program) investments, and national- and regional- level strategies, including the region's strong commitment to the HoAI**. Sub-projects were identified from participating countries' national priority investments, including single project pipeline investments. Governments' actions to finance sub-activity preparation speak of their commitment to achieving the expected results and sustaining project outcomes. The selected sub-projects have been identified, and some have been prepared, by the respective government institutions. The same implementing/government institutions have the overall mandate for ensuring sustained O&M for the infrastructure that will be supported through this Program. The training, knowledge sharing, and improved monitoring schemes will further ensure institutional sustainability.

IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic and Financial Analysis

51. **Technical designs and selection of infrastructure typology is sound and adequate to the borderlands of the HoA.** Appropriate technologies for shallow wells and other service delivery infrastructure, together with low operation and maintenance requirements, are key for facilitating sustainability of service provision. The analytical work to be conducted on groundwater both at local and regional levels, supported by local consultations, will help select the most adequate sites for such investments. Infrastructure to increase buffer capacity to shocks and protect aquifer recharge should also be informed by such studies. The Program will incorporate capacity building activities for local institutions, and involve community organizations in sub-project design and implementation to ensure the right levels of ownership by users during all stages of the Program. It will also be essential that the collaboration between countries and IGAD on data sharing is effective, so that IGAD can develop sound, high value-added feasibility studies in the region's transboundary aquifers that will be the basis for future joint groundwater management.

52. **The Program is expected to generate an important set of quantifiable and non-quantifiable benefits through its interventions.** Component 2 is aimed at improving the regional and national capacities or sustainable groundwater management and use, and its proposed activities are expected to support and reinforce the investments planned under Component 1 also beyond the projects' implementation boundaries and timeline. As such, the economic analysis is primarily focused on testing the economic justification of the proposed investments under Component 1. These investments will result in improved water access for the targeted communities, which in turn will support crop and livestock agricultural activity (improving food security), improve sanitation and health conditions of the local populations, reduce time spent in accessing water and in certain conditions, and support the diversification of livelihoods and job creation, thus helping communities to adapt to climate change impacts (e.g., drought and floods).

53. **In particular, the Program's investments are expected to generate several benefit streams for the targeted beneficiaries, including financial benefits from improved productive activities, improved health, and other socio-economic outcomes.** Specifically, the interventions will, reduce the financial cost and the time spent accessing water, improve agricultural productivity, reduce livestock losses and improve the animals' health and market value, and contribute to reduce the beneficiaries' healthcare costs. In addition, improved access to water will have longer-term benefits for the overall health of the beneficiaries, can reduce school absenteeism, and empower women to undertake other productive activities. The new infrastructure is also expected to create job opportunities in the local communities both for the operation and the maintenance and repair of the equipment.

54. **As the Program will invest in the necessary diagnostics to identify the location of water supply solutions, an indicative ex-ante economic and financial analysis has been developed for the main types of water supply schemes.** For Ethiopia, the analysis has considered the small to medium scale rural water supply schemes, for Kenya, new and rehabilitated systems and boreholes, and for Somalia new improved shallow wells, deep wells, sand dam water supply schemes, and rehabilitated shallow wells. The financial analysis of these schemes indicates their profitability: with modest fee collection systems in place (for the operation and maintenance of the infrastructure) the break-even conditions are met. Their economic benefits, when considering only the avoided losses in productivity due to sickness and the avoided healthcare costs, are significant for all selected schemes, as detailed in the Economic and Financial Analysis (EFA) in Annex 3.

55. **Overall, the EFA results indicate that the Program's interventions under Component 1 are economically justified, generating an indicative net present value (NPV, at six percent) of the additional benefits of US$145.2 million, and an economic rate of return (EIRR) of 19.3 percent (over a 20-year period), not accounting for environmental externalities.** At country level, the returns on investment vary depending on the respective allocations and the choice of investments, with NPVs ranging from US$9.9 million in Somalia, to US$53.5 million in Kenya, and US$81.8 million in Ethiopia, and EIRRs from 17.7 percent in Ethiopia to 22.1 percent in Somalia and 22.5 percent in Kenya. These economic results are very satisfactory given that several other program benefits (e.g., impact on livestock, increase in resilience of targeted beneficiaries, strengthening of communities' capabilities for managing infrastructure, etc.) could not yet be quantified due to limited data availability. In addition, these economic results are robust when testing several sensitivity scenarios, including reduced outreach, delays in implementation, and cost overruns.

56. **The valuation of environmental externalities further enhances the economic justification of the Program.** As estimated through the GHG accounting, the Program is estimated to reduce GHG emissions by 502,621 tCO_2-e over 20 years as a result of transitioning from fossil fuel to solar energy pumping. When evaluating these environmental benefits using the social price of carbon estimates, the overall economic results of the Program increase to an NPV of US$160.8 million and an EIRR of 20.6 percent (assuming the low range pricing – increasing from US$42/$tCO_2$eq in 2022 to US$64/tCO_2eq in 2041) and to an NPV of US$175.8 million and an EIRR of 22.1 percent (assuming the high range pricing – increasing from US$84/$tCO_2$eq in 2022 to US$128/tCO_2eq in 2041).

B. Fiduciary

(i) Financial Management

57. **As part of the Program's preparation, Financial Management assessments were carried out by the World Bank to evaluate the adequacy of FM arrangements in the implementing entities.** The objective of the assessments was to determine whether the proposed FM arrangements (a) are capable of correctly and completely recording all transactions and balances relating to the Program; (b) would facilitate the preparation of regular, accurate, reliable, and timely financial statements; (c) would safeguard the Program's assets; and (d) would be subject to acceptable auditing arrangements. The assessments build significantly on the World Bank's knowledge of country FM systems and requirement, and experience and the performance of national- and regional-level entities through its involvement in other World Bank financed operations.

58. **Based on the FM assessments, the FM risk is considered High.** Main challenges are related to the following: (a) In Somalia: lack of key financial management competencies and internal controls, reliance on consultants, lack of regulatory framework for key public financial management (PFM) aspects and generally, weak institutional and systems capacities at the federal and states level. The necessary policies, procedures and legal framework to support the sector are under formation with support from international development partners including the World Bank; deficient human resource capital to restore dilapidated infrastructure at both nationally and state levels; inadequate resources to finance the sector in line with the priorities of the Government(s) i.e. establishment of delivery and accountability systems as well as rehabilitation of destroyed facilities as a result of long drawn internal conflict, among other challenges. (b) In Ethiopia, delays in planning/budgeting, low utilization/absorption capacity, gaps in staffing capacity both in respect of weak technical capacity and high turnover of accountants, weak internal audit oversight, internal controls over advances and low quality of financial reporting; (c) In Kenya, significant audit qualification issues in WRA; delays in OAG issuing audit certificates (e.g., Water Resources Authority (WRA) is yet to

receive for FY19 and FY20); budget delays especially in the first year of implementation and undefined funds flow mechanism for conditional grants following a court case on existing mechanism. WRA has not directly held a Designated Account before, and as a PIU, some handholding will be required on disbursement and FM reporting procedures. WSTF and Ministry of Water, Sanitation and Irrigation (MoWSI) may also require training if they deploy new staff to the project; (d) In IGAD (i) the lack of a specific entity for the management and implementation of the project and (ii) the late submission of the 2019 audit reports of ongoing projects.

59. **Regarding IGAD, the FM assessment previously conducted during the preparation of previous initiatives (including the Development Response to Displacement Impacts Project, DRDIP-II, IGAD Building Disaster Resilience to Disasters through Risk Management and Climate Change Adaptation, and the Regional Pastoral Livelihoods Resilience Project, RPLRP), was updated for the purpose of this Program**. The updated assessment concluded that with the implementation of agreed-upon actions, the proposed FM arrangements are satisfactory to the Bank. IGAD has extensive experience managing World Bank-financed projects, and its performance is also assessed as satisfactory. The Project's FM and disbursement arrangements are designed to address the needs and specific activities of the project, including:

i) A dedicated Accountant from the IGAD Finance Unit will handle the project's FM and disbursement functions. As needed, a full-time qualified Financial Officer, financed from the Project, will be hired to join the IGAD team.
ii) IGAD's accounting software will be used to capture the project's financial transactions.
iii) Semi-annual IFRs will be submitted to the World Bank no later than 45 days after the end of each semester.
iv) The project's payments (except minimal operational costs) will be centrally financed using a US Dollar-designated Account (DA) that will be opened in an acceptable commercial bank in Djibouti.
v) A POM was prepared including the rules, guidelines, standard documents, and procedures for carrying out the Project. The POM includes a designated chapter on FM and disbursement functions.
vi) A TPM will be used to verify the project activities in participating MS.
vii) IGAD will submit the annual audit report and management letter to the World Bank no later than six months after the end of each fiscal year.

Further details on FM and disbursements arrangements are presented in the POM.

60. **The following mitigating measures have been agreed:**

(a) **In Somalia,** the mitigating measures are designed both specific to the project, and as part of other World Bank/Donor engagements in the country. Given the consideration for Use of Country Systems (UCS), the project will adopt the UCS in various aspects of the projects financial management including accounting and reporting, banking, oversight arrangements with the Office of the Auditor General and staffing. This will be supported by TA with clear requirement for knowledge transfer incorporated in the Term of Reference. The External Assistance Fiduciary Section (EAFS), already established under the Office of the Accountant General and staffed with mainstream civil servants in consultation with the Directorates of Finance in Ministry of Energy and Water Resources, Federal Government of Somalia, and Ministry of Energy and Mineral Resources, Somaliland, will oversee and manage the project financial management. The EAFS units have been fully operational both at the FGS, Puntland and Somaliland for the last six years. The need for a dedicated project accountant based at the Project

Implementation Unit (PIU) will be determined to which the Accountant Generals will second one from the EAFS to the PIU.

(b) **In Ethiopia,** fiduciary management will be initially centralized at the federal level while initial woreda capacity implementation assessment is carried out. Implementation of sub projects will then gradually be delegated to regions, once the adequacy of implementation capacity is confirmed in the POM through capacity and risk assessments (procurement, financial management and E&S) shows outcomes acceptable to the World Bank. A disbursement condition to ensure recruitment or assignment of key FM staff at MoWE including project Financial Management System (FMS) owing to the assessed weak control systems, low capacities, and lack of previous experiences in managing World Bank financed operations. The project will also have its own FM manual, to be available as part of the POM, which would outline the detailed FM procedures and requirements.

(c) **In Kenya,** WRA will be required to prepare an action plan of how it intends to address the audit qualification issues, WRA/OAG to ensure no audit delays as this will affect compliance with the financial covenants in the proposed HoA GW4R, a comprehensive Project FM manual has already been prepared and forms part of the POM and, PFM staff especially at the WRA and the water service providers and counties Sub-PIUs will be taken through the World Bank FM procedures and WSTF will seek dialogue with MoWSI and NT to agree on what Funds Flow mechanism would be acceptable in the interim.

(d) **IGAD** will need to implement the following measures in order to appropriately mitigate the risks: (i) setting up a team, including a financial specialist, to manage the FM aspects of the project under the overall supervision of the Project Coordinator; (ii) compliance with the deadlines for the delivery of the annual Financial Audit report; and (iii) setting up existing software to record daily transactions and produce the required financial reports specific to the project.

61. **Subject to the successful implementation of the FM action plan and implementation and operation of the agreed mitigating measures described above, the proposed FM arrangements are considered adequate to support the Program's implementation.** The World Bank will follow up on implementation of agreed mitigating measures during the implementation support mission. This task will be reinforced by the activities of the TPM on results verification, to ensure funds are used for the intended purposes.

(ii) Procurement

62. **Applicable Procurement procedures: The Program will apply the World Bank Procurement Regulations for IPF Borrowers for procurement of Goods, Works, Non-consulting Services and Consulting Services, dated July 2016 and as updated in November 2020.** Furthermore, the Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants', dated October 15, 2006, and revised in January 2011 and July 1, 2016, and the provisions stipulated in the Financing Agreement will apply.

63. **Procurement implementation arrangement:** Procurement implementation arrangement will be country specific. The majority of the country implementing agencies have previous experience with World Bank financed operations although at varied levels. The World Bank has conducted detailed procurement capacity assessment of the implementation agencies to identify risks and weaknesses, and mitigation measures, which was discussed and agreed with the respective PIUs.

64. **Project Procurement Strategy for Development (PPSD) and Procurement Plan:** The procurements under the Program are not expected to involve highly complex procurement activities. Most of the activities are consultancy services, and moderate value works contracts and supply of goods. The other non-procurement activities will be implemented as operating expenses following acceptable implementing agencies' procedures and practices. The implementing agencies have finalized the PPSD and a 18-months Procurement Plan with the support of the World Bank team. The PPSD has documented, among others, the implementing agencies' capacity assessment and implementation context, current practices, market information, risk assessment and knowledge-based market approach and selection methods for critical contract activities. One of the outcomes of the PPSD is the 18 months Procurement Plan agreed between the implementing agencies and the World Bank. The Procurement Plan will be updated in agreement with the World Bank annually or as required to reflect actual project implementation needs and improvements in institutional capacity.

65. **Procurement Capacity Assessment**: A Procurement Capacity Assessment was carried out on the executing agencies of the country project implementing agencies, MoWE and Ministry of Irrigation and Lowlands (MoIL) in Ethiopia; MoWSI, WRA and WSTF in Kenya; Ministry of Energy and Water Resources (MoEWR) and the Federal Member States Ministry of Energy and Water Resources (Hirshabelle, Galmudug, Jubaland) in Somalia; and the regional body, IGAD, in Djibouti. The Ministry of Water and Energy, and the Ministry of Irrigation and Lowlands of Ethiopia are undergoing restructuring. It is deemed that centralized project (engineering) procurement directorates will be established by the two ministries to implement the Project. This will be a disbursement condition in the Financing Agreement. In addition, for Somalia implementing agencies, having full PIUs in place with all functions covered is a condition for disbursement.

66. **Procurement Risks:** The major risks identified were:(i) lack of appropriate procurement organizations, (ii) staff have limited experience in the World Bank's Procurement Regulations,(ii) lack of sufficient disclosure of procurement opportunities, invitation for bids and contract awards (iii) lack of procurement and contract management capacity, (iv) project implementation delays, (v) lack of adequate procurement and contract management reporting, (vi) lack of adequate complaint handling mechanisms, (vii) weak record keeping (incomplete procurement files), (viii) lack of internal and external procurement audit mechanisms, (ix) the geographical spread and devolution challenges and remoteness of some of the locations for CDD activities. The overall inherent project procurement risk rating is **"High"**. The project procurement risk rating will be updated based on change in the capacity of the implementing agencies.

67. **Procurement Risks Mitigation Measures:** The following risk mitigation measures are identified, (i) establish/strengthen appropriate procurement units with the required level of staffing, (ii) provide procurement training on the World Bank's Procurement Regulations to the procurement and project implementation units, user sections and procurement endorsing committees, (iii) engage TA consultants, as necessary, who will support the implementing agencies in procurement and contract management which will also be supported via TPM to ensure alignment between physical work progress and payments, (iv) establish project performance measurement and monitoring system using KPIs, (v) project quarterly reports should include adequate coverage of procurement and contract management progress and issues, (vi) engage consultants for feasibility studies, designs, and supervision of works,(vii) establish adequate internal complaint handling mechanisms following the World Bank procurement regulations, (viii) the internal audit units of the implementing agencies shall carry out procurement audits and the World Bank will carry out procurement prior and post reviews, (ix) use of STEP and websites to proactively disclose procurement opportunities, invitation for bids and contract awards, (x) establish and maintain a structured and effective filing and records management system, (xi) use of STEP for all procurement activities including PBG and CDD Procurements, and (xii) increase ownership of procurement at the community level and develop simplified CDD

procurement procedures as part of the POM. Procurement at the community level by communities will be in accordance with the provisions defined in Paragraph 6.9 and 6.10 of the Bank's Procurement Regulations and the "Guidance Note for Design and Management of Procurement Responsibilities in Community-Driven Development Projects," dated March 15, 2012. The overall residual project procurement risk is rated as **"Substantial"**.

68. **Systematic Tracking of Exchanges in Procurement (STEP).** The World Bank's STEP approach will be used to prepare, clear, and update Procurement Plans and conduct all procurement transactions for all implementing agencies of the Program. Procurement staff of the implementing agencies not familiar with STEP will be trained on using STEP. Details are provided in Annex 1.

69. **It is envisaged that projects utilize solar pumped irrigation and solar pumped ground water systems which may involve sourcing and use of solar panels by the Contractors**. There is a significant risk of forced labor in the global supply chain for solar panels and solar components. Hence, for any procurement of solar pumped irrigation and solar pumped ground water systems and other procurements involving use of solar panels, the Borrower will use World Bank standard procurement documents with specific requirements for solar panel procurement and requires that goods are accompanied by two declarations from bidders: (i) a Forced Labor Performance Declaration, which covers past performance, and (ii) a Forced Labor Declaration, which covers future commitments to prevent, monitor and report on any forced labor, cascading the requirements to their own sub-contractors and suppliers. These provisions and declaration forms must be included in procurement documents for both international as well as national competitive procurement, and any direct selection/direct contracting. In addition, the Borrower will include enhanced language on forced labor in the procurement contracts. All procurements that apply the declaration will be subject to World Bank prior review and no objection. The World Bank's prior review will also include procurement documents prior to issue; Subcontractors/ suppliers/ manufacturers of solar panels/components prior to Employer (Borrower) approval, and same for post award if there are any changes to Subcontractors/ suppliers/ manufacturers of solar panels/components.

C. Legal Operational Policies

	Triggered?
Projects on International Waterways OP 7.50	Yes
Projects in Disputed Areas OP 7.60	No

70. **International Waterways policy OP 7.50 is triggered under the Program.** A joint meeting between all participating countries and IGAD was organized to agree on the assessment of transboundary aquifers tapped under the Program. The assessment shows that the proposed investments would not adversely affect the quality or quantity of groundwater of the listed transboundary aquifers nor the quality or quantity of surface water to other riparians or adversely affect other riparians' possible water use. Riparians notified were the five countries included in the Program, including phase I countries(Ethiopia, Kenya and Somalia), and subsequent ones (Djibouti and South Sudan), plus Sudan and Eritrea. Participating countries have delegated the function to notify to IGAD, which has issued the notifications between February 12 and 14, 2022. The notification period ended on March 16, 2022 with no requests for further information made by the riparian countries.

D. Environmental and Social

71. **The Program will have a range of environmental and social (E&S) benefits including improved groundwater management and building resilience through TA, capacity building, and institutional strengthening activities of the countries and entities.** However, there are various environmental, social and health and safety risks that may occur if appropriate arrangements for identification and management are not put in place.

72. **The environmental risks (mainly project activities under Components 1 and 2) are expected to be predictable, reversible, site-specific and are not that likely to be highly significant.** Relevant component one activities include drilling of test and production wells, the provision of small-scale irrigation activities that may potentially result in an impact to the nearby biophysical environment. The Program will reach remote areas and vulnerable groups through installation of solar pumped groundwater supply schemes that may present environmental risks, small scale irrigation activities may use pesticides that potentially generate dispersed waste situations, affecting access to subproject implementation locations, making monitoring difficult. The implementing institutions existing E&S risk management capacity and prior experience are weak and limited due to the lack of project implementation experience; etc. The anticipated environmental risks and impacts are associated with project activities, particularly under Components 1 and 2 which will involve construction, operation and maintenance of groundwater for human consumption and livelihoods support. Livelihood support involves livestock rearing; groundwater-based small-scale irrigation; peri-urban solar pumped groundwater supply schemes, sand dam pilots for community gardens, nature-based solutions for enhanced groundwater recharge; access to groundwater resources; soil and water conservation practices; conducting various studies.

73. **There are environmental impacts due to groundwater extraction (including on surface waters, e.g., groundwater fed rivers) and potential impacts from use of water extracted in terms of contamination (e.g., discharge of wastewater from community systems, discharges, and waste from livestock, impacts from irrigation).** There is also potential for transboundary impacts on water resources. Program activities will also have other potential environmental risks such as air and noise quality, visual/aesthetic intrusion, heat/light reflection, resources depletion, safety risks, other public and occupational health and safety risks, traffic safety, water, and soil pollution due to spillage of chemicals, pesticides, fuel from project activities, and hazard toxicity from improper use and disposal of battery from the installation of solar pumped groundwater supply schemes.

74. **The social risks and impacts of the Program will mainly be associated with activities under Component 1**. The involvement of communities in the identification and management of subprojects will help mitigate the risks, by promoting community buy-in and resilience. However, there is the potential for exclusion of disadvantaged and vulnerable groups (e.g., women, persons living with disabilities, youth, IDPs, refugees) from decision making structures due to cultural norms or existing tensions, with associated elite capture.

75. **Activities under Component 1 will require access to land including land which is likely to be subject to communal ownership and usage rights, which commonly occurs amongst pastoral communities.** Developing agreements over rights to land may be challenging but possible given the need for increased access to water, as such meaningful engagement with settled and pastoral communities over access to land will be critical. Resettlement Policy Frameworks detail the approach to accessing land based on national laws, approaches and customary land rights. An increased risk of social tensions within and between communities associated with rights to access water, irrigated land and benefit sharing, siting of facilities and costs may occur. Despite the contextual challenges, inclusive

community consultations and meaningful stakeholder engagement, as detailed in the Stakeholder Engagement Plans (SEPs) for each country, will be required to ensure the Program's success.

76. **The presence of even relatively small numbers of external workers can result in increased social tensions, increased risk of disease transmission and the risk of sexual exploitation and abuse (SEA) and sexual harassment.** Labor risks associated with the Program include Occupational Health and Safety risks, safety and security risks and the potential use of child labor. Local contracting arrangements may also mean that project workers do not have contracts or are subject to unfair conditions. Female workers may be discriminated against in terms of employment but are also at higher risk of SEA/ SH. Labour Management Procedures, SEA/SH action plans and codes of conduct for workers will be prepared during implementation. Security risks to workers and communities will be addressed through the development of security risk assessments and management plans when project sites are finalised.

77. **There are allegations of forced labor risks associated with the polysilicon suppliers**. The Borrower will require bidders to provide two declarations: a Forced Labor Performance Declaration (which covers past performance), and a Forced Labor Declaration (which covers future commitments to prevent, monitor and report on any forced labor, cascading the requirements to their own sub-contractors and suppliers). In addition, the Borrower will include enhanced language on forced labor in the procurement contracts.

78. **As Component 2 is mainly associated with institutional strengthening and capacity building, the direct social and environmental risks are considered to be low and are likely to be linked to labor and working conditions and the application of outcomes of the work undertaken including future use of groundwater resources**. All activities under this component will need to be developed in line with the requirements of the World Bank's ESF.

79. **Security risks are present in the participating countries including, the threat of insecurity from terrorism, inter-ethnic and interclan conflict including between settled (farming) and pastoralist communities over access to land and natural resources**. In Somalia the Islamist group Al-Shabaab which still controls some areas, poses significant security risks for the population and project activities. These include terrorist attacks, hijackings, abductions, and killings. Al-Shabaab are also known to be active on the border between Kenya and Somalia. Within Ethiopia, instability in the north, notably Tigray has also resulted in increased risks. Given the security risks in participating countries, security risk analysis/ assessments will be undertaken at the Project/ District (Woreda) level (during implementation but prior to any activities being undertaken on the ground) and will inform the development of sub-project security risks assessments. The project will carry out environmental and social assessments of the sub-projects when identified to assess the environmental and social risks and impacts including customary modalities for the use of water points using participatory engagement with all potential beneficiary groups. The methodologies for such engagement will be informed by existing or traditional methods for engagement and decision making. The assessment should be proportionate to the potential risks and impacts including security risks in the participating countries. The development of the Project/District security assessments will be undertaken after effectiveness when there is greater certainty over the planned investments in each of the participating countries. A Security risk assessment will be developed in parallel to the environmental and social assessments for the identified sub-projects and security management measures will be included in contractors Environmental and Social Management Plans (ESMPs). Country specific details regarding security management can be found in the individual ESMFs and ESCPs prepared for the project.

80. **COVID-19 may continue to play a role in influencing Program's implementation, notably around stakeholder engagement and working arrangements.** Virtual options for meetings will be limited due to poor

connectivity and lack of familiarity with such forums. During implementation, the project will require communities to come together to plan. Any risks of exclusion may be exacerbated if COVID-19 restrictions further limit face to face interactions. These concerns have been addressed in the SEPs and approaches will be modified as needed based on the evolving nature of the pandemic.

81. **To manage the anticipated risks and impacts, an ESMF has been prepared by each participating country[50].** The ESMFs detail the approach to managing E&S risks of subprojects including screening processes; generic ESMP and terms of reference for the preparation of site-specific Environmental and Social Impact Assessments ESIAs or ESMPs. The ESMF has highlighted, measures on the management of hazardous wastes, including damaged batteries, solar panels, and chemical and pesticide containers as most of the participating countries do not have appropriate final hazardous waste disposal facilities. The Program will follow the General WBG Environmental Health and Safety Guidelines (EHSG), as well as relevant Good International Industry Practice (GIIP) to address environmental, social, health, and safety risks. The EHSGs on construction sites will apply to ensure the safety and security of workers. Based on the outcomes of the screening and national regulations, an ESIA or ESMP shall be prepared and to provide input to the design of subprojects. The ESMF also establish exclusion criteria for activities that the Program will not fund. Each country has also prepared an ESCP outlining agreed measures to address E&S risks and impacts associated with all aspects of the Program. Final versions of the ESCP were disclosed in the World Bank external website on April 25 2022. The ESMF and ESCP highlight the need for conducting aquifer sustainability assessments prior to development as a prerequisite for proposed infrastructure investments (water supply and irrigation) that will access border area groundwater resources. As most of country level ESMFs instruments will deal with local risks and impacts, a regional Strategic Environmental and Social Assessment (SESA) will be prepared by IGAD to consider regional level impacts, transboundary and cumulative impacts.

E. Climate Change, Gender and Citizen Engagement

82. **The Program has a very explicit design to strengthen climate resilience and mitigation over the long-term, acknowledging that climate change acts as a threat multiplier that will continue to exacerbate the region's development challenges.** The Program will strengthen adaptation and mitigation by fostering a sustainable management and use of groundwater, including water balance and governance mechanisms to ensure replenishment and avoid over exploitation. Component one activities will support the use of groundwater to strengthen local livelihoods and income generation, which are key to ensure diversity and flexibility to adapt to droughts and floods, while avoiding soil erosion and enhancing carbon sinks and soil productivity for food and water security. Enhanced groundwater infrastructure will support local livelihoods and help respond more effectively to climate shocks such as drought and floods.[51] Enhanced community readiness and participation in groundwater management will contribute to strengthen local adaptation actions through citizen engagement, while promoting

[50] ESMFs and ESCPs for Ethiopia, Kenya, Somalia and IGAD (ESCP) were disclosed in the World Bank external website between March 4 and April 25, 2022.These documents were also disclosed in their respective countries as follows: In Kenya, on April 21 and May 5, 2022 respectively and are available at *https://waterfund.go.ke/news/general* ; in Ethiopia on May 1, 2022, both documents at *https://mowe.gov.et/en/sector/water-resources-managment/resources* ; in Somalia on May 5, 2022, both documents, and are available at *https://moewr.gov.so/en/projects/Water_ongoing#faq-list-1* ; IGAD disclosed the ESCP on May 5 at *https://igad.int/download/environmental-and-social-commitment-plan-escp/*

[51] For example, water treatment systems and construction/rehabilitation of water supply systems will contribute to the reduction of the volume of untreated wastewater discharged into water bodies, thereby reducing the volume of potential floodwaters as well as exposure to waterborne pathogens and related diseases, thus increasing the communities' resilience to floods.

the use of renewable energy and nature-based solutions to minimize the carbon footprint of interventions.[52] Solar pumping, community gardens, soil and water conservation practices and nature-based solutions[53] are all relevant to the intention to reduce emissions and enhance carbon sequestration capacity. Component two activities will strengthen institutional capacity to manage groundwater resources more effectively (considering low-GHG management, as appropriate) in drought prevention and response. Improved groundwater information will help inform planning processes, enhancing preparedness (e.g., for periods of drought, floods, to mitigate the effects of seasonality), as well as increase collaboration between national and regional stakeholders (e.g., information and knowledge exchange, coordination). See Annex 1 for further examples of the links between climate vulnerability and specific project activities. The preliminary GHG accounting results indicate that the GW4RP could generate positive environmental externalities, with a total mitigation potential of 502,621 tCO_2-e over 20 years (Annex 3).

83. **The Program will address three main gender gaps (see details in Annex 4)**: (a) Women and girls in rural areas play a leading role in providing water for the household and spend a disproportionate amount of time fetching water from public surface and groundwater sources.[54] Water collection limits the time available for educational and productive activities (with adverse consequences for female literacy, educational attainment, and income-generation) and can exacerbate gender-based vulnerabilities.[55] (b) At the local level, women play a minimal role in groundwater-linked decision-making. In Ethiopia, for example, men are about six times more likely than women to participate in collective action groups and five times more likely to hold a leadership position. In Kenya and Ethiopia, women are under-represented as members and leaders in Water User Associations (WUAs). In the HoA, women's low participation in collective action groups is due to multiple forms of structural patriarchy, including male control over income, land and productive assets, as well as norms of Sub-Saharan African Historically Underserved Traditional-Local Communities (SSAHUTLC).[56] (c) Women are under-represented in agencies governing groundwater management at the local, national and transboundary levels, similar to global and regional patterns[57]. In Ethiopia, for example, women comprise on average 21percent of staff in water institutions, only 7 percent of engineering staff and 12.5 percent of managers. This is often due to reasons including women's lower enrollment in Science Technology Engineering and Math (STEM) programs, occupational sex segregation, gender biases in hiring and promotions, lack of flexible work arrangements (e.g., flex-time, part-time, teleworking options), and limited training opportunities for female staff (e.g., in technical, leadership, communications skills).

84. **The following gender actions will address the above-mentioned gaps (specific details of actions vary among the participating countries):** i) support the construction of small and medium scale universally accessible infrastructure that allows groundwater abstraction in proximity to human settlements and (thereby reduce the time women and girls spend collecting water), including small investments in lighting to reduce security risks during night

[52] COVID-19 may continue to play a role in influencing project implementation notably around stakeholder engagement and face-to-face gatherings under the CDD approach. Virtual options for meetings will be limited due to poor connectivity and lack of familiarity with such forums. CDD approaches require communities to come together to plan, any risks of exclusion may be exacerbated if COVID-19 restrictions limit face to face interactions. The evolving nature of the pandemic makes it difficult to determine longer-term implications. Alternative arrangements considering COVID-19 safety protocols are being explored to ensure communities' participation.

[53] Nature-based solutions including local recharge infrastructure as part of catchment management programs, rainwater harvesting, surface runoff collection from plots and, in the case of the Somalia and Kenya programs, also sand dams.

[54] Nigussie, L.; Barron, J.; Haile, A. T.; Lefore, N.; Gowing, J. 2018. Gender dimensions of community-based groundwater governance in Ethiopia: using citizen science as an entry point. Colombo, Sri Lanka: International Water Management Institute (IWMI).

[55] World Vision, Somalia 2020. Clean water gives girls and women hope. World Vision.

[56] World Bank. 2020. From Isolation to Integration: The Borderlands of the Horn of Africa. Washington DC: World Bank.

[57] World Bank. 2019. Women in Water Utilities: Breaking Barriers. World Bank, Washington, DC. Global data shows that women comprise only 18 percent of staff in water-related institutions and are equally under-represented in technical and managerial roles. In Sub-Saharan Africa women comprise on average 20 percent of water institution staff, 11 percent of engineering staff, and 13.5 percent of managers.

hours; ii) involve women in the planning and design of infrastructure investments; iii) analyze how groundwater is used and managed differently by females and males in all feasibility studies and information-related products that will be conducted by IGAD and the Borrowers; iv) support the preparation of vocational trainings and other education opportunities for women, girls and women-led enterprises; v) support women's participation in decision-making in the PIU, water committees, WUAs, grievance redress mechanism (GRM) by providing training for implementers (e.g., on the importance of women's knowledge and roles in water management and conservation), training for women (e.g., leadership and negotiation skills), promoting the establishment of separate women's groundwater management groups with decision making authority, and tailoring meeting times to fit women's schedule; vi) promote women's participation in decision-making in all phases of the project cycle; vii) ensure that the project-level GRM enables measures to ensure that women can submit feedback and grievances and get responses including gender-based violence (GBV)-related complaints; viii) building on the current evidence, conduct detailed equal Aqua assessment of groundwater agency staff composition (by gender and type of position) and diagnose barriers for women's entry, retention, and advancement in these agencies. The findings will help to finetune the proposed activities and add new ones if relevant; xi) Gender awareness/diversity training for groundwater agency staff and management to support female employment, particularly in managerial positions; x) Leadership and technical training for women agency staff, organized at times/locations to facilitate participation (and outreach to female staff to encourage their participation in training programs.

85. **Progress on reducing the gender gaps will be measured through the following indicators:** (a) investment projects prepared to pre-feasibility stage including analysis related to gender; (b) number of hours per week women and girls spend collecting water; (c) women's share of leadership positions in community groundwater organizations; (d) women's share of leadership positions in agencies governing groundwater management; (e) grievances submitted by women satisfactorily resolved at the GRM-level (details included in the POM).

86. **In the context of the World Bank's Strategic Framework for Mainstreaming Citizen Engagement in WBG Operations, the team is mindful that citizen engagement channels must be context-specific and must be tailored according to the specificities of the implementation areas in participating countries.** Citizen engagement is embedded in the design of the project through its CDD approach, and specifically through the activities that allow communities' participation in groundwater use and management. The program will build on existing community-level structures developed at national and local levels or establish structures adapted from national and regional experiences. FCV-associated considerations will be observed (see Annex 4). The Results Framework contains indicators that will be used to measure performance in the citizen engagement front.

V. GRIEVANCE REDRESS SERVICES

87. **Communities and individuals who believe that they are adversely affected by a World Bank supported project may submit complaints to existing project-level grievance redress mechanisms or the World Bank's Grievance Redress Service (GRS).** The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate GRS, please visit http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

88. **The project-level grievance redress mechanism (GRM) will be central to risk mitigation efforts and will help manage grievances from communities or by parties who feel that they are or will be adversely affected by the program.** The project-level GRM should serve as an avenue for communities to channel their concerns. The team is cognizant about the need to support the clients to establish an accessible, effective and efficient GRM with the capacity to receive and respond timely to grievances in the local languages. Grievances related to sexual exploitation and abuse and sexual harassment, as well as other forms of GBV, will need to be dealt with special attention and protocols to enable survivor-centered responses must be in place. The team will ensure that project-related grievances are shared with the World Bank's GRS. The team will work with the clients to ensure that communities are aware of the multiple forms to submit grievances to the GRM and the GRS in case they think they are or could be adversely affected by this project.

VI. KEY RISKS

89. **Key Program Risks.** The Project´s overall risk is rated High due to the aggregation of residual risks in each participating country. The risk assessment focuses largely on the residual risks to the project (Phase 1) taking into account the mitigation measures and assuming that these measures will be implemented. The Program will be implemented in one of Africa's most fragile sub-regions, which has high levels of poverty, severe food insecurity, and is experiencing forced displacement, and armed conflict. The design of the program, which focuses on strengthening climate resilience at the community level, is inspired by lessons from previous experiences in the HoA and other fragile contexts. In order to manage these risks, the project will, inter alia: (a) provide a standard technical outline for feasibility studies and project preparation with quality assurance elements such as review meetings and peer reviewer support; (b) provide TA to Borrowers; (c) manage a learning agenda to raise the quality of implementation across all participating countries.

- ***Political, governance and security risks are High***. The program spans several countries, each at a different stage of development, ranging between fragile and conflict affected states, to low and middle-income countries, and with different political and governance-related challenges. The Program implementation will take place in areas that are characterized by FCV, where security risks are high. Activities that require field visits/work (i.e., groundwater assessments) may be affected in some countries by the rapidly changing security situation. To mitigate these risks, and with a view to systematically enhance real-time access to the project's implementation areas, the team will use and make available to Borrowers the tools and technologies enabled by the GEMS used in FCV-affected areas. As a risk mitigation strategy, the World Bank and Borrowers will work closely with local partners that have regular and safe access to the project implementation areas. The World Bank is mindful about the general election calendar for the participating countries. In 2021, elections took place in Ethiopia, and they will take place in Somalia and Kenya in 2022. The World Bank will work with the current government officials to ensure continuity of efforts with the new administrations.

- ***Macroeconomic risks are Substantial.*** The COVID-19 pandemic has affected economies in the region, and the economic outlook remains uncertain and contingent on the course of the pandemic. The war in Ukraine has also triggered an increase in prices of primary goods and imported inputs. If these factors prove protracted, the consequent macroeconomic effects may undermine the achievement of the PDO, especially if they lead to a further tightening of fiscal space and reduced availability of counterpart funds or an increase in the price of crucial imported inputs. As a mitigating measure for these risks, price contingencies should be accounted for in the Program's costings. At the same time, the region's fragility and exposure to climate impacts pose risks to the

countries' macroeconomic situation, which the Program will help mitigate by strengthening the capacity of key institutions at all levels during rollout.

- ***Institutional capacity for implementation and sustainability risks are rated Substantial.*** Institutional capacities vary largely among the participating countries, but across the region, rural water supply schemes and water related investments in remote areas present significant sustainability challenges. Countries like Kenya and Ethiopia have higher institutional capacity than Somalia. The later will require stronger Program support in terms of reinforcing institutional implementation arrangements and building capacities for service delivery. The strong involvement of local communities is also essential to ensure service delivery sustainability. Community ownership is also key to mitigate risks related to vandalism, to protect physical assets. A CDD approach will be used for identification and prioritization of community—level investments related to groundwater community use.

- ***Technical design of Program risk is Substantial.*** The risk that groundwater use develops faster than countries expect, leading to an overuse of groundwater and less inclusion, is also being acknowledged. The Program's approach to preserving groundwater sustainability is to ensure that no drilling occurs without the corresponding aquifer technical assessment. In parallel, the strategy to develop sound groundwater knowledge and management capacity in regional and national institutions will also help mitigate this risk.

- ***Fiduciary risk is Substantial*.** The residual risk rating is Substantial. The rating is due to poor financial management competencies and financial controls, and low technical capacities in Somalia, gaps in organization staffing and weak internal audit controls in Ethiopia and qualified audits of main implementing agencies in Kenya. Mitigation measures are designed both specific to the project and as part of other World Bank/Donor engagements in the countries. Given the consideration for UCS, the project will adopt the UCS in various aspects of the projects financial management including accounting and reporting, banking, oversight arrangements with the Office of the Auditor General and staffing. This will be supported by TA. Furthermore, several risks were identified in terms of procurement, which includes, lack of appropriate procurement organization and staffing, process delays, lack of internal and external audit, and complaint handling mechanisms. Appropriate risk mitigation measures are included as part of the project design.

- ***The Program's environmental and social risks have been classified as High.*** The environmental risk rating is substantial as the direct environmental risks of the Program are expected to be predictable, reversible, site-specific and are not likely to be highly significant. The social risk rating is high given the contextual risks including the security situation in the HoA, the risk of conflict which can be unpredictable and factors such as access to land and inclusion. Each subproject activity will have a specific location and salient physical, biological and socio-economic characteristics which will need to be understood as part of the Environmental and Social Assessment. It is expected that the Program's subproject physical footprint will be limited to small-scale capital investments in rural and peri-urban areas. The Task Team is cognizant of the fact that groundwater use develops faster than countries expect, which can lead to overuse of the resource and less inclusion. Water resource sustainability is at the core of the Program's design. Adequate provisions will be in place to ensure that investments are supported by studies and assessments to ensure the protection of the resource, as well as monitoring of water quantity and quality to inform groundwater management. From a social perspective, the CDD approach will ensure bottom-up prioritization of community needs and should result in inclusive development. However, there are also a number of inherent risks with the process especially including exclusion of vulnerable and marginalized groups from decision making processes, potential for social conflict within and between communities especially over access to resources, procurement of contractors, rights to land and natural resources, physical and economic displacement

and elite capture by members of society leading to unequal distribution of assets and benefits. Risks associated with SEA/SH may occur as a result of the program activities notably associated with labor influx where even relatively small numbers can lead to increased risks and towards female workers who may be at risk of SEA or SH in the workplace.

- ***Stakeholder Risk is rated as high mainly due to security risks.*** In addition to factors related to conflict over land and natural resources affecting the security situation as mentioned above, there are other risks related to security associated with the presence of a range of local stakeholders and their links with local communities, local political groups and formal and informal institutions. Coupled with the contextual factors, notably the diverse and complex socio-political dynamics and tensions in the vast territory in which this project is being implemented, these risks are difficult to manage and mitigate. Given the security risks in the participating countries, security risk assessments will be undertaken and will inform the development of sub-project security risks assessments and management measures. Adopting a flexible approach, those assessments will inform project activities and corresponding supervision tasks, which may inform corrective actions in project design or implementation as needed.

VII. RESULTS FRAMEWORK AND MONITORING

Results Framework
COUNTRY: Eastern and Southern Africa
Horn of Africa - Groundwater for Resilience Project

Project Development Objective(s)

To increase the sustainable access and management of groundwater in the Horn of Africa's borderlands.

Project Development Objective Indicators

Indicator Name	PBC	Baseline	End Target
To increase the sustainable access and management of groundwater in the Horn of Africa's borderlands			
Beneficiaries provided with access to improved water supply (Number)		0.00	3,344,300.00
Kenya - 55 % Women (Number)		0.00	1,512,800.00
Somalia - 50% Women (Number)		0.00	350,000.00
Ethiopia - 50% Women (Number)		0.00	1,481,500.00
Water points constructed or rehabilitated under the Program that are functioning. (Percentage)		0.00	90.00
Kenya (Percentage)		0.00	90.00
Somalia (Percentage)		0.00	90.00
Ethiopia (Percentage)		0.00	90.00

Indicator Name	PBC	Baseline	End Target
Regional groundwater institutions with increased access to improved information critical for sustainable GW management. (Number)		0.00	4.00
Kenya (Number)		0.00	1.00
Somalia (Number)		0.00	1.00
Ethiopia (Number)		0.00	1.00
IGAD (Number)		0.00	1.00

Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	End Target
Component 1. Delivering inclusive groundwater services to priority areas			
Water supply schemes constructed or rehabilitated under the project in drought-prone areas with reliable groundwater resource (Number)		0.00	610.00
Kenya (Number)		0.00	400.00
Somalia (Number)		0.00	100.00
Ethiopia (Number)		0.00	110.00
Investment projects prepared to pre-feasibility stage, including analysis related to gender (Number)		0.00	610.00
Kenya (Number)		0.00	400.00
Somalia (Number)		0.00	110.00
Ethiopia (Number)		0.00	110.00

Indicator Name	PBC	Baseline	End Target
Nature-based infrastructure built or rehabilitated under the project (Number)		0.00	70.00
Kenya (Number)		0.00	50.00
Somalia (Number)		0.00	5.00
Ethiopia (Number)		0.00	15.00
Community institutions, committees and/or Water Resources Users Associations (WRUAs) established for operation and maintenance (O&M) of groundwater infrastructure (Number)		0.00	237.00
Kenya (Number)		0.00	70.00
Somalia (Number)		0.00	50.00
Ethiopia (Number)		0.00	117.00
Number of hours per week women and girls spend collecting water (Number)		23.00	5.80
Kenya (Number)		28.00	3.50
Somalia (Number)		14.00	7.00
Ethiopia (Number)		28.00	7.00
Women's share of leadership positions in community groundwater organizations (Percentage)		9.00	37.00
Kenya (Percentage)		18.00	30.00
Somalia (Percentage)		10.00	30.00
Ethiopia (Percentage)		0.00	50.00
Hectares with sustainable water supply for irrigation provided by the project (Hectare(Ha))		0.00	375.00
Ethiopia (Hectare(Ha))		0.00	375.00
Component 2. Generating groundwater information and strengthening regional and national groundwater			
New policies, bylaws, regulations, guidelines or regional		0.00	17.00

Indicator Name	PBC	Baseline	End Target
agreements prepared or adopted for sustainable groundwater management and use in participating countries (Number)			
Kenya (Number)		0.00	8.00
Somalia (Number)		0.00	3.00
Ethiopia (Number)		0.00	3.00
Intergovernmental Authority on Development (IGAD) (Number)		0.00	3.00
Participating countries that have prepared and/or endorsed a National Groundwater Strategy or Master Plan (Yes/No)		No	Yes
Kenya (Yes/No)		No	Yes
Somalia (Yes/No)		No	Yes
Ethiopia (Yes/No)		No	Yes
People trained in sustainable groundwater management practices in national and regional water resources entities. (Number)		0.00	400.00
Kenya (Number)		0.00	200.00
Somalia (Number)		0.00	50.00
Ethiopia (Number)		0.00	100.00
Intergovernmental Authority on Development (IGAD) (Number)		0.00	50.00
Professional Unit established within government (National or Federal level), or within a regional entity, with capacity to develop and manage groundwater resources (Yes/No)		No	Yes
Kenya (Yes/No)		No	No
Somalia (Yes/No)		No	Yes
Ethiopia (Yes/No)		No	Yes

Indicator Name	PBC	Baseline	End Target
Intergovernmental Authority on Development (IGAD) (Yes/No)		No	Yes
Women's share of leadership positions in agencies governing groundwater management (Percentage)		12.00	23.00
Kenya (Percentage)		18.00	30.00
Somalia (Percentage)		0.00	15.00
Ethiopia (Percentage)		17.00	25.00
Groundwater quantity or quality monitoring points established and monitored at least quarterly. (Number)		0.00	154.00
Kenya (Number)		0.00	70.00
Somalia (Number)		0.00	25.00
Ethiopia (Number)		0.00	59.00
Plans and studies conducted for groundwater development (in the short, medium, and/or long term) with community engagement. (Number)		0.00	75.00
Kenya (Number)		0.00	13.00
Somalia (Number)		0.00	6.00
Ethiopia (Number)		0.00	56.00
Groundwater information accessible to beneficiaries/groundwater users and institutions (Yes/No)		No	Yes
Kenya (Yes/No)		No	Yes
Somalia (Yes/No)		No	Yes
Ethiopia (Yes/No)		No	Yes
Intergovernmental Authority on Development (IGAD) (Yes/No)		No	Yes
Country / regional groundwater mapping or assessment		No	Yes

Indicator Name	PBC	Baseline	End Target
completed (Yes/No)			
Kenya (Yes/No)		No	Yes
Somalia (Yes/No)		No	Yes
Ethiopia (Yes/No)		No	Yes
Intergovernmental Authority on Development (IGAD) (Yes/No)		No	Yes
Horn of Africa Groundwater Information System (GWIS) established and operational. (Yes/No)		No	Yes
Kenya (Yes/No)		No	Yes
Somalia (Yes/No)		No	Yes
Ethiopia (Yes/No)		No	Yes
IGAD (Yes/No)		No	Yes
Regional Platform for Groundwater Collaboration (PGWC) functioning among participating countries. (Yes/No)		No	Yes
Kenya (Yes/No)		No	Yes
Somalia (Yes/No)		No	Yes
Ethiopia (Yes/No)		No	Yes
IGAD (Yes/No)		No	Yes
Component 3. Support to Project Magement, Knowledge and Operations			
Grievances that have been satisfactory resolved at the GRM-level (Percentage)		0.00	85.00
Kenya (Percentage)		0.00	85.00
Somalia (Percentage)		0.00	85.00
Ethiopia (Percentage)		0.00	85.00
Grievances submitted by women satisfactory resolved at the		0.00	85.00

Indicator Name	PBC	Baseline	End Target
GRM-level (Percentage)			
Kenya (Percentage)		0.00	85.00
Somalia (Percentage)		0.00	85.00
Ethiopia (Percentage)		0.00	85.00
Assessment on Environmental and Social Risk Management Capacity conducted and main recommendations involving program entities implemented (Yes/No)		No	Yes
Kenya (Yes/No)		No	Yes

Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Beneficiaries provided with access to improved water supply	Number of project beneficiaries (individuals & women %) with increased water access for domestic, agricultural, or pastoral purposes. JMP standards. Details in POM.	Semi-annually	Survey	Detailed in the OM.	PIU
Kenya - 55 % Women		Semi-annually	Survey	Detailed in the POM.	PIU
Somalia - 50% Women		Semi-annually	Survey	Detailed in the POM.	PIU

Ethiopia - 50% Women		Semi-annually	Survey	Detailed in the POM.	PIU
Water points constructed or rehabilitated under the Program that are functioning.	Number of water points operating according to the conditions for which they were designed, in terms of quantity and quality. Measured starting after 6 months of being constructed or rehabilitated. Water points should continue operating at project closure. 'Functioning' defined in the POM.	Annually	Survey	Detailed in the OM.	PIU
Kenya		Every 6 months	Surveys	Detailed in the POM.	PIU
Somalia		Every 6 months.	Surveys	Detailed in the POM.	PIU
Ethiopia		Every six months.	Survey	Detailed in the POM.	PIU
Regional groundwater institutions with increased access to improved information critical for sustainable GW management.	Number of regional and national groundwater institutions with increased access to information	Semi-annually	Periodical reports	Program data	PIU-IGAD

	critical for sustainable groundwater management. Increased access defined in POM.				
Kenya		Semi-annually	Periodical reports	Program data	PIU
Somalia		Semi-annually	Periodical reports	Program data	PIU
Ethiopia		Semi-annually	Periodical reports	Program data	PIU
IGAD		Semi-annually	Periodical reports	Program data	IGAD

Monitoring & Evaluation Plan: Intermediate Results Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Water supply schemes constructed or rehabilitated under the project in drought-prone areas with reliable groundwater resource	Definitions of 'water supply scheme' and 'reliable GW resource' provided in the OM.	Semi-annually	Periodical reports	PIU M&E system	PIU
Kenya					
Somalia					

Ethiopia					
Investment projects prepared to pre-feasibility stage, including analysis related to gender	'Pre-feasibility' includes an assessment of the resource and preliminary technical and financial solutions, and a gender analysis. Further details included in the OM.	Semi-annually	Project documentation	PIU M&E system	PIU
Kenya					
Somalia					
Ethiopia					
Nature-based infrastructure built or rehabilitated under the project	'Nature-based infrastructure' defined in the OM.	Semi-annually	Program reports	PIU M&E system	PIU
Kenya					
Somalia					
Ethiopia					
Community institutions, committees and/or Water Resources Users Associations (WRUAs) established for operation and maintenance (O&M) of groundwater infrastructure	Definitions for community institutions/committees and WRUAs included in the OM.	Semi-Annually	Project documentation	PIU M&E system	PIU
Kenya					
Somalia					
Ethiopia					

Number of hours per week women and girls spend collecting water	Reduction in the number of hours women and girls spend collecting water before and after project-funded infrastructure is operational. Number at country level, average at Program level.	Baseline, mid-term and completion	Survey	Specified in the POM.	PIU
Kenya					
Somalia					
Ethiopia					
Women's share of leadership positions in community groundwater organizations	Percentage at country level, average at Program level. 'Leadership positions' defined in the POM.	Semi-annually	Periodical reports	Survey	PIU
Kenya					
Somalia					
Ethiopia					
Hectares with sustainable water supply for irrigation provided by the project	New area irrigated by sub-projects financed by the WB operation	Semi-annually	Periodical technical reports	PIU M&E system	PIU
Ethiopia					

New policies, bylaws, regulations, guidelines or regional agreements prepared or adopted for sustainable groundwater management and use in participating countries	Includes those that are under negotiation or that are being updated, at any administrative level. Detailed in OM.	Semi-annually	Periodical reports	PIU M&E system	PIU
Kenya					
Somalia					
Ethiopia					
Intergovernmental Authority on Development (IGAD)					
Participating countries that have prepared and/or endorsed a National Groundwater Strategy or Master Plan	Detailed definition in the POM.	Annual	Periodical reports	PIU M&E system	PIU
Kenya					
Somalia					
Ethiopia					
People trained in sustainable groundwater management practices in national and regional water resources entities.	Includes exchange visits, youth training, internships. Includes IGAD staff. Disaggregated male/women.	Semi-annually	Periodical reports	Questionnaire	PIU
Kenya					
Somalia					
Ethiopia					

Intergovernmental Authority on Development (IGAD)					
Professional Unit established within government (National or Federal level), or within a regional entity, with capacity to develop and manage groundwater resources	Detailed definition included in the POM	Semi-annually	Periodical reports	PIU M&E system	PIU
Kenya					
Somalia					
Ethiopia					
Intergovernmental Authority on Development (IGAD)					
Women's share of leadership positions in agencies governing groundwater management	Each country to describe types of leadership positions and organizations/agencies(at national, sub-national, and/or TB level). Detailed in POM.	Semi-annually	Periodical reports	Questionnaire	PIU
Kenya					
Somalia					
Ethiopia					
Groundwater quantity or quality monitoring points established and monitored at least quarterly.	Detailed in the POM.	Quarterly	Periodical reports	PIU M&E system	PIU
Kenya					

Somalia					
Ethiopia					
Plans and studies conducted for groundwater development (in the short, medium, and/or long term) with community engagement.	Details included in the POM.	Semi-annually	Periodical reports	PIU M&E system	PIU
Kenya					
Somalia					
Ethiopia					
Groundwater information accessible to beneficiaries/groundwater users and institutions	Details included in the POM.	Semi-annually	Periodical reports	Survey	PIU
Kenya					
Somalia					
Ethiopia					
Intergovernmental Authority on Development (IGAD)					
Country / regional groundwater mapping or assessment completed	Completion of a GW climate vulnerability map by each country or a water harvesting potential and suitability map. Details in POM.	Semi-annually	Periodical reports	PIU M&E system	PIU
Kenya					
Somalia					

Ethiopia					
Intergovernmental Authority on Development (IGAD)					
Horn of Africa Groundwater Information System (GWIS) established and operational.	GWIS established in the IGAD GW Center, and in National GW Centers of participating countries. Functions and definition of "operational" detailed in the POM, with implications for countries and IGAD.	Semi-annually	Periodical reports	PIU M&E system	PIU
Kenya					
Somalia					
Ethiopia					
IGAD					
Regional Platform for Groundwater Collaboration (PGWC) functioning among participating countries.	PGWC established and operational. Definitions of 'platform' and 'functioning' included in the OM, with implications for countries and IGAD.	Semi-annually	Periodical reports	Program data	PIU-IGAD
Kenya					
Somalia					
Ethiopia					
IGAD					

Grievances that have been satisfactory resolved at the GRM-level		Quarterly	Periodical reports	PIU M&E system	PIU
Kenya					
Somalia					
Ethiopia					
Grievances submitted by women satisfactory resolved at the GRM-level		Quarterly	Periodical reports	PIU M&E system	PIU
Kenya					
Somalia					
Ethiopia					
Assessment on Environmental and Social Risk Management Capacity conducted and main recommendations involving program entities implemented	The assessment needs to be completed and the recommendations involving program entities (MoWI, WRA, WSTF) implemented.	At the time of the completion of the assessment	Periodical reports	Program supervision missions	PIU
Kenya					

ANNEX 1. Detailed Program Design: Phase I

1.1. KENYA: Horn of Africa Groundwater for Resilience Project

I. Strategic Context

A. Country Context

1. **Although poverty rates in Kenya seem to have fallen, formidable challenges to reducing poverty remain, particularly in rural areas**. Poverty reduction has been driven by solid growth across most sectors of the economy, together with some improvements in social safety nets targeting the poor. It has also been driven by continuing migration to urban areas, especially metropolitan Nairobi, that offer better job prospects (albeit largely in the informal sector), as well as easier access to health and education services. Kenya's poverty rate fell from 47 percent in 2005/06 to about 39 percent based on best estimates in 2012/13. 1 But improvements in income are not shared evenly among people or across regions, and inequality appears to be rising.

2. **Poverty levels are highest in the Arid and Semi-Arid Lands (ASALs), mainly in the north and northeast parts of the country**. In ASALs, agro-climatic shocks impact vulnerable livelihoods that depend on livestock and low-productivity agricultural activities; and people's assets, including their educational opportunities and attainments, are very limited. These areas are heavily affected by recurrent droughts that further exacerbate the water scarcity challenge in these areas, whose population mainly rely on livestock (90 percent). Over the past decade, losses in livestock populations due to drought related causes amounted to nearly US$1.08 billion. Cattle rustling and resource-based conflict are key sources of insecurity.

B. Sectoral Context

3. **Kenya is a water-scarce nation with 443 m^3 per capita of annual renewable freshwater supplies and with 83 percent of its land being classified as arid or semi-arid lands (ASAL).** The country has a highly variable climate and an economy vulnerable to climate shocks. Kenya's high climatic and hydrologic variability results in frequent droughts and floods. In September 2021, a national drought disaster was also declared with 2.1 million people declared food insecure. In 2018, floods displaced 230,000 people, including 150,000 children, over 700 schools were also closed with significant losses to road infrastructure, crops (about 8500 hectares) and drowning of over 20,000 head of livestock.[58] Over the long term, floods and droughts cost the economy about 2.4 percent of GDP. This exacerbates considerable inequalities among different regions of the country in terms of access to water and sanitation. Although potable water access has improved in the past decade, from 47 percent in 2000 to 70 percent in 2019, close to 14 million people (30 percent of the nation's population) still drink water from unimproved sources (surface water, unprotected dug wells/springs). Moreover, the sector has been hit by the COVID-19 pandemic, with some 38 percent Kenyans reporting pandemic-linked difficulties in access to drinking water[59].

4. **In the Arid and Semi-Arid Lands (ASALs) of the Horn of Africa, groundwater plays a critical role in building drought resilience**. In times of drought, when surface water dries or pans silt up, communities, particularly women and children, walk long distances searching for the few available productive boreholes. Drought does not only threaten the livelihoods and food security of these communities, but also creates water tensions and exacerbates

[58]Access to a basic sanitation service means a household uses an improved sanitation facility (flush/pour flush connected to a piped sewer system, septic tank or pit latrine; ventilated improved pit latrines, compositing toilet or pit latrines with slabs) which is not shared with other households.
[59] USAID, Assessing the effects of COVID-19 on access to Water, Sanitation and Hygiene 2021.

conflict and fragility within and across Kenya, particularly in the borderlands. To address the issues and to build the resilience of vulnerable communities, tapping the region's groundwater's potential is key.

5. **Despite increased investments in rural groundwater infrastructures, lower yielding and failing borehole increase the vulnerability of rural communities living in the ASAL counties.** Lack of knowledge about aquifer location, declining groundwater resources, and weak operations and maintenance (O&M) are among the main factors of this high borehole failure rate. Various studies indicate that up to about two-thirds of rural water systems in the ASALs of Kenya become severely malfunctional within 3-5 years post-construction. Although the knowledge of groundwater availability and quality in Kenya has improved over the past three decades, there is still considerable uncertainty about the available information and its use for management purposes, particularly in the ASALs.

6. **The effects of natural and infrastructure gaps are exacerbated by institutional challenges.** Despite previous attempts in 2006 and 2013 to formulate a groundwater policy, the coming into force of the 2010 Kenya constitution, and the adoption of the new 2016 Water Act to align the water sector with the devolution process, made groundwater aspects lag behind. Moreover, institutional and regulatory gaps exist in aquifers that cross basins, counties, and countries..

II. Project Description

A. Components, Subcomponents and Activities.

Component 1. Delivering inclusive groundwater services to priority areas (US$87 million equivalent)

7. **This component will finance groundwater conservation, infrastructure development and service delivery improvement activities in the five borderland NEDI counties of Turkana, Marsabit, Mandera, Wajir and Garissa, and in the selected NEDI aquifers.** A performance-based grant mechanism (PBG) will be applied under Subcomponent 1.2 to incentivize results and sustainability of the outcomes. The primary goal of this grant is to improve the quality of approximately 400 rural water supply schemes through results-based rehabilitation and construction works and by mainstreaming a post-construction operation and maintenance (O&M) regime for rural schemes in each of the five counties of focus. The PBG is defined by a set of minimum eligibility criteria (MEC) that the Water Service Provider and the County Water Department Sub-PIUs must meet to access Grant funds, as well as fixed and variable performance indicators for both rehabilitation, construction and O&M support at various stages of the project.

8. **Subcomponent 1.1. Development of nature-based solutions for strengthening groundwater conservation, sustainable use, and recharge of seven selected NEDI aquifers (US$15 million equivalent).** This subcomponent will finance investments to enhance conservation and sustainability of the NEDI region's seven aquifers through nature-based solutions for aquifer recharge and other water resources/aquifer management strategies led by the local WRUAs. Activities under this component will be developed and informed by the AAD&MP and will be implemented by the Water Resources Authority (WRA). Thus, the project will help establish, mobilize and train WRUAs covering the selected NEDI aquifers. Each WRUA participating in the program will enter into a contract with the WRA to execute its SCMPs using a CDD approach, as per the MoU between the WRA and the counties.

9. **Groundwater management, conservation, and aquifer recharge activities funded by this program include**: monitoring groundwater abstraction and compliance with WRA-issued permits by various sub-catchment users, planting of appropriate tree species in protected recharge zones and around boreholes, re-greening overgrazed areas, and construction of small scale aquifer recharge structures such as infiltration galleries, sand dams or diversion channels to use excess runoff for groundwater recharge while also decreasing the intensity of the flood waves.

10. **Subcomponent 1.2. Rehabilitation of groundwater rural water supply schemes, enhancement of the designated drought-response strategic boreholes network (DSBN) and mainstreaming O&M of groundwater infrastructure in the five borderland NEDI counties (US$ 72 million equivalent).** The subcomponent includes the following:

- *Inventory of groundwater rural water supply schemes and the designated drought strategic borehole network*. The inventories will compile comprehensive and georeferenced data for existing groundwater rural water supply schemes and the Drought-Response Strategic Boreholes Network (DSBN).

- *Rehabilitation and upgrading of groundwater rural water supply schemes.* This activity will finance the civil works to rehabilitate and upgrade existing groundwater-based rural water supply schemes through a performance-based approach.

- *Mainstreaming O&M of existing, rehabilitated, and new boreholes through an O&M Support Facility.* The project will finance an O&M support facility for existing, rehabilitated, and new schemes in the five counties of focus through a PBG mechanism

- *Development of a Web-based Information Management System (IMS) and Decision Support System (DSS) for the O&M of rural water supply systems at the county level connected to WRA's database*. The IMS and DSS will inform on the status of the systems and provide information on how well they are operated, but also on the characteristics of the borehole (i.e., depth, yield, and water quality).

- *Preparation of the County Water Sector Drought Contingency Plans for Turkana, Marsabit, Wajir, Mandera and Garissa*. The project will also strengthen Counties' drought management capacities by assisting the Sub-PIUs in developing and implementing county-wide water sector drought contingency plans in collaboration with the National Drought Management Authority (NDMA).

- *Strengthening the drought strategic borehole network.* Based on the rural water supply inventory conducted, the Water County Drought Contingency Plans, and potentially the outcomes of the Merti Feasibility Study conducted by IGAD, the project will invest in the drilling of new strategic boreholes.

Component 2. Generating groundwater information and strengthening regional and national groundwater institutions (US$45 million equivalent).

11. The main implementing agency of this component is the Water Resources Authority (WRA). Other entities such as the Transboundary Water Department and the Groundwater Division within the Ministry of Water, Sanitation and Irrigation (MoWSI), and the Regional Center on Groundwater Resources Education Training & Research will also contribute to implement the activities under the following sub-components.

12. **Subcomponent 2.1. Strengthening the enabling environment and the institutional capacity for developing and managing groundwater sustainably (US$15 million equivalent).** This subcomponent aims at: (i) addressing the lack of visibility of groundwater resources in the water legal framework through the development of a groundwater strategy and guidelines and regulations related to groundwater management and development; (ii) addressing the transboundary institutional gaps of non-existing transboundary instruments for the management of shared aquifers through the completion of the Kenyan Transboundary Policy and the drafting of the Bill, and investment in dialogue platforms for the development of a memorandum of understanding (MoU) between riparian countries. The project will also conduct and implement a specialized environmental and social capacity gap assessment to improve the social and environmental management risks within the project's participating Institutions. The project will also promote the capacity building of national and county government institutions.

13. **Subcomponent 2.2. Groundwater Information Enhancement (US$30 million equivalent).** This subcomponent focuses on enhancing the knowledge base of the aquifers systems and the application of this knowledge for management and development purposes. The knowledge will enhance decision-making and facilitate climate-informed mitigation policies and strategies. This will be done through two main tasks: (i) the development of aquifer assessments development and management plans (AAD&MP) for the selected NEDI aquifers[60], Nairobi aquifer and Nakuru aquifer, along with the required exploratory wells, and the improvement of the monitoring framework in these aquifers; (ii) the upgrade of the existing groundwater database and the development of mobile App to improve users' interface with the database.

Component 3. Project Management Support (US$3 million equivalent)

14. **This component provides technical and operational assistance to the Project Coordination Unit (PCU), the Project Implementation Units (PIUs) and the Sub-PIUs to manage the project**. The PCU, PIUs and Sub-PIUs will receive operational support, including financial management, procurement, E&S and gender experts, and communication officers. At the PCU level, the project will receive support on monitoring and evaluation of the Project, including remote monitoring and geotagging of the assets rehabilitated or built under the Project. Part of the funds under this component will be used for operating costs for the participating agencies.

Component 4. Contingent Emergency Response Component (CERC) (US$0 million)

15. **This zero-cost component will finance eligible expenditures under the Immediate Response Mechanism (IRM) in case of natural or man-made crises or disasters, severe economic shocks, or other crises and emergencies in Kenya.** Implementation of this component will follow a detailed Contingent Emergency Response Implementation Plan satisfactory to the World Bank that will be prepared as the case may be for each Eligible Crisis of Emergency. More details about this component are found in the POM.

B. Project Beneficiaries

16. **The project is estimated to reach 1,512,800 people through the rehabilitation and construction of boreholes.** The Kenyan institutions that work on groundwater at the transboundary, national and county levels will be strengthened, including the Ministry of Water Sanitation and Irrigation, the Water Resources Authority, the Regional Center on Groundwater, the National Drought Management Authority, the water service providers, and County Water Departments of ASAL counties.

III. Implementation Arrangements

17. **The project's implementation falls under different government agencies.** The National Treasury will be responsible for ensuring that project resources are budgeted for and released while the Office of the Auditor-General will be responsible for auditing project accounts. The proposed project will be implemented using existing organizational structures in line with the constitution and the Water Act, incorporating lessons learned and experience gained in the implementation of other World Bank-financed operations. While MOWSI will have an overall coordination role, the main implementing agencies will be the Water Resources Authority for subcomponent 1.1 and Component 2, and the Water Sector Trust Fund for subcomponent 1.2. The Water Service Providers and County Water Departments Sub-PIUs will implement county-specific activities through the performance-based grant managed by the WSTF. A tripartite PBG agreement will be signed between WSTF, the Water Service Providers and the County Water Departments. MOWSI will also procure some few activities under their mandate. The Regional

[60] Daua Parma alluvial aquifer, Merti aquifer, Neogene (Lamu Embayment) aquifer system, Lotikipi Basin aquifer system, Lodwar/Napuu aquifer system, Walda/Rawana aquifer system, and the Logologo-Shuur aquifer system.

Center for Groundwater will operate under the MoWSI PCU through an MoU detailing the Centre's activities and mandates. WRA and the Sub-PIUs will also sign an MOU to ensure all county level activities are well coordinated.

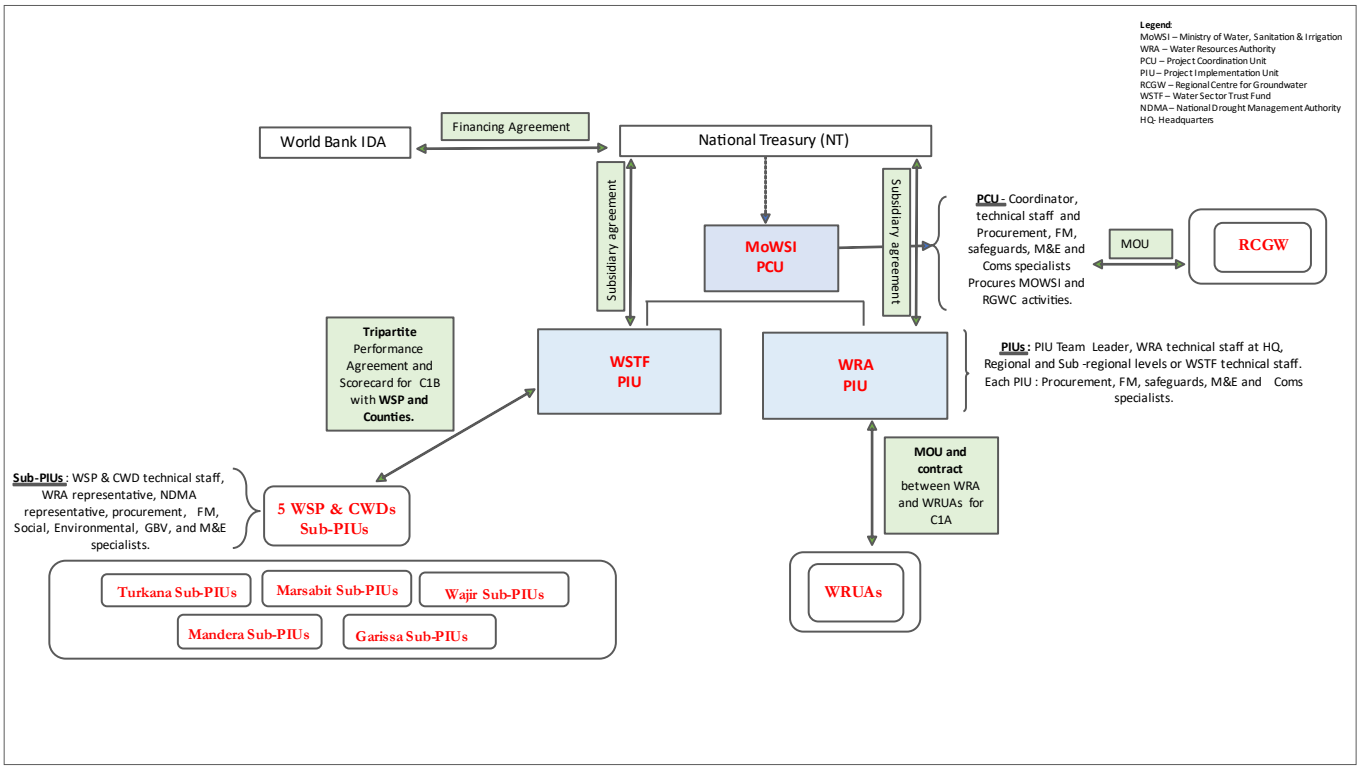
18. **The Groundwater Division of Water Resources Department in the MoWSI will be responsible for the overall project coordination.** A Project Coordination Unit (PCU) has been established and will be responsible for overall project coordination, management, communication and monitoring and reporting. As such, the MoWSI will ensure smooth, effective, and coordinated project implementation while avoiding overlaps, duplication, or conflicts (Figure 2). In particular, MOWSI will be facilitating the flow of funds, ensuring inter-agency collaboration across the different institutions that will be part of the project, and will oversee the M&E of the project. The PCU will be headed by a national project coordinator who will report to the Principal Secretary through the Water Secretary. Representatives of the Transboundary Water Department and the Groundwater Department will be part of the technical team nominated to the PCU, but won't interfere with the overall project coordination. Given that all participating entities will be procuring, implementing, and monitoring their own project activities, the PCU will be lean. Technical assistance will be provided in key areas like communications and M&E. The detailed composition of the PCU will be provided in the POM.

19. **A Project Technical Committee (PTC) and a National Project Steering Committee (NPSC) will be established by the MoWSI within six months after Project effectiveness. These committees will provide technical and policy guidance, overall project oversight.** The committees will also help the PCU and implementing entities to resolve any project coordination challenges and escalate issues as appropriate to ensure smooth and timely project management. The Principal Secretary will chair the NPSC, the Water Secretary will chair the PTC. The detailed composition of these committees will be provided in the POM.

20. **The main Implementing Agencies (IAs) will be the Water Resources Authority, mainly for Subcomponent 1A and Component 2, and the Water Sector Trust Fund, mainly for Subcomponent 1B.** The two implementing agencies (WRA and WSTF) will be responsible for implementing the project activities and will have a full technical and operational support team to ensure successful and timely delivery. Project Implementing Units (PIUs) will be established in these IAs to implement project activities. These IAs will be composed of a project coordinator, a finance management expert, a procurement specialist, a social specialist, an environmental specialist, a gender-based violence expert, an M&E specialist and a communications specialist. Each of these entities will have a designated account (DA) under the project to facilitate smooth flow of funds and reporting. Given that WSTF will be managing a performance-based grant, the WSTF DA will be flexible and without ceiling, and disbursements will be according to results forecasted for a given period.

21. **At the county level, the county Executive Committee Member responsible for Water affairs will establish a sub-PIU, including the appointed WSP, within the department responsible for water services.** There will be five WSP & County Water Department Sub-PIUs to implement activities on the ground. The composition of the Sub-PIUs will mirror that of the IAs. WSTF will sign tripartite Performance Based Grant Agreements with each of the water service providers and participating counties. WSTF will procure the support consultancies that the Sub-PIUs will received and could also potentially procure some consolidated work packages to facilitate faster and enhanced procurement and implementation .

Figure 1. Implementation Arrangements in Kenya's Project



22. **The project will be linked to the regional M&E architecture with M&E capacity in both PCU and PIUs as per the section above.** M&E officers will be trained on the usage of KOBOTOOLBOX and on the filling of the regional program customized templates**.** The Ministry will be in charge of reporting to the World Bank on a quarterly basis on overall project progress, based on inputs received from both WSTF and WRA. Both PCU and PIUS will count with a full time M&E officer to ensure results are collected on a regular basis. For the performance-based grant under Component 1B, an independent verification agent will be hired by WSTF to verify the variable part of the grant. All aspects related to component 1B and the PBG mechanisms will be capture in the PBG manual.

IV. Risks

23. **The overall risk remains substantial after mitigation measures.** The project is exposed to several risk factors rated substantial or high (including political and governance, macroeconomic, technical, institutional, fiduciary, and E&S) that could undermine the achievement of the PDO or, in the case of E&S, cause unintended negative impacts. Except for E&S risks, the task team has rated all other risks after mitigation according to the latest Bank guidance on risk assessments.

24. **Details on the project's Financial Management, Procurement, and E&S, are provided in the POM.**

1.2. SOMALIA: Horn of Africa Groundwater for Resilience Project

I. Strategic Context

A. Country Context

1. **Recovering from conflict, Somalia has been on a trajectory toward political stabilization and reconstruction**, **however Somalia is facing severe development challenges**. The country has a population of 15 million, of which 60 percent are nomadic and semi-nomadic pastoralists, and 60 percent live in rural areas. About 70 percent of the population lives below the poverty line (US$1.90 a day in 2011 purchasing power parity terms), although this figure is expected to have increased following a triple crisis of COVID-19, floods and locust's invasion in 2020. Nine out of ten Somali households are deprived in at least one dimension of poverty—monetary, electricity, education, or water and sanitation—and seven out of ten households suffer in two or more dimensions. Poverty in Somalia is driven by political fragility, conflict, insecurity and lawlessness, and exacerbated by climate emergencies. Social development is needed to fuel and sustain economic growth, through human capital development, social protection and disaster risk management, and the National Development Plan (NDP) aims at addressing the root causes of poverty.

2. **The country's vulnerability to climate change is projected to increase due to its dependency on its natural resource base.** Somalia is an arid and semi-arid country recording 300 mm of rainfall per year on average, with 75 percent of this annual rainfall being recorded during the Gu season (Mourad, 2020). It is prone to recurring droughts as well as to flooding given its arid and semi-arid climate and has experienced 14 droughts since the 1960s, one at least every four years that has caused severe food insecurity. Historical trends show droughts occurring regularly at intervals of two-three years in the Deyr (October - December) season and 8-10 years in consecutive Deyr and Gu (April - June) seasons, extending seasonal hardships. Somalia is highly vulnerable to natural disaster and the trend is increasingly alarming. From 1934 to 2000 there were 32 disasters in 84 years, from 2000 to 2017 there were 17 disasters in 17 years. The damages and losses impact alone of the 2016/17 drought was estimated to cost the livestock economy over US$1.65 billion.

B. Sectoral and Institutional Context

3. **Coverage of water is critically low compared to other countries in the region**. Access to water and sanitation remains very low in Somalia. According to the JMP 2019 data,[1] only 52 percent of the population in Somalia has access to a basic water supply. Limited regulation of private water suppliers often leads to expensive prices, forcing families to fetch water from far and from unsafe open wells. Groundwater resources, level of current use, distribution, and quality is largely unknown, thus providing a green field opportunity. The Federal Republic of Somalia (FGS) consists of a Benadir and Five Federal Member States. Those relevant to this project are Jubaland, Hirshabele, Galmudug, Puntland, and Southwest States. Also relevant to this project is Somaliland which suffers from the same low water coverage challenges. Somaliland as well as each FMS and the FGS has its own government with a dedicated ministry dealing with water resources development. The FGS national water vision is: *Sustainable, equitable and secure water for national unity, growth and well-being, for all and in harmony with nature.*

4. **The absence of a policy and regulatory framework hampers governance and growth of the water sector in Somalia.** Uncoordinated implementation by non-state actors undermines government service delivery and further contributes to the capacity conundrum in the water sector. The development of the National Water Resources Strategy presented in July 2021, represents a strong step in the positive step forward for Somalia. The water sector is underfunded in the fiscus due to limited public funds, and therefore the sector is highly reliant on donor funding and private sector involvement. The severe shortage of funding also limits the ability to pay salaries to employ and retain competent personnel.

II. Project Description

A. Components, Subcomponents and Activities

5. **Component 1. Delivering inclusive groundwater services to critical areas (US$14 million equivalent).** The project will improve access to safe water through investments in new supply and rehabilitation of existing systems, address WASH needs, and construct and rehabilitate distribution systems. Additionally, the project will conduct community mobilization and awareness-raising on health and hygiene, as well as community engagement and mobilization to build local capacity and set the basis for the co-management of priority investments.

6. **Regionality, borderlands and border districts.** Due to the regional character of the project, and benefitting from regional cooperation, the Somalia project is designed to increase resilience across its territory with a priority in the borderlands, defined here as districts close to the national borders, and in the areas between Somaliland and Puntland, meeting needs for improved water supply, as identified by the Somaliland and member state governments and project management. Project investments will tap into both shallow aquifers and also deep aquifers.

7. **Investment plans – a learning approach**. Investment plans for new water infrastructure will be based on a thorough assessment of the status of existing systems needing rehabilitation. This may be due a variety of technical and social reasons including poor siting, poor design and construction, or poor operation and maintenance due to insufficient ownership by the users, lack of finance, poor technical knowledge and lack of spare parts. The learnings from the assessment will be used to introduce measures and guidelines to promote sustainability of service delivery. Improved systems design provides an opportunity to invest in solar-powered systems and other low-carbon activities and mitigate project effects on climate change.

8. **Subcomponent 1.1. Hydrogeological surveys and research, assessing aquifers, and identifying potential water point area locations (US$2 million equivalent)**. This sub-component will undertake geological, hydrogeological and geophysical surveys in order to identify the location of promising aquifers and water points. Information from transboundary surveys will be shared with IGAD. Activities include gathering data and information required to locate, develop and construct new groundwater supply schemes and to rehabilitate old schemes. This sub-component involves information gathering on the collection of surface runoff, groundwater storage, which is used in times of water scarcity/drought, and is key to for the sustainable management of the resource, factoring in climate trends and projections, given the country's vulnerability to climate change.

9. **Subcomponent 1.2. Invest in groundwater infrastructure development, including community engagement and improved water distribution and water usage (US$11.5 million equivalent).** The project will place great emphasis on sustainability, both of the resource and of local service delivery. This sub-component builds on lessons learned by including community engagement and improved water distribution and water usage, with a focus on system robustness to ensure the continuity of service delivery during climate shocks. Resource sustainability will be addressed by ensuring that there is sufficient knowledge of the aquifer/resource and that exploitation rates are kept way below recharge ones. Coordination with the Biyoole project (P167826) will be essential to avoid duplication of resources.

10. **Sand dams will be promoted at enhancing the resilience of marginal dry-land environments by helping sustain vegetation biomass during drought periods.** The improved vegetation biomass and soil management, combined with

the increased water availability derived from these various infrastructure investments, will facilitate agricultural activities and food production. These will, in turn, increase the targeted communities' resilience to droughts and floods. Solar pumping units will lift water and then use gravity to feed auxiliary structures such as cattle troughs, water points for human and livestock use.

11. **Subcomponent 1.3. Preparation for groundwater development in focus areas (US$0.5 million equivalent).** The planning, construction and investment in improved water supply is an evolving area in terms of designs, experience and lessons learned. This sub-component provides support for such development to take place by enabling in-depth studies, feasibility studies and technical designs for groundwater development.

12. **Component 2. Establish a uniform system for groundwater development and management across Somalia (US$5 million equivalent).** This component focuses on groundwater information and governance. It includes both required short-term and interim project governance components and the development and the design of a comprehensive groundwater governance system. The system will be developed at the federal level, in close cooperation with FMS, and submitted for approval and inclusion in national and state legislation. The component also includes training to professional staff, establishing groundwater offices in the FGS, FMS and Somaliland Ministries of Water, and arranging access to required data and management.

13. **Subcomponent 2.1. Develop a groundwater governance system and foster cooperation between federal and state governments, within governments, and with civil society (US$0.8 million equivalent)**. This sub-component seeks to contribute to the development of groundwater governance in Somalia and Somaliland. Water governance seeks to address a set of key issues: who gets what water, when and how, and who has the right to water and related services, and their benefits. The two main deliveries are: (i) an interim project governance component (enabling the project to follow uniform standards) and a (ii) a proposal for a comprehensive country wide groundwater governance system developed and delivered for approval to appropriate government authorities.

14. **Subcomponent 2.2. Establish and operationalize groundwater offices at the Ministry of Energy and Water Resources at Federal and Member State Governments and in Somaliland (US$1.8 million equivalent).** The support will focus on (i) having suitable premises, equipment, computer software, or internet access, (ii) arranging an appropriate organizational structure, with clarity on positions, roles and responsibilities, workplans, and guidelines, (iii) identifying and engaging staff for new positions, and (iv) social promotion activities to ensure women are represented on the staff in leadership positions.

15. **Subcomponent 2.3. Sector-wide capacity assessment in groundwater development, management, and monitoring (US$2 million equivalent).** A needs assessment will be conducted feeding into both national and regional programs to identify how potential shortages in groundwater management can be addressed. Recommendations will include specific topics such as community development, gender inclusion, climate adaptation and mitigation, the use of renewable energy in groundwater pumping and distribution, promotion of climate-smart agriculture, and nature-based solutions for natural resources development.

16. **The project's approach to capacity development is based on strengthening capacity on sustainable groundwater access and management, key to effectively cope with and adapt to the impacts of climate change.** As part of this component, local and state leaders will be trained in basic themes of groundwater/surface water governance, the hydro-social cycle, how to share water between competing demands, conflict resolution, human needs, and linkages to wellbeing, which will contribute to enhance their adaptive capacity to a broad range of shocks

and stressors affecting the region, including drought. Delivering individual and institutional capacity development also includes (i) project management (E&S, procurement, finance, management, monitoring) and (ii) field implementation competence (community/gender development, groundwater hydrology and engineering, efficient water development and use, sustainable groundwater management, and WASH).

17. **Subcomponent 2.4.Groundwater data and information management (US$0.3 million equivalent).** This sub-component is intended to support the establishment of a groundwater section within the National Groundwater Center, focused on groundwater development, management and monitoring in Somalia.

18. **Subcomponent 2.5. The Merti transboundary aquifer - a strong case of regional cooperation, development, and learning (US$0.1 million equivalent).** The Merti aquifer, located mainly in Kenya but stretching into Somalia, will be promoted as a case for regional cooperation and development, taking advantage of a recent Feasibility Study on this aquifer developed by IGAD which identifies the scope for cross boundary groundwater development opportunities. These include enhanced water use efficiency and systems to share derived economic gains, data sharing, capacity development and investments in improved water supply.

19. **Component 3. Project Management and M&E and Internalized Knowledge Management and Learning (US$11 million equivalent).**[61] This component will finance the operational costs of one National Project Coordination Unit (NPCU) at FGS and six Project Implementation Units (PIUs) at the FMS MoEWR, Hirshabelle, Galmudug, Jubaland, Puntland and South West and Somaliland. The PCU and PIUs will be housed in new Groundwater Offices in the Ministries of Water. This component will ensure that the project is implemented efficiently. The component would also be responsible for M&E, knowledge management and learning, and evidence-based policy input.

B. Project Beneficiaries

20. **Project beneficiaries will be water insecure communities in Somalia that face increasingly challenging access due to climate change and population growth.** Total beneficiary number is estimated at 350,000. That includes:

- Rural communities. Lacking enough clean water to maintain healthy living conditions.
- Livestock owners. Delivering about half of Somalia's food security and a very large share of the countries' export value.
- Women and girl-children. Traditionally being responsible for collecting household water, often from very far distances from the household.
- Peri-urban communities, particularly those reliant on water trucking.

III. Implementation Arrangements

Federal Level Roles and Responsibilities

21. **A federal inter-ministerial project steering committee (PSC) will be established for the purposes of the project and will consist of representatives from the following federal ministries**: (a) Ministry of Energy and Water Resources (MoEWR); (b) Ministry of Finance (MoF); and (c) Federal Member State Water Ministries. The membership of the steering committee will consist of three representatives from the MoEWR, one representative from MoF, and two representatives from each of the FMS Water Ministries. The PSC will be chaired by the MoEWR. The steering

[61] It includes the cost of E&S, security and contingency.

committee will meet quarterly to review project progress, resolve cross-sectoral and cross-ministerial project implementation issues and identify policy and regulatory issues. Minutes of the PSC meetings will be provided by the National Project Coordinator.

22. **A National Project Coordination Unit (NPCU) headed by a National Project Coordinator will be housed in the Federal Ministry of Energy and Water Resources**. The National Project Coordinator will be an individual contracted by the Ministry of Energy and Water Resources (MoEWR). The Project Coordinator will be a member of the Project Steering Committee (PSC) and will also act as its secretary. The Project Coordinator will work closely with counterparts in the World Bank and the Chair of the Project Steering Committee (PSC).

23. **The National Project Coordinator will be supported by a senior groundwater specialist, and fiduciary specialists (E&S, procurement and finance) and an M&E Specialist from the MoEWR**. All supporting staff will be selected on a competitive basis and the preference will be for seconded civil servants above consultants, civil servants will receive a responsibility allowance. If qualified staff cannot be found within government, then consultants may be contracted following the World Bank procurement policies and CIM guidelines. Other specialists required for medium and short-term inputs will be appointed on an ad hoc basis.

State-Level and Government of Somaliland Roles and Responsibilities

24. **State Level Project Implementation Units.** Each member state and Somaliland will establish a State Level Project Implementation Unit (PIU) in the Ministry of Water Resources. The objective of these PIUs is to manage implementation of project activities. The PIUs will be staffed with civil servants who will receive responsibility allowances. Specialists will be contracted only if no civil servants are available. The GW4R PIUs will aim to be gender balanced and will focus on developing a cadre of women engineers or water experts.

25. **Establishment of State Level PIU's as a condition of disbursement.** To incentivise the FMS and Somaliland MOEWR's to fast-track project implementation the project will only disburse funds from DA-H and DA-I to the FMS project accounts once the full PIU in the FMS is established.

26. **Community level institutions and mobilization.** Project activities that are implemented at the community level will work through village development committees, under which water user associations will be established. These community level units should include representatives from various stakeholder groups within the village/community. The main role of these community level units will be to provide oversight to the GW4R activities implemented in their respective communities. The GW4R will channel community level project activities through existing Village Development Committees where possible. The GW4R project will draw significantly from the World Bank financed Biyoole project which is enabling government to pioneer country led community driven development.

27. **Community mobilization and planning**. Community level institutions will lead the identification and prioritization of water sector investments which fall under the scope of the project. These local and district level committees will be in charge of operating, managing, and maintaining infrastructure in their respective district/community levels, this will include construction of infrastructure (hand dug and manual drilled wells by local entrepreneurs). A robust process of community engagement will be followed whereby communities will be included in the choosing of sites and technologies. Drawing from state level humanitarian coordination lists and state prioritization plans FMS and Somaliland PIU's will remotely identify borderland communities and then undertake rapid assessments to determine whether it is technically feasible to undertake implementation. These rapid

assessments will shortlist 12 sites per FMS and Somaliland for the preparation of Construction Investment Reports by the Backstopping Engineering Firm.

Monitoring and Evaluation

28. **The project will support continuous learning and adaptable knowledge management**. The web-based Management Information System (MIS) developed under the Biyoole project to track real time performance of the project and a robust monitoring and evaluation (M&E) system will be modified and replicated to align to the GW4R results framework and will help the project focus on targets and results. This system utilises the Kobo Toolkit and is aligned with GEMS. The project will support the contracting of an M&E Specialist Organization to develop the system, support it's roll out and implementation. This subcomponent will finance baseline, concurrent monitoring of inputs and outputs and monitoring of E&S risks, conflict, and gender issues, and will focus on developing and disseminating knowledge generated through various project activities.

29. **Robust M&E frameworks developed under the Biyoole project will be revisited and strengthened for the GW4R.** The NPCU and each PIU will include an M&E specialist, and this person will be tasked with modifying the existing framework aligned with this project's results framework. A baseline report will be produced following the first quarter of the project; thereafter, monthly summary and full semesterly M&E reports will be provided to the project coordinator who will send them to the Federal Government Coordinator for consolidation and submission to the World Bank.

IV. Risks

30. The **overall risk of the project is rated as substantial.** Somalia represents a unique and complex operational environment with no shortage of risks that have the potential to derail project activities and impede achievement of the project's objectives. In addition to challenging operational environment, continued insecurity and conflict over water and land, climate-related shocks, and GBV risks, these risks relate to political and macroeconomic situation, nascent institutional capacity for project implementation and supervision, fiduciary, environment and social, and stakeholders' risks in Somalia. The project will mitigate these risks by taking a stepwise, incremental approach based on readiness criteria and with a robust emphasis on stakeholder engagement and capacity building at all levels of the rollout. This will maximize learning-by-doing opportunities to identify and address existing gaps in the project team's understanding of the risk landscape and to put in place evidence-based and more effective risk management strategies. Risk ratings' detailed explanations and mitigations will be discussed in the POM.

31. Details **on the project's Financial Management, Procurement, and E&S, are provided in the POM.**

1.3 ETHIOPIA: Horn of Africa Groundwater for Resilience Project

I. Strategic Context

A. Country Context

1. **Ethiopia is a large, predominately rural, and diverse country with a rapidly growing population. The country had an estimated population of 115 million in 2020 (the second largest in the region), more than 80 percent of whom live in rural areas**. With an average annual growth rate of around 9 percent over the past decade, Ethiopia achieved substantial progress in promoting economic, social, and human development. However, this growth slowed to 6.1 percent in Fiscal Year 2020 due to the COVID 19 pandemic, the conflict in the northern regions, locust infestation and droughts caused by La Niña. Ethiopia remains one of the world's poorest countries, with a per capita income (that is, gross national income per capita) of US$890 in 2020, far lower than the Sub-Saharan Africa regional average of US$1,646.

2. **Ethiopia is endowed with abundant water resources (both ground- and surface-water). However, the spatial and temporal (within and between years) distribution of this resource is exceptionally variable and unpredictable, which is manifested in endemic, devastating droughts and floods**. Displacement and resource-based conflicts are among the major risks in Ethiopia caused by extreme climate events (El Niño and La Niña) recurring for decades, resulting in extreme changes in rainfall patterns in these areas. As per Early Warning and Response Directorate in 2017 more than half of the country's rural districts (450 woredas) are identified as priority drought woredas of which 192 are identified as hotspot woredas that urgently need immediate interventions to avoid catastrophic impacts. Resource constraints due to hydrological variability and climate change are further exacerbated by rapidly increasing population demands and increasing competition for water resources between multiple productive sectors (e.g., agriculture, industry, hydropower, etc.).

B. Sectoral and Institutional Context

3. **Ethiopia's water resource management policy, strategy, regulations, and proclamations are well articulated and have adequate provisions for proper management of water resources**. However, assessment of efficacy of the provisions revealed that regulations on water resources management, pollution control, land use rights related to water, watershed development, and environmental quality are not effective or enacted because of weak/ lack of enforcement capacity (NBI, 2006).

4. **The Ministry of Water Irrigation and Energy (MoWIE) established in 1995, has the responsibility for groundwater management and use**. Whilst the Ministry has been renamed and restructured from time to time, the responsibility of managing water resources has remained its mandate. Following establishment of a new government in Ethiopia in September 2021, MoWIE was reorganized into two separate ministries, the Ministry of Water and Energy (MoWE) and the Ministry of Irrigation and Lowlands (MoIL). The mandate for water resources management has remained under MoWE. However, MoWE does not have adequate institutional capacity to coordinate and provide guidance to institutions and stakeholders involved in groundwater planning and management. Information available about groundwater resources in Ethiopia is inadequate and fragmented. Master plan studies of different river basins are focused on surface water resources (potential for hydropower and irrigation use), mainly in the highlands of Ethiopia, with limited resource assessments in the lowlands. MoWE's recent records show that confirmed knowledge of groundwater covers only 17 percent of the country, highlighting the need for further investments in national GW assessments. There is a strong need for integrating the information, infrastructure and use and management aspects of groundwater among groundwater actors (WSS Division under MoWE, WRM Division under MoWE and Irrigation Development Project Division under MoIL) to ensure a higher return from groundwater development and sustainable use.

II. Project description

A. Components, Subcomponents and Activities.

5. **The PDO is envisioned to be achieved through implementation of three interlinked components: i) Groundwater potential assessment and infrastructure development for inclusive community-level use; ii) strengthening groundwater institutions and information, and iii) project management, knowledge, and operational support**. Project components are further divided into different subcomponents.

Component 1: GW Potential Assessment and Infrastructure Development for Inclusive Community-level Use (US$192 million equivalent).

6. **This component will focus on carrying out groundwater potential assessments, and implementing investments for groundwater use, conjunctive use, and introduction of managed aquifer recharge (MAR[62]).** It supports investments to develop critical groundwater infrastructure in selected priority woredas as well as ensuring their sustainability. It will also promote the use of efficient renewable energy, such as solar and wind to lift water, as well as soil conservation measures and aquifer recharge. The component will have three subcomponents: (i) groundwater potential assessment and aquifer recharge; ii) utilization of groundwater for water supply (human and livestock) as well as enhancing service delivery management capacity, and iii) utilization of groundwater for irrigation.

7. **Selection criteria for prioritizing woredas to be supported under the Project**. The federal MoWE and MoIL project preparation teams in consultation with regional administrations have identified priority woredas to be financed under the Project. During the prioritization process consideration is given to i) ensure adequate representation of regions in the country; ii) maintain alignment with the regional project though prioritization of woredas in borderland areas, and iii) ensure prioritization of least served woredas based on a set of defined selection criteria. The selection criteria include the following:

- ***Priority drought prone woredas*:** chronically drought-prone arid and semi-arid areas are prioritized based on the drought prevalence ranking assessment of the National Disaster Risk Management Commission (NDRMC)
- ***Water scarcity:*** "Priority-1" water stress areas identified in recent assessment are selected
- ***Readiness for implementation****:* availability of developed groundwater sources and engineering design is given priority
- ***Absence of financing from other stakeholders***

8. **Based on the resource allocated to the project components, and detailed cost estimates of planned sub-projects, the project will support 59 prioritized woredas (55 for water supply and 4 for irrigation).** Additionally, 67 woredas are targeted to be part of the groundwater assessment interventions.

9. **Focus on borderland areas.** The prioritization of woredas is focused on borderland areas, and also considers critical challenges faced in other vulnerable areas. The prioritization of border areas will strengthen resilience of communities in border areas potentially contributing to the reduction of forced displacement and potential conflicts. 30 woredas bordering Somalia, Sudan, South Sudan, Kenya, Eritrea, and Djibouti are selected under the project for

[62] MAR is one of the groundwater storage enhancement technologies through a purposeful addition of excess water from precipitation, treated wastewater or any other source to the groundwater system or aquifer using a variety of water retention structures.

groundwater investigation/monitoring, water supply and irrigation interventions. Any intervention tapping into deeper or transboundary aquifers will need to be backed up by a corresponding aquifer sustainability assessment. This is expected to ensure that the proposed investments will not compromise the sustainability of the resource or have negative externalities. Aquifer sustainability assessment will be conducted prior to development as a prerequisite for proposed infrastructure investments (water supply and irrigation) in the border areas.

10. **Subcomponent 1.1. Groundwater potential assessment and aquifer recharge (US$67.5 million equivalent):** This subcomponent will finance: (i) groundwater potential assessment in prioritized areas, including borderland sites; (ii) design and implementation of MAR in the Dire Dawa plain, and (iii) development and management of monitoring wells that will feed into component 2 in targeted water supply and irrigation subproject sites/ woredas under subcomponent 1.2 and 1.3 described below. Groundwater sources in the priority areas will be regularly monitored and the information will be used for sustainable management and efficient utilization of the groundwater sources.

11. **Subcomponent 1.2. Utilization of groundwater for water supply (human and livestock) and enhancing service delivery management capacity (US$119.5 million equivalent).** This subcomponent is divided into two parts:

12. **Subcomponent 1.2a. Increasing rural and pastoral access to water supply services (US$113.5 million equivalent).** This subcomponent 1.2a will focus on groundwater-based rural water supply infrastructure/system development with an emphasis on strengthening resilience at the community level against droughts and extreme temperatures. It will finance: i) groundwater source development; ii) feasibility studies and engineering designs, and iii) construction and rehabilitation of small and medium scale[63] multi village water supply schemes for community and livestock demand, including water distribution to public water taps.

13. **Subcomponent 1.2b. Enhancing service delivery management capacity (US$6 million equivalent)** This subcomponent 1.2b will build on existing practices and lessons from ongoing projects (such as the One WaSH), and apply lessons learned on operational and managerial challenges by existing rural water systems, to ensure the sustainability of rural water supply schemes through strengthened community management arrangements. It will adopt GoE's existing experience of community-led water supply management arrangement though Water Supply, Sanitation and Hygiene Committees (WaSHCOMs), building on existing guidelines and manuals.

14. **Strengthening community level scheme management arrangements.** Under subcomponent 1.2b, MoWE will provide Technical Assistance (TA) support in the development of training materials and conduct a series of trainings in planning, works execution and the operation and maintenance (O&M) of water supply facilities for woreda water offices and WaSHCOMs. The project will: i) support the establishment of WASHCOMs at water point and Rural Piped Schemes level and train their members; (ii) enable WASHCOMs to design and implement an effective fee collection system for scheme O&M through setting standard tariff structures that will cover operation costs; iii) ensure the establishment of WASHCOM bank accounts, and strengthening of bookkeeping practices; (iv) build technical capacity of WASHCOMs to respond to changes in the environment (supply-demand), and rapid response in conducting repairs and maintenance tasks through provision of technical trainings and facilitation of easy access to technical service providers, and awareness of aquifer dynamics including effects of climate change; (v) facilitate legalization of the WASHCOMS based on MoWE's existing manuals and guidelines, and(vi) ensure that women constitute a target share of leadership positions in WASHCOMs.

[63] Aligned with the Government's standard for rural water supply, each public water taps constructed under the medium multi village rural piped scheme (RPS) will consider provision of at least 25l/c/d to communities living in 1 km radios from the water point. Based on the MoWE's experience and related guidelines medium sized multi village RPSs could include up to 15 water points.

15. **Establish and strengthen water quality monitoring.** Subcomponent1.2b will support the establishment, strengthening, and maintenance of the water quality monitoring systems in project woredas. The subcomponent will also benefit from the groundwater monitoring stations that will be developed under subcomponent 1.1.

16. **Subcomponent 1.3. Utilization of groundwater for small scale irrigation[64] (US$5 million equivalent).** This subcomponent will finance: i) groundwater source development; ii) feasibility studies and engineering designs, construction/ rehabilitation of small-scale groundwater-based irrigation infrastructures, including climate-resilience considerations, and iii) introduction of the concept of farmer-led irrigation (FLID), where farmers are the decision makers, to improve agricultural water use. This subcomponent will be informed by the findings of subcomponent 1.1. Boreholes drilled for testing purposes, that are ready for production, will be optimally utilized.

17. **The project will finance pressurized irrigation development through sub-projects to be developed in two phases in the Borena zone of the Oromia region.** The intervention will consist of two subprojects (about 200 hectares the first one and 175 the second one) , located in Southern border of Ethiopia, will establish different types of multipurpose water infrastructure for ensuring sustainable water supply for irrigation development. They will propose measures and technologies to address irrigation-based, Climate Smart Agriculture development and the integration of optimum crop-livestock and forage production. These measures are key to enhance local preparedness and adaptation to droughts. The project will consider solar powered irrigation system (SPIS) as an alternative energy source to reduce operating costs and provide a clean energy alternative to fossil fuels, enabling the development of low carbon irrigated agriculture.

Component 2: Strengthening groundwater institutions and information (US$8 million equivalent)

18. **This component will strengthen the enabling environment and institutional capacities for groundwater assessments, development and management as well as improve the country's groundwater management information system**. Implemented by Water Resource Management Division at MoWE, this component will finance the following two sub-components:

19. **Subcomponent 2.1. Strengthening institutional capacity for groundwater management (US$3 million equivalent):** This subcomponent finances technical assistance, capacity building and institutional strengthening, including support to national water resources management entities. It aims to improve the MoWE WRM division's groundwater governance and management capacity through: (i) development of a groundwater strategy in line with the national policy; (ii) establishment of a groundwater management and regulation framework, and (iii) building institutional capacity through the design and implementation of training programs for groundwater resources exploration, management, and planning.

20. **Subcomponent 2.2. enhancing groundwater information and monitoring systems (US$5 million equivalent):** This subcomponent will finance interventions that will enhance groundwater information management systems, which are critical to ensure the sustainable management of the resource. Activities will include: (i) development of supportive tools for groundwater information access, monitoring and use, and (ii) consolidation, production, and dissemination of groundwater data and information.

[64] Small scale irrigation is considered to have 200 hectares or less in Ethiopia.

21. **The project will also support the MoWE WRM Division in the preparation of a regionally-aligned national groundwater risk mitigation assessment, with focus on climate resilience, and support transboundary collaboration and dialogue on groundwater resource management through regional platforms/forums.** The national groundwater risk mitigation assessment will make a vital contribution to both the preparation of the national risk mitigation Strategy and the regional water risk assessment to be caried out by IGAD. These activities are expected to enhance Ethiopia's collaboration with IGAD and member countries on groundwater management. The consultative approach of developing the groundwater risk mitigation strategy, with IGAD and member states, is also expected to contribute to transboundary groundwater policy, collaboration, and risk management capacity.

Component 3: Project management, Knowledge, and operational support (US$10 million equivalent). This component will finance consultants and operational costs of the Project Coordination and Management Unit (PCMU) at MoWE and the Project Management Teams at MoWE (water supply project implementation team and WRM project implementation team) and MoIL (irrigation development project implementation team). This component will finance the procurement of goods, services, training, and operating costs including: (i) implementation support in the form of technical experts, and equipment, including assistance in capacity building; (ii) project management and coordination costs between implementing agencies; (iii) specialists on procurement and contract management, financial management, and environmental and social management to support the corresponding staff at the Ministry, and (vi) knowledge management.

Component 4: Contingent Emergency Response Component (CERC) (US$ 0million). This component is a mechanism for financing eligible expenditures in the event of an eligible crisis or emergency, such as a major natural disaster. A Contingent Emergency Response Manual is included in the POM, specifying fiduciary, E&S, monitoring and reporting, and any other necessary coordination and implementation arrangements. All expenditures under the CERC will be in accordance with World Bank OP 10 (Investment Project Financing—IPF) and will be reviewed by the Bank for eligibility prior to disbursement.

B. Project Beneficiaries

22. **The project targets hotspot areas requiring the most urgent interventions and benefit the most vulnerable groups**. Sub-project locations will be selected based on criteria including nutrition and health problems, crop and livestock losses, lack of access to basic services, prevalence of drought and flood and disease outbreaks, positive environmental and development impacts, and absence of financing from other sources. The project will benefit an estimated 1.48 million people living in the selected drought prone and water stressed areas.

III. Institutional and Implementation arrangements

23. **A National Groundwater Management Steering Committee (NGWMSC) will be established and maintained throughout the project duration.** The NGWMSC will be the highest governing body for the project and provide overall governance and strategic guidance for the project. The NGWMSC will be chaired by the minister of Ministry of Water and Energy or any official delegated by the minister. The NGWMSC will comprises the State Minister for the Water Resource Management Division, and the State Minister for the Water Supply Division at MoWE, the Ministry of Finance, the Ministry of Irrigation and Lowlands and the World Bank. Members of the steering committee could expand as required and may include the Minister of Agriculture, the Agriculture Transformation Agency, the Ethiopia Metrological Institute, and others. The NGWMSC will be responsible for reviewing and approving the annual work plan and budget of the project and reviewing progress reports on a quarterly basis.

24. **A Project Management and Coordination Unit (PMCU) will be established at Ministry of Water and Energy under the Water Resource Management Division.** The PMCU will carry out the overall coordination, planning, monitoring, and supervision of the project. The PMCU will be responsible for: i) consolidation of the annual project action plan and budget for all components; ii) consolidation of quarterly physical progress and Interim Financial Reports; iii) channeling of resources to project implementing teams at WSSD-MoWE and IDPD-MoIL based on approved annual work plans and budgets, and iv) coordinating implementing agencies and serve as a secretariat to the National Groundwater Resource Management Steering Committee. The PMCU will deploy critical staff including a coordinator, water resources management specialists, M&E specialists etc. The PMCU will also be responsible for planning, implementation, and regular reporting of activities under component 2 and 1.1.

25. **Implementation of subcomponent 1.2 (infrastructure development for water supply) will be managed by a Project Implementation Team (GWPIT) to be established under the MoWE Water Supply and Sanitation Division.** As much as possible priority will be given to utilizing the capacity of existing PMUs such as the OWNP-CWA PMU. Depending on the outcome of the ongoing restructuring of MoWE, fiduciary and safeguard responsibilities may be centralized for component 1.1 and 1.2. In such case, the project will strengthen the capacity of the centralized fiduciary and safeguard structures at the Ministry. Detailed staffing will be presented in the POM. Similarly, a Project Implementation Team will be established at the Irrigation Development Projects Division of the Ministry of Irrigation and Lowlands for the implementation of Subcomponent 1.3 (infrastructure development for irrigation). Each Project Implementation Team will be responsible for the planning and implementation of their respective subcomponents. While the project will finance the establishment of these implementing teams, potential use of existing PMUs and their staff at WSSD-MoWE and IDPD-MoIL will be explored.

26. **All project interventions and procurement activities will be managed and implemented at the federal level.** However, implementation could be delegated to regions, after adequacy of implementation capacity is confirmed through capacity and risk assessment (procurement, financial management and E&S) acceptable to the World Bank. In addition, the POM will provide details of other preconditions (PMUs, staffing) that regions should fulfil to be delegated for implementation. It is also suggested that a project focal person should be assigned at the selected regional water bureaus as a demonstration of commitment and readiness for implementation of project activities.

27. **At community level, WASH Committees (WASHCOMs), will be established to engage proactively during design and implementation of infrastructure and entrusted to operate and manage services.** WASHCOMs are legally recognized community management structures that exist within the Ethiopian context. They are mandated to operate and manage community level water supply infrastructure and promote sanitation interventions. WASHCOMs were legally recognized at regional levels (adopted by proclamations at varying stages) and have been promoted as a standardized modality within the water sector in Ethiopia. The WASHCOMs are made up of 7-10 members elected by the community (of which 50 percent are female). In several regions (namely Bennishangul-Gumuz), WASHCOMs are headed and managed by women. The program will adopt this management model to ensure complementarity with existing community level implementation modalities and will adapt lessons learned to enhance the capacities of these established structures.

Monitoring and Evaluation (M&E)

28. **The M&E arrangement is designed to monitor inputs, outputs, and outcomes.** The monitoring and evaluation process will be directly linked to the Results Framework which contains output and outcome indicators for the project. The monitoring will look at both the processes and result in terms of i) what and how activities are identified,

planned, and accomplished; ii) examining progress -checking whether activities are implemented according to plan; iii) scrutinize the process in terms of how activities are undertaken and who is involved/organized, and iv) measure end results/effects.

29. **Institutional arrangements for M&E:** the PCMU at MoWE and Project Implementation Teams (PITs) within MoWE (water supply PIT and water resource management PIT) and PIT at MoIL will establish clear institutional arrangement to ensure systematic and periodic reporting of the project outcomes and outputs. The project will finance the structure created for handling M&E tasks within the PCIU and PITs at the federal level. Staffing details will be elaborated in the POM.

30. **Reporting Arrangement:** The PCMU at MoWE will be responsible for consolidating progress reports and sharing quarterly reports with the NGWSC and the WB, no later than 45 days after the end of each fiscal quarter. PITs within MoWE and MoIL will be responsible for preparing and submitting reports to the PCIU at MOWE based on agreed reporting formats and schedules. To facilitate standard and consistent reporting among the different actors, the PCIU will develop a reporting guideline that will be used by all actors. Reporting schedules, formats and staffing details will be further elaborated in the POM. The project will use the GEMS platform for remote supervision, real-time risk and E&S monitoring, and portfolio mapping and coordination across sub-projects.

31. **Baseline assessment:** Three months after effectiveness, a Woreda-level baseline for key project indicators will be compiled and documented. All targeted woredas will be included in the baseline assessment. The recently conducted National WaSH Inventory II will be considered during the assessment. A household survey in targeted woredas will be carried out by the PCIU to document the baseline situation. This will be used as an input during mid-term and end-term evaluations.

IV. Risks

32. **The overall risk rating for achieving the proposed project's development objective is rated Substantial.** The project is exposed to several risk factors rated substantial or high (including political and governance, macroeconomic, technical, institutional, fiduciary, and E&S) that have the potential to undermine the achievement of the PDO or, in the case of E&S, cause unintended negative impacts. Except for E&S risks, the task team has rated all other risks after mitigation according to the latest Bank guidance on risk assessments.

33. **Details on the project's Financial Management, Procurement, and E&S, are provided in the POM.**

1.4. IGAD: Horn of Africa Groundwater for Resilience Project

I. Strategic Context

1. **IGAD was established in 1986 as the Intergovernmental Authority on Drought and Development (IGADD) to coordinate the efforts of the Member States (MS) in combating desertification and promoting efforts to mitigate the effects of drought.** It is a Regional Economic Community (REC) in Eastern Africa and one of the eight building blocks of the African Economic Community of the African Union (AU). It currently has eight MS: Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan, and Uganda. As per IGAD's agreement signed by the Heads of State and Government in 1995, its mission is to promote regional cooperation and integration, based on the principle of subsidiarity and complementarity, to add value to the MS' efforts in the priority areas of: (i) food security and environmental protection, (ii) economic and social development, and (iii) conflict prevention, management, and resolution. Water Security is central to all the priority areas.

2. **To support a concerted effort by IGAD towards the sustainable development of the regional water resources, IGAD Water Unit (IWU) was created in 2015, housed at the Directorate for Agriculture and Environment.** IGAD has specialized centers located in MS (e.g., Climate Prediction and Application Center (ICPAC), the Center for Pastoral Areas and Livestock Development (ICPALD), and the Center for Conflict Early Warning and Response (CEWARN), as well as long-standing programs such as the Drought Disaster Resilience Sustainability Initiative (IDDRSI).

3. **The IGAD MS recognize that the collaborative use of the region's water resources is an essential element of the HoA's peace and stability, poverty reduction and economic growth.** IGAD's Regional Strategy (January 2016) acknowledges the current and potential conflicts on transboundary water resources under Pillar 3: Peace and Security. During 2012-15, IGAD implemented the EU-funded regional Inland Water Resources Management Program (INWRMP), which helped strengthen the national policy and legal frameworks for water resources management, and water information systems. INWRMP produced a Regional Water Policy in 2015, which was endorsed by the Ministers of Water Affairs, who also instructed IGAD to proceed with the formulation of a Regional Water Protocol, which remains at the negotiation stage. Specifically, on groundwater, IGAD conducted consultancy studies on managed aquifer recharge in the transboundary Merti aquifer (Kenya/Somalia), and water harvesting pilot projects in the transboundary areas of Kenya/ Uganda/ Ethiopia/ Djibouti/ Somalia.

4. **The IGAD-HYCOS (Hydrological Cycle Observation System) project, launched in 2011, aimed to develop a sustainable and integrated water resources management system in the region**. The need for integration of incoming data from observing stations into the existing database, vandalism of equipment leading to large data gaps, and poor after-sales service/support by suppliers beyond the project lifetime, were among the challenges faced. Additionally, the Project implementation period was insufficient to meet the ambitious objectives, and sustainability of the IGAD Regional Centre for Water Management was not achieved.

5. **In 2015, the Ministers of Water Affairs approved the establishment of an IGAD 'Water Unit' (IWU) to support MS and increase their capacity towards enhanced regional collaboration**. Tasks of the IWU include (i) the development of regional water resources policies and strategies, (ii) the development and implementation of regional water-related protocols and legal frameworks, (iii) the development and implementation of bi- or multinational programs and projects concerning their transboundary water resources, (iv) upon request by the MS, assist in the development and/or update the national policies and legal frameworks, and development of national programs and projects, (v) capacity building of MS on transboundary water resources management, and (vi) facilitate generation and sharing of water resources data and information, among others.

6. **Since 2019, IGAD has been implementing the World Bank financed 'Horn of Africa Groundwater Initiative' (HoA-GWI) (P169078).** This US$2.7 million CIWA grant aims to support selected IGAD countries to prepare for the

development and management of groundwater through strengthening knowledge systems, building their capacity, and assessing the feasibility of specific investments. This project builds on the experience and lessons learned from the HoA GWI, to further enhance IGAD's capacity and role in regional integration.

Project Description

A. Project Components and Sub-Components

7. **The project has been structured around two main components that address gaps in information about regional groundwater resources and the capacity to manage them and promote regional collaboration and harmonization in groundwater policies and guidelines.** A third project component supports project management, coordination, and M&E, and includes Third-Party Monitoring (TPM) of the regional Program. Each component includes activities that will be conducted at the regional or transboundary level, complementing those that will be undertaken at the national and local levels as part of country proposals of participating countries of the Program.

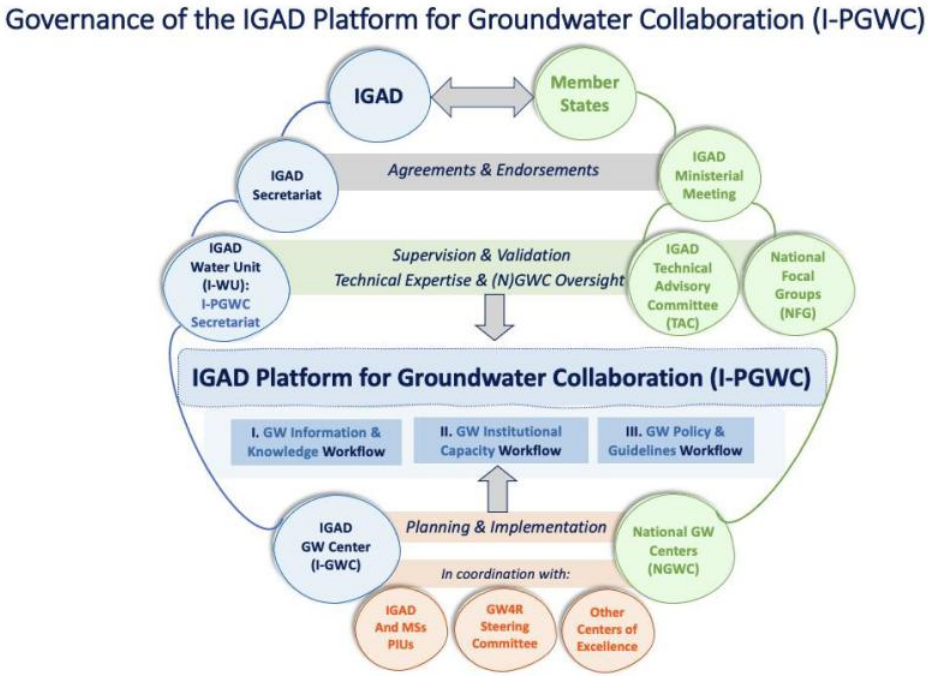
8. **Acknowledging that the region's knowledge and capacity gaps are significant, and that addressing them requires a prolonged collective effort, the Project supports the establishment of the *IGAD-Platform for Groundwater Collaboration* (I-PGWC).** The PGWC provides a cross-cutting approach for MS to collectively identify short-, medium- and long-term priority actions for groundwater knowledge generation, information sharing, capacity building and harmonization (see Box 1). The proposed governance of the PGWC is reflected in Figure 1. Components 1 and 2 will support agreed priority activities and studies identified under the I-PGWC. The IWU will coordinate the prioritization, definition of scope and implementation modalities, and validation of outcomes of regional activities in consultation with MS under the I-PGWC. IGAD's WU will also coordinate the implementation of regional activities with the PIU's in the participating MS.

Box 1. IGAD Platform for Groundwater Collaboration (I-PGWC)

The I-PGWC provides a multi-year, action-oriented approach to address the extensive needs for information, capacity building, and enhanced collaboration among IGAD MS. Prioritization of activities will be conducted through the involvement of National Focus Groups and agreed upon by MS according to their respective needs. To avoid creating additional institutions or collaboration bodies, the I-PGWC will operate within the existing frameworks for cooperation among IGAD MS, using established collaboration mechanisms and procedures. Governance arrangements of the I-PGWP are shown in Figure 1 (below).

The I-PGWC is structured around several workflows, each one developing a program of activities for the short-, medium- and long term, addressing structural challenges in information generation and sharing, capacity building, and updating groundwater policies and regulations. The Platform can be thought of as the 'glue' that cuts across project components, and brings together priority actions under a shared, long term regional vision.

Figure 1. *Governance arrangements of the I-PGWC*



9. **Component 1. Strengthening regional capacity and information for sustainable groundwater management (US$2 million equivalent).** The overall objective of this component is to strengthen the ability of government institutions in the MS, and of IGAD's WU, to sustainably develop the region's groundwater resources. Building on the achievements of earlier and ongoing projects, IWU will coordinate the setting up of the IGAD Platform for Groundwater Collaboration (I-PGWC), under which the activities of Components 1 and 2 will be implemented. IWU will also coordinate the creation of a regional network of groundwater centers, composed by existing institutions in the region. The scope and structure of the IGAD Groundwater Center (IGAD-GWC) and of the National Groundwater Centers (NGWC) located in MS, have been defined in consultation with MS as part of the ongoing HoA-GWI project. Efforts towards institutional strengthening and information management at a regional level will complement activities carried out by the individual MS. This component will have three sub-components:

10. **Subcomponent 1.1. Creating the Framework for Regional Collaboration (U$1.3 million equivalent)**

a) Setting-up the IGAD regional Groundwater Center (IGAD-GWC). The regional GWC will help in expanding and sharing groundwater information in the region, as it will be linked to a network of National Groundwater Centers (NGWC). The proposed IGAD-GWC will support MS in enhancing the sustainable management and utilization of groundwater through resources mobilization, data information sharing and capacity building. The centre will provide an up-to-date information database on the physical and socio-economic dimensions of shared groundwater and its sustainable use under future conditions and uncertainty related to climate change, population growth, economic development, and regional trade and cooperation. This will feed into both regional and national planning, decision-making and projects implementation. The center will be in charge of receiving, processing, storing and sharing MS information related to the availability, status and risks of groundwater resources in the HoA. The GWC will also prepare regular updates and assessments of groundwater related information to support MS in the management of their groundwater resources. This Subcomponent will support the hiring of dedicated staff

implementing the mission of the GWC, the development of the data-base and GIS, the establishment of the IT infrastructure, implementation of the HoA Groundwater Information System (HoA-GWIS) and the establishment of links with the HYCOS database. The HoA-GWIS will include a database of key groundwater information and GIS layers built on recently completed hydrogeological maps and studies in the IGAD region.

b) Setting-up a network of National groundwater centers (NGWC). Data collection and transmission, as well as data analysis for shared watercourses, are invariably carried out at national level. The establishment of a national groundwater center (NGWC) in every MS is crucial for the development of harmonized and centralized groundwater information base at the country and regional level. The NGWC will be established in an existing scientific or government institution involved in groundwater research or management, and will be in charge of data collection, compilation and dissemination, including storage, data processing, retrieval, quality control and dissemination. The Subcomponent will also support the operationalization of the network of NGWCs.

c) Setting-up the IGAD Platform for Groundwater Collaboration (I-PGWC). Regional knowledge generation and capacity building activities, joint studies and transboundary case studies will be implemented through the I-PGWC, for which IWU will fulfill the role of Secretariat. Activities under the I-PGWC will be prioritized, and implementation modalities defined, in consultation with MS. This Subcomponent will support the establishment of the I-PGWC and the development of its first multi-year workplan. The governance arrangements for the I-PGWC match the project implementation arrangements, with TAC Members forming the Steering Committee of the Platform and the National Focus Groups, fulfilling an advisory role, and providing technical expertise. The I-PGWC's first multi-year plan will be discussed and validated in a regional workshop.

11. **IGAD will also facilitate the establishment and operationalisation of Groundwater National Focal Groups (GW-NFGs) in the MS, as a governmentally convened working group that should serve and augment existing groundwater management structures in the MS**. The NFGs also provide advisory services to the I-PGWC. A target will be set for women's participation in these working groups. The aim is to improve and enhance the related institutional capacity in IGAD MS and expand interest for groundwater and influence decision-making towards increased and integrated groundwater investments within the region. MoU's will be signed between IGAD and the selected NGWCs, and support will be provided to link them to the HoA GW Information System and HYCOS database.

12. **Subcomponent 1.2. Strengthening & Harmonizing Regional Capacity (US$0.3 million equivalent)**

a) **Design of a regional capacity building program.** NGWCs will also co-develop a pipeline of capacity-building activities to strengthen research technical and management skills, professional skills, and professional development. A series of four regional training modules will be designed to be implemented through the IGAD-GWC and the network of NGWCs in MS. Over the past years IGAD has conducted several needs assessments in the field of groundwater management in transboundary, national institutions and agencies involved in groundwater management. This activity will compile the information from previous needs assessments carried out under the CIWA supported HoA-GWI, and update and deepen them by identifying priorities and target groups for every Center, specifically considering gender gaps at various levels and in different professional fields.

b) **Implementation of a regional capacity building program through the network of IGAD GWC and the NGWCs.** This Subcomponent will support targeted trainings and capacity building programs for civil servants and professionals from institutions and agencies in MS. Examples of priority areas for capacity building include integration of groundwater management into river basin organizations, groundwater data collection and

management, principles of data sharing and data compatibility across countries, RBOs, NGOs, and other interested parties, among others. Targets will be set for women professionals' participation in training and capacity building.

13. **Subcomponent 1.3. Building a regional information base on groundwater (US$0.4 million equivalent).** This encompasses the following:

a) Building regional data sets- The aim of this activity is to kick-start the establishment of a groundwater knowledge base by IGAD-GWC and the NGWCs through the compilation of relevant GW information from a wide range of sources, including public reports, datasets and maps, scientific research, and information shared by MS. To facilitate harmonization of standards and procedures in groundwater data collection, processing, and dissemination in the region, IGAD-GWC and MS will work on the development of data collection guidelines, on the identification of soft and hardware needs for data / information processing, and on the identification and establishment of mechanisms / networks for data and information sharing. This activity will support the operational costs related to the regional information base related to IGAD-GWC. The staffing and other operational costs of NGWCs will be covered by the respective national Project budgets. The IGAD GWC will not duplicate functions carried out by NGWCs, but instead, it will bring together related issues under one umbrella, when relevant, and offer a shared, up-to-date information base on the physical and socio-economic dimensions of groundwater and its sustainable use under future risks and uncertainty.

b) Joint Regional Studies & Assessments- IGAD will add value by contributing to the generation of new knowledge at a regional scale through the financing of joint studies and assessments by MS. In coordination with the IWU and the NGWCs, the IGAD-GWC will elaborate a list of priority topics for a regional study or assessment with their objectives and proposed scopes (further details about agreed priorities are provided in the POM). Examples of joint priority research areas include groundwater risks and threats, assessment of natural groundwater recharge/discharge dynamics and artificial recharge potential to better understand the role of groundwater as a buffer against drought, groundwater pollution and degradation (saline intrusion, etc.) and socioeconomics of groundwater (governance, economics, gender, social inclusion, and policy). The IGAD-GWC will develop the methodology for joint studies in consultation with the NGWCs, and prepare common ToRs for the studies/assessments that each MS will conduct. IGAD-GWC will coordinate these project activities at a regional level, convene expert workshops, and compile the results into a regional knowledge product.

14. **Component 2. Promoting regional integration and collaboration (US$2.1 million equivalent).** This component complements the previous one through the active promotion of regional integration policies, guidelines and standards governing groundwater development and management, and through enhanced collaboration in the study, planning and management of shared groundwater resources in the HoA. Activities will build on and complement past and ongoing efforts supported by a range of regional and international institutions and programs in the region, specifically those that promote gender equality in access to water, in decision making on water resources allocation, and in sharing economic opportunities.

15. **Subcomponent 2.1. Strengthening regional integration through harmonization of policies and guidelines (US$0.3 million equivalent).** This encompasses the following:

a) **Developing guidelines and tools for groundwater management.** Support the development of guidelines and tools for sustainable groundwater exploration and management in the HoA. Guided by the results of Gap Analyses conducted under the ongoing HoA-GWI, priority topics will be identified in consultation with MS

(more details on agreed priority topics are included in the POM). This activity will coordinate and support targeted consultancy initiatives by MS on the development of policies, standards and guidelines for sustainable groundwater development.

b) **Working towards a regional policy on groundwater management.** Develop and present for ministerial endorsement a regional groundwater policy and strategy and consolidate a sustainable institutional and policy framework for trans-boundary aquifers. This activity will also address the lack of institutional, legal and policy mechanisms in relation to trans-boundary aquifers through the support of gender aware Transboundary Diagnostic Analyses (TDAs) and the development of Strategic Action Plans.

16. **Subcomponent 2.2. Supporting transboundary dialogue (US$0.3 million equivalent).** This sub-component supports activities promoting trans-boundary dialogue and collaboration on groundwater issues among IGAD MS, including the coordination of the 3rd IGAD Water Dialogue on Groundwater for Resilience. The subcomponent will also support one study tour focused on sharing experiences of groundwater management in dryland regions.

17. **Subcomponent 2.3. Supporting transboundary case studies (US$1.5 million equivalent).** **Feasibility studies on Transboundary Aquifers**- Building on the achievements of HOA-GWI, the IWU will support IGAD MS in characterizing the complexity of two or three TBAs, as well as the preparation of joint cooperation mechanisms, such as bilateral/regional agreements and arrangements, including aquifer development and management plans (details on selected aquifers to be studied are included in the POM). Under the HOA-GWI, the IWU is implementing the Feasibility Study (FS) for the Merti Aquifer, which includes a complete aquifer mapping, a socio-economic assessment, and a bankable investment project, as well as the ESIA. The FS, in consultation with the government of Kenya and Somalia, is expected to provide options either for joint or bilateral developments and to identify potential sources of financing for development. IGAD will use the results of the Merti study to develop, in consultation with MS, model ToRs for Feasibility Studies for the sustainable development of TB aquifers.

18. **In general, the feasibility study is expected to generate a pathway for the joint monitoring, modeling, governance and eventually development of the shared aquifer.** The development of a joint model for the aquifer will contribute to a common understanding of the dynamics and potential of the TB groundwater resource that will facilitate the dialogue among the riparian countries to develop a shared vision and support decision-making on the future development and management of the aquifer. The steps and approaches used to prepare the phased development of a TB aquifer could also be applied to national aquifers in MS. IGAD will facilitate joint meetings of the participating countries to agree on joint monitoring framework on groundwater use, groundwater levels as well as the groundwater quality. IGAD will coordinate in consultation with MS the selection process for the TB aquifers that will be supported through this activity.

19. **This subcomponent will also provide ad-hoc support to nascent and ongoing initiatives by MS that wish to engage in a dialogue or collaborative activities with neighbouring countries on the development of shared TB groundwater resources.** The development of transboundary groundwater resources is a process that includes the establishment of trust among riparian countries. IGAD will facilitate TB dialogue and collaborative initiatives by MS through tailored support that, depending on the status of current collaboration, can include trust building initiatives, fact finding missions, support to joint studies or monitoring initiatives, and support to the establishment a joint transboundary working groups or committees.

20. **Component 3. Project coordination, management, and monitoring and evaluation (M&E), including Third Party Monitoring (US$5.9 million equivalent)**

21. **Subcomponent 3.1. Third Party Monitoring (US$3.8 million equivalent).** Entails the contract of a Third Party Monitoring (TPM) entity to independently monitor the entire regional program, thus covering the TPM of the Somalia, Kenya and Ethiopia projects as well as of the IGAD Regional component. This subcomponent also includes IGAD's M&E support to supervise the TPM contract. The TPM entity will have the following responsibilities:

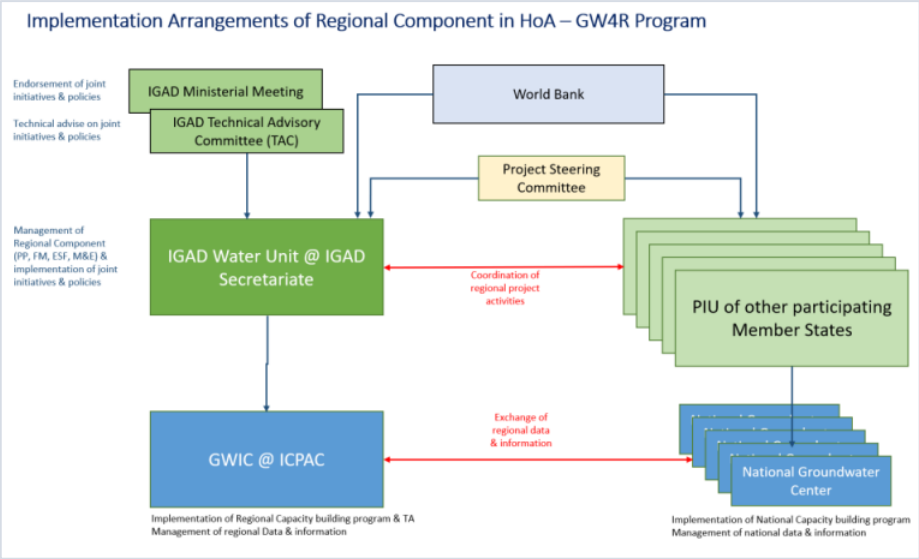
- To monitor procurement and financial management transactions, including physical verification of works/construction sites, beneficiaries and assets acquired under each project;
- To report to the World Bank, IGAD and country implementing agencies on the status of project implementation and contract administration, and compliance with procurement, E&S and financial management procedures in support of its mandatory reviews, verification and audits;
- To help ascertain whether the projects are reaching their intended results based on the view and evidence from the ground and in compliance with World Bank E&S policies;
- To report on challenges faced by the implementing entity and field consultants involved in implementation and supervision;
- To support institutional capacity building initiatives to strengthen the procurement, financial management, E&S, and project implementation capabilities of the implementing agencies; and
- To compile lessons from activity verification and output monitoring to generate reports on lessons learned and recommendations for improving monitored projects.

22. **Subcomponent 3.2. Project Coordination and Management, and support to IWU capacity (US$ 2.1 million).** Support the required planning, management, implementation, coordination, and validation of the regional activities by IGAD and MS through the project's Steering Committee, composed of the MS TAC Members, and the Platform for Groundwater Collaboration (PGWC). Support the hiring and training of key IWU and IGAD-Groundwater Centre (IGAD-GWC) staff in charge of the management and coordination of the IGAD project, including procurement and administration of project activities, financial management and Environmental and Social Framework (ESF) implementation. This subcomponent also supports office, operational and logistical costs related to the project's implementation and management, travel of project staff as part of the implementation of regional project activities, and fees for audits and other consultancies supporting IGAD in fulfilling its fiduciary obligations.

III. Implementation arrangements

23. **The project will be implemented by IGAD, which has extensive experience in managing World Bank-financed projects.** Its experience includes the Development Response to Displacement Impacts Project (DRDIP-II) project, IGAD Building Disaster Resilience to Disasters through Risk Management and Climate Change Adaptation project, and the Regional Pastoral Livelihoods Resilience Project (RPLRP). IGAD's performance has been satisfactory. The Finance Unit (part of the IGAD Secretariat) is headed by a Finance and Administration Director, a qualified accountant with many years of experience working on World Bank-financed projects. The Finance Unit includes 15 accountants. IGAD will dedicate an Accountant to work on the project. Additional finance staff, financed from the project, will be hired if needed. The IWU will be strengthened to actively manage and implement the project activities. The implementation arrangements are summarized in Figure 2.

Figure 2. Schematic implementation arrangements



24. **Project Steering Committee.** The Project will benefit from the already existing Project Steering Committee (PSC) of the HoA-GWI Initiative, who will undertake the same function of approving the Work Plans and Budget, and providing inputs on behalf of the countries.

25. **Coordination between the IWU and other IGAD departments/other IGAD agencies.** The IWU has been able to work closely with ICPAC, ICPALD and IDDRSI on all water related activities. The IWU has provided support to ICPAC on water issues in their Workshops/meetings and Webinars. It has provided similar support to ICPALD, including meetings involving the development of Dams in the Dawa river (shared between Ethiopia, Kenya and Somalia) and also on sand dams in the ASAL areas. The IWU provides support to IDDRSI, in handling all water related activities in the Cluster zones within cross border areas. The Unit works closely with all the Divisions at the IGAD Secretariat, including the Economic Cooperation Division (e.g., water activities under the IGAD Master Plan as well as Water Projects/Programmes under AU-NEPAD PIDAPAP 2 Process) and the Social Development Division (e.g., issues of WASH under COVID). The IWU also supported a Special Envoy for South Sudan on groundwater development activities

26. **Coordination between the Water Unit and IGAD MS.** IGAD's Water Unit coordinates all Water Projects/Programmes at the IGAD Secretariat. While coordinating these activities, the IWU works closely with the Technical Advisory Committee (TAC), a long-standing Committee on water matters formed by Senior representatives from the MS. The TAC reports to their respective Water Ministers.

27. **IGAD's Technical Advisory Committee meetings**: The TAC meetings are held twice per year according to their standing regulations. However, there can extra-ordinary TAC Meetings as need may arise.

Monitoring & Evaluation (M&E)

28. The monitoring and evaluation (M&E) system will be directly linked to the Results Framework, which contains output and outcome indicators for the Project. Throughout implementation, the project's monitoring will look at both the process and the results in terms of i) what and how activities are identified, planned, and accomplished; ii) examining the progress -checking whether activities are implemented according to plan; iii) scrutinize the process in

terms of how activities are done and who are involved/organized; and iv) measure end results/effects. Further details on the M&E approach of the project are provided in the POM.

29. **Details on the project's Financial Management, Procurement, and E&S, are provided in the POM.**

ANNEX 2. Program Costs: Phase I
(All costs in US$)

Component	SOMALIA	KENYA	ETHIOPIA	IGAD*	TOTAL
C1. Delivering inclusive groundwater services to priority areas	**14 M**	**87 M**	**192 M**		**C1: 293 M**
C1.A Hydrological surveys, assessing aquifers, and identify potential water point locations	2 M				
C1.B. GW infrastructure development and community engagement for water use	11.5 M				
C1.C. Preparation of GW development in focal areas	0.5 M				
C1.A. NBS- Strengthening conservation, sustainable use and recharge of the 7 NEDI aquifers		15 M			
C1.B. Rehabilitation of groundwater rural water supply schemes, enhancement of the NDMA designated drought-response strategic boreholes network (DSBN) and mainstreaming O&M of groundwater infrastructure in the five borderland NEDI counties		72 M			
C1.A. GW potential assessment and aquifer recharge			67.5 M		
C1.B. Utilization of GW for water supply (human and livestock)			119.5 M		
C1.C. Utilization of GW for Irrigation			5 M		
C2. Generating groundwater information and strengthening regional and national GW institutions	**5 M**	**45 M**	**8 M**	**4.1 M**	**C2: 62 M**
C2.A. Establish GW governance system and arrangements for cooperation and coordination	0.8 M				
C2.B. Establish and operationalize GW offices at Ministry of Water at Federal and Member States governments	1.8 M				
C2.C. Sector-wide capacity building in GW development, management, and monitoring	2 M				
C2.D. GW Data and information management	0.3 M				
C2.E. Merti aquifer study and development	0.1 M				
C2.A. Strengthening the enabling environment and the institutional capacity for developing and managing groundwater sustainably		15 M			
C2.B. Groundwater & Drought Information Enhancement		30 M			
C2.A. Strengthening Groundwater Institutional Capacity			3 M		
C2.B Enhancing Groundwater Information and Monitoring			5 M		
C1.A. Creating the framework for regional collaboration				1.3 M	
C1.B. Strengthening & harmonizing regional capacity				0.3 M	
C1.C. Building a regional information base on groundwater				0.4 M	
C2.A. Strengthening regional integration				0.3 M	
C2.B. Supporting transboundary collaboration				0.3 M	
C2.C. Supporting transboundary case studies				1.5 M	
C3. Project Management, M&E, Knowledge and Learning	**11 M***	**3 M**	**10 M**	**2.2 M**	**C3: 30 M**
Third Party Monitoring				**3.7M**	
**Includes contingency and risk and safeguard arrangements*					
C4. Contingent Emergency Response Component (CERC)	N/A	0.0	0.0	N/A	
TOTAL	**30 M**	**135 M**	**210 M**	**10 M**	**385 M**

**Budget reflects the structure of the overall regional Program. IGAD's project is focused on Component 2 of the regional Program.*
**IGAD's C3 budget includes M&E support (0.1M) for the Program's TPM (3.7M)*

ANNEX 3. GHG Accounting and Economic and Financial Analysis

Greenhouse Gas Accounting

1. **This annex presents the ex-ante Greenhouse Gas (GHG) accounting for the proposed Horn of Africa Groundwater for Resilience Program (GW4R).** The present analysis focuses on the first three beneficiary countries – Ethiopia, Kenya and Somalia – and estimates the environmental externalities of the main proposed investments under Component 1 Delivering inclusive groundwater services to priority areas – as the main intervention[65] with direct impact on the beneficiaries and largest budget allocation. Directly aligned to the assumptions used in the Economic and Financial Analysis (EFA), this GHG analysis presents the main environmental externalities of the project.The valuation of these environmental benefits has been included in the EFA using the social price of carbon (SPC), as recommended by the World Bank guidelines.

2. **The environmental externalities of the project were estimated using the EX-ACT tool[66], developed by FAO to provide estimations of the impact of AFOLU (agriculture, forestry and other land use) projects and policies on the carbon balance.** The tool also includes a module that allows for the evaluation of the carbon footprint of inputs, including energy use, which is highly relevant for the present analysis. The carbon balance is defined as the net balance across all GHGs expressed in CO_2 equivalents (CO_2e) that will be emitted or sequestered due to project implementation (WP), as compared to a business-as-usual scenario (WOP). EX-ACT is a land-based accounting system, estimating CO_2e stock changes (i.e., emissions or sinks of CO_2) expressed in equivalent tons of CO_2 per hectare and year. The tool was designed using mostly data from the Intergovernmental Panel on Climate Change (IPPCC) Guidelines for National Greenhouse Gas Inventories (NGGI-IPCC, 2006), which furnishes EX-ACT with recognized default values for emission factors and carbon values in soils and biomass (the so-called “Tier 1 level” of precision).

3. **For the GW4R Program, the GHG accounting calculations have focused on the most important set of changes introduced by the proposed investments: the shift from diesel powered to solar powered pumping in the water supply schemes developed or rehabilitated by the project.** The program is expected to have other, secondary impacts on carbon emissions, from irrigated agriculture (albeit on a limited number of hectares), better access to water for livestock, etc., yet the lack of available information prevents a full quantification. Nevertheless, it is expected that the energy consumption component (the transition from fossil fuel to solar) would account for the large majority of environmental externalities generated by the project.

4. **For each participating country, a yearly volume of diesel fuel consumption has been estimated, based on the proposed water supply schemes parameters and the experience of similar schemes already in operation.** Typical hours of operation of diesel generators were estimated for the characteristics of the water schemes, together with their consumption and the potential for replacement with solar. As such, the present analysis has assumed, depending on the type of scheme, between 4 and 10 hours of operation per day, with a typical consumption of 4-5 liters of diesel per hour of operation. When aggregating the estimated number of water supply schemes, as also included in the EFA, the results indicate the full transition to solar pumping proposed by the Program could avoid the consumption of 12,301 m^3 of diesel fuel per year (5,621 m3/year in Ethiopia, 5,840 m3/year in Kenya, and 840 m3/year in Somalia). These country-specific values have been inputted in Ex-ACT’s module on inputs to generate the estimated reduction in CO_2 emissions that the Program could generate.

[65] The economic and financial analysis (EFA) of the project has been developed using the same approach of focusing on the investments of Component 1.
[66] The recently launched version 9 of Ex-ACT was used for the present analysis.

5. **The GHG accounting results indicate that the GW4R Program could generate positive environmental externalities, with a total mitigation potential of 502,621 tCO_2-e over 20 years.** Specific activities under Component one of the Program are relevant to emissions reduction, including solar pumping, community gardens, soil and water conversation practices and nature-based solutions. The results of Ex-ACT analysis are summarized in Table 1: in each participating country, the resulting net emissions are negative, ranging from -39,455 tCO_2eq in Somalia to -188,697 tCO2eq in Ethiopia and –274,469 tCO_2eq in Kenya. For the entire Program, the average annual reduction in emissions is -28,276 tCO_2eq. These results have been valued using the social price of carbon (SPC), as per the World Bank guidelines and the resulting environmental benefits have been integrated in the economic benefit flow of the EFA.

Table 1 GHG Accounting results

	Ethiopia	Kenya	Somalia	Total
Estimated avoided diesel consumption (m3/year)	5,621	5,840	840	**12,301**
Average annual emissions (tCO2eq/year)	-12,580	-13,723	-1,973	**-28,276**
Total emissions (tCOeq)	-188,697	-274,469	-39,455	**-502,621**

6. **The valuation of environmental externalities further enhances the economic justification of the Program**. As estimated through the GHG accounting, the Program is estimated to reduce GHG emissions by 502,621 tCO_2-e over 20 years, as a result of transitioning from fossil fuel to solar energy pumping. In line with the World Bank guidelines[67], the GHG emissions results have been valued using the social price of carbon, using the gradually increasing estimates at both low and high ranges. When evaluating these environmental benefits using the social price of carbon estimates, the overall economic results of the Program increase to an NPV of US$ 160.8 million and an EIRR of 20.6 percent (assuming the low range pricing – increasing from 42 US$/$tCO_2eq$ in 2022 to 64 US$/$tCO_2eq$ in 2041) and to an NPV of US$175.8 million and an EIRR of 22.1percent (assuming the high range pricing – increasing from 84 US$/$tCO_2eq$ in 2022 to 128 US$/$tCO_2eq$ in 2041).

7. **This annex presents the economic and financial analysis (EFA) for proposed Horn of Africa Groundwater for Resilience Program (GW4R).** The present analysis is developed for the first three beneficiary countries – Ethiopia, Kenya and Somalia – and explores the Project's economic justification using the cost-benefit analysis methodology. At this stage, the EFA is focuses on estimating the benefits generated by Component 1 *Delivering inclusive groundwater services to priority areas*, as the project's main source of direct impact on the targeted beneficiaries. A valuation of environmental benefits – directly with the GHG accounting exercise – has been included in the EFA.

8. **The EFA has been developed on the experience of other projects and initiatives supporting improved access to water in the region**. In addition, the exact mix of water supply schemes that the project will invest in will evolve as the project formulation advances and will depend on the diagnostics conducted at the onset of implementation. As the available information demonstrates, there are important site-specific differences in number of potential beneficiaries, the productive activities that might be impacted (agricultural land and livestock owned), and the gap in water supply that the investments could address. In addition, the exact mix of water supply schemes that the project will invest in will evolve as the project formulation advances and will depend on the diagnostics conducted at

[67] World Bank *Guidance note on shadow price of carbon in economic analysis* (Nov 2017).

the onset of implementation. For these reasons and more, the results of this analysis should be considered indicative of the Program's potential economic impact. During implementation, it is recommended that specific economic and financial analyses be conducted for the key investments proposed, both to test their economic justification and to inform the subsequent phases of this operation.

9. **Overall, the EFA results indicate that the Program's interventions under Component 1 are economically justified, generating an indicative net present value (NPV, at 6 percent) of the additional benefits of US$145.2 million and an economic rate of return (EIRR) of 19.3 percent (over a 20-year period), not accounting for environmental externalities.** At country level, the returns on investment vary depending on the respective allocations and the choice of investments, with NPVs ranging from US$9.9 million in Somalia to US$53.5 million in Ethiopia and US$81.8 million in Ethiopia, and EIRRs from 17.7 percent in Ethiopia to 22.1 percent in Somalia and 22.5 percent in Kenya. These economic results are satisfactory, given that several other program benefits (such as the impact on livestock, the increase in resilience of targeted beneficiaries, the strengthening of communities' capabilities for managing infrastructure, etc.) could not be yet quantified due to limited data availability. In addition, these economic results are robust when testing several sensitivity scenarios, including reduced outreach, delays in implementation and cost overruns. The valuation of environmental externalities further enhances the economic justification of the Program.

Identification of benefits

10. **The project is expected to generate an important set of quantifiable and non-quantifiable impacts through its interventions.** In particular, Component 2 is aimed at improving the regional and national capacities or sustainable groundwater management and use and its proposed activities are expected to support and reinforce the concrete investments planned under Component 1, but also beyond the project implementation boundaries and timeline. As such, the economic analysis is being primarily focused on testing the economic justification of the proposed investments under Component 1. These investments will result in improved water access for the targeted communities, which in turn will support crop and livestock agricultural activity (improving food security), will improve health conditions of the local populations, will reduce time spent in accessing water and will support the diversification of livelihoods and job creation.

11. **In particular, the Program's investments are expected to generate several benefit streams for the targeted beneficiaries, who will benefit financially through improved productive activities and in terms of improved health and other socio-economic outcomes**. Specifically, the interventions will reduce the financial cost and the time spent for accessing water, will improve agricultural productivity, will reduce livestock losses, and improve the animals' health and market value, and will reduce the beneficiaries' costs for healthcare. In addition, improved access to water will have longer-term benefits for the overall health of the beneficiaries, can reduce school absenteeism and empower for women for other productive activities. The new infrastructure is also expected to create job opportunities in the local communities, both for the operation and for the maintenance and repair of the equipment.

Methodology

12. **For each participating country, sub-component 1.2 represents the largest building block (between 42 percent and 67 percent) of the budget and its investments generate most of the quantifiable benefits for the targeted beneficiaries**. As such, the focus of the present analysis has been to identify the most representative investments under this sub-component and model their economic impact for the beneficiaries. Yet, given their particularities and prioritization, each country has proposed a different indicative set of investments. This reality is reflected in the different cost per capita proposed at this stage, which reflects the different type of service level that investments would have. Table summarises some of the key considerations under this sub-component, as used in the analysis.

13. **As the Program will invest in the necessary diagnostics to identify the location specific solutions for water supply, an indicative ex-ante economic and financial analysis has been developed for the main types of water supply schemes.** For Ethiopia, the analysis has considered the medium scale rural water supply schemes (308 schemes considered for the analysis), for Kenya new and rehabilitated boreholes (500 units, half new, half rehabilitated), and for Somalia new improved shallow wells (75), deep wells (15), sand dam water supply schemes (10), and rehabilitated shallow wells (50).

Table 2. Sub-component 1.2 investments

	Estimated number of beneficiaries	Component 1.2 costs (US$ m)	Indicative cost per beneficiary (US$/capita)	Representative investments considered in the analysis
Ethiopia	1,480,000	123.5	83	Small-Medium scale rural water supply schemes
Kenya	1,500,000	72.0	51	New and rehabilitated small schemes and boreholes
Somalia	350,000	12.7	36	New deep wells, improved shallow wells, sand dams, and rehabilitated shallow wells
Total	3,630,000			

14. **The proposed investments and their quantification are to be considered indicative, as interventions are expected to be refined as the program's design evolves and implementation commences.** As such, the present analysis is to be considered indicative and rooted in program's budgets at design stage. Nevertheless, this CBA analysis follows the standard methodology recommended by the World Bank, as described in Gittinger (1982), Belli et al. (2001) and is aligned to the recent guidelines for economic and financial analysis.

15. **Investment costs per scheme**. Based on information provided by the country teams and on the experience of recent projects, the unit cost of each of the representative schemes has been established, ranging from a minimum of US$6,825 to rehabilitate a shallow well (as part of a larger package in a specific area) in Somalia to a maximum of US$364,370 for the entire medium rural piped scheme (PRS) proposed in Ethiopia. These investment costs have been considered as occurring in year 1 of each respective scheme, unless otherwise indicated in the specific budget of the scheme. Operation and maintenance (O&M) costs have been included at a rate of 5 percent, based on available information from similar schemes and from expert opinion. The life expectancy of the schemes has been considered 20 years for new investments and 15 years for rehabilitation.

16. **Estimated number of beneficiaries/users**. Similarly, the experience of previous projects, together with the maximum operational water supply capacity of the proposed schemes provided an indication on the number of users (individual, not households) that could benefit for their daily water requirements from the schemes. These estimates were used to aggregate the individual additional benefits that could accrue due to improved water access.

17. **Main benefits**. For the present analysis and based on the available literature, the methodological choice was to concentrate on the two most important and immediate benefits from improved water access: avoided losses in productivity (i.e., avoided lost days of work due to illness) and avoided healthcare costs due to illness. For the avoided losses in productivity, it was assumed that each household has seven members, out of which 2.5 could be considered engaged in productive activities (i.e., the two parents and partially one of the older children). Improved water access would result in a reduction of 5 days per year of sickness that would impair productive activities, and the daily rural wage or equivalent earning was considered US$3 in Kenya and US$2 in Somalia. For the avoided costs of healthcare,

it was assumed that half of household members would get seriously sick once a year to require medical care worth US$2. These estimates are rather conservative, but counteract the potential over-estimation of the number of users by scheme. This approach was conducted for Kenya and Somalia only, as for Ethiopia the economic analysis of the rural piped scheme (RPS) scheme was readily available from the ONEWASH National Programme (OWNP).

Table 3. Financial analysis of the main water supply schemes

	Ethiopia	Kenya		Somalia			
	Medium rural piped scheme (RPS)	New borehole	Rehabilitated borehole	New improved shallow well	New deep well	Sand dam WDS	Rehab. shallow well
Avg. number of users	3,629	3,782	3,782	1,440	23,040	7,452	288
Average cost (US$)	364,370	126,481	90,597	32,770	290,150	221,950	6,825
NPV (US$, 15/20-y)	313.3	149,949	136,212	28,535	649,078	147,544	3,286
IRR (%)	18.7%	22.7%	35.8%	18.7%	45.4%	15.5%	14.1%
Break-even O&M Min. user fee (US$/HH/year)		5.0	3.4	6.2	5.0	5.0	3.0

18. **Financial results**. The two benefit streams have been aggregated on an annual basis and compared against the costs of each scheme to determine the net present value (NPV) of the additional benefits and the economic internal rate of return, as summarised in Table . All the representative schemes demonstrate profitability under these assumptions, with positive NPVs and higher than cost of capital EIRRs.

19. **User fees and break-even for O&M**. As the management and user fee collection systems that would accompany these investments have not yet been defined fully as part of the Program design, the above mentioned analysis has excluded the fees from economic estimates. Were they to be included, the above results would be higher. Nevertheless, to preliminarily test the minimum level of user fees that would cover the O&M costs, a break-even analysis was conducted under the assumptions that all users would contribute. The results indicate that modest contributions of US$3 to US$6 per household per year would be required to break-even on O&M.

Economic Results

20. **The overall benefits of the program have been aggregated using the economic results of these indicative investments against the program's economic costs.** The analysis has been conducted over 20 years (5 years of implementation and 15 years of capitalization), in line with profile of investments proposed under the GW4R. The social discount rate has been set at 6 percent, In line with the *Technical Note on Discounting Costs and Benefits in Economic Analysis of World Bank Projects.* For each participating country, the total economic costs have been estimated by removing taxes and by avoiding double-counting (as the cost of the investments are already reflected in the individual models).

Table 4. Economic results

	Base Scenario		Base Scenario + low SPC ENV valuation		Base Scenario + high SPC ENV valuation	
	NPV	***EIRR***	***NPV***	***EIRR***	***NPV***	***EIRR***
	(US$)	*(%)*	*(US$)*	*(%)*	*(US$)*	*(%)*
	(@6%, 20-y)	*(20-y)*	*(@6%, 20-y)*	*(20-y)*	*(@6%, 20-y)*	*(20-y)*
Ethiopia	81.8	17.7%	89.0	18.7%	96.2	19.7%
Kenya	53.5	22.5%	61.4	25.2%	69.2	28.1%
Somalia	9.9	22.1%	12.2	26.2%	12.2	26.2%
Regional	**145.2**	**19.3%**	**162.6**	**20.9%**	**177.6**	**22.4%**

21. **These economic results are robust when testing several sensitivity scenarios, including reduced benefits, delays in implementation and cost overruns**, as summarized in Table . This analysis shows how scenarios of higher costs and delays in implementation could lower the economic returns.

Table 5. Sensitivity analysis

	NPV @ 6%, 20-y	EIRR
	(US$ mn)	(%)
Baseline Scenario	145.2	19.3%
Increased project costs +5%	140.8	18.5%
Increased project costs +10%	136.3	17.8%
Increased project costs +20%	127.4	16.5%
Delayed benefits +1 year	119.3	16.5%
Delayed benefits +2 year	94.8	14.1%
Delayed benefits +3 year	71.7	12.1%
Decreased add. benefits -10%	121.8	17.7%
Decreased add. benefits -20%	98.3	15.9%
Decreased add. benefits -30%	74.9	14.0%

ANNEX 4. Gender and Citizen Engagement

A. Gender: Gaps, Actions and Indicators

1. **Three main gender gaps will be addressed by the Program.** Actions related to addressing the gender gaps are mentioned in section IV E of the main text.

(a) Gender Gap No. 1 **Women and girls in rural areas play a leading role in providing water for the household, and spend a disproportionate amount of time fetching water.[68]** In Ethiopia, a survey concluded that 37 percent of households have to travel 1- 2.5 hours to obtain water and about 15 percent travel over 2.5 hours [69], with women and girls bearing primary responsibility for this task. 30 percent of households get water from unprotected wells outside of the household; 22 percent from a protected well outside of the household; and 25 percent from natural sources. Less than 1 percent of Ethiopian households that participated in the survey reported having access to piped water on their premises. In Kenya, an estimated 80 percent of women spend 1 to 5 hours a day looking for firewood or water. On average, Kenyan women work 15 to 17 hours a day while men work only 6 to 7.[70] In Somalia, a survey found that 42.2 percent of women obtain water from communal water taps, and 15.9 percent from boreholes.[71] Data on the time that women invest in fetching water in Somalia is not available but anecdotal evidence suggests that it could be similar to, if not higher, than the time devoted by rural Ethiopian and Kenyan women.

Water collection considerably shortens women's and girls' time available for educational, leisure, childcare and income-generation activities.[72] Women with disabilities, the elderly as well as pregnant and lactating women often see their capacity to walk to collect water due to health-related restrictions as limited, and often rely on other women or aid workers to meet their water needs. Forcibly displaced women,[73] women with disabilities, and women belonging to Sub-Saharan African Historically Underserved Traditional-Local Communities (SSAHUTLC) may encounter additional challenges to access water sources.

During water collection, women experience a high exposure to GBV due to complex, inequitable, and often coercive governance of water supply in urban and rural areas by a myriad of state and non-state actors [74]. Travels to fetch water often takes place at night to avoid the high temperatures and the long lines at water points. Night travelling increases their exposure to security risks during the long walks to water points and boreholes [75]. Risks are particularly high in areas with armed groups presence and other FCV-linked challenges. In Kenya, cases of 'sextorsion' and sexual harassment have been reported at or on the way to WASH facilities. [76] In Somalia, 96 percent of reported

[68] Nigussie, L.; Barron, J.; Haile, A. T.; Lefore, N.; Gowing, J. 2018. Gender dimensions of community-based groundwater governance in Ethiopia: using citizen science as an entry point. Colombo, Sri Lanka: International Water Management Institute (IWMI).
[69] Central Statistical Agency, 2014. Ethiopia time use survey 2013: How women and men spend their time. Addis Ababa: Central Statistical Agency.
[70] Hyun, Mia; Okolo, Wendy; Munene, Aurelia, 2020. USAID Kenya Gender Analysis Report. Washington DC: Banyan Global.
[71] Ministry of Women and Human Rights Development (Government of Somalia), 2020. Somali Women Forging Alliances to Safeguard Equal Rights For All. Government of Somalia.
[72] UNICEF, 2016. UNICEF: Collecting water is often a colossal waste of time for women and girls. New York: UNICEF.
[73] There is a higher proportion of women to men in refugee camps. In some refugee camps in neighboring Uganda, for example, over 70 percent of the refugee population are women and children. In refugee camps and IDP settlements, governments and host communities are often reluctant to allow the drilling of boreholes that could encourage refugees to remain for the longer term in their area pushing women to seek water outside camps and settlements exposing them to protection and security risks during long walks to get water -including SGBV.
[74] Reuters, 2016. Over 17 million women and girls collect water in Africa, at risk of rape and disease. Reuters.
[75] GBV Sub-Cluster, Somalia, 2018. Somalia National GBV Strategy 2018-2020. Mogadishu: GBV Sub-Cluster.
[76] Kewasnet and ANEW, 2020. Sex for Water Project. Promoting Safe Space for Girls and Yung Women in Kibera Project. Kewasnet and ANEW.

GBV are women and girls, 76 percent of which are internally displaced. [77] In Ethiopia and Djibouti women are also exposed to GBV while collecting water.

(b) Gender Gap No. 2 **While women and girls are the main fetchers of water to the households, they usually play a secondary role in groundwater-linked decision-making.** Data from Ethiopia indicates that men are about six times more likely than women to participate in collective action groups (24 percent and 4 percent of men and women, respectively) and five times more likely to hold a leadership position.[78] Evidence from Kenya also shows that women are less likely than men to participate in collective action groups.[79] Similarly, studies in Kenya and Ethiopia find that women are under-represented as members and leaders in WUAs.[80] Lack of time, a patriarchal culture discouraging membership, little education and limited decision-making power in the household are often cited as the most important factors constraining the involvement of women in collective action groups, particularly in decision-making. In Somalia, most women respondents of a 2020 survey indicate they want more opportunities to participate in decision-making (92 percent) and that they would have more access to a decision-maker if that person was a woman (86.6 percent). [81]

Overall, in the Horn women's low participation in collective action groups is the result of multiple forms of structural patriarchy, disability, including male control over income, norms of SSAHUTLC, land and productive assets. [82] Evidence suggests that the active participation of women in collective groups helps them to build self-esteem, confidence, leadership skills, social networks and solidarity.[83] The lack of community centers for meetings is another barrier to women's participation in decision-making. In the absence of physical spaces to interact, communities often see their power to participate collectively in development planning limited.

(c) Gender gap No. 3**. Women are under-represented in technical and managerial roles in agencies governing groundwater management**. This is similar to global patterns (that show that women comprise on average only 18 percent of staff in water institutions and are equally under-represented in technical and managerial roles)[84] as well as regional (sub-Saharan Africa) patterns where women comprise, on average, 20 percent of staff, 11 percent of engineering staff, and 13.5 percent of managers. In Ethiopia, specifically, women comprise on average 21 percent of staff in water institutions, and only 7 percent of engineering staff and 12.5 percent of managers.[85] This female under-representation could be due to multiple factors. For example, girls have lower education opportunities than boys;

[77] UNOCHA, 2021. Humanitarian Needs Overview for Somalia 2021. New York: United Nations Office for the Coordination of Humanitarian Affairs.
[78] Mogues, T.; Petracco, C.; Randriamamonjy, J. 2011. The wealth and gender distribution of rural services in Ethiopia: A public expenditure benefit incidence analysis. IFPRI Discussion Paper 01057. Washington, DC, USA: International Food Policy Research Institute (IFPRI).
[79] World Bank. 2018. Kenya Gender and Poverty Assessment 2015-2016 : Reflecting on a Decade of Progress and the Road Ahead. World Bank, Nairobi.
[80] See Yami M (2013) Sustaining participation in irrigation systems of Ethiopia: What have we learned about water user associations?; Imburgia, L., Osbahr, H., Cardey, S, (2020). Inclusive participation, self-governance, and sustainability: Current challenges and opportunities for women in leadership of communal irrigation systems; and Adams, W.; Watson, E.; Mutiso, S. (1997). Water, Rules and Gender: Water Rights in an Indigenous Irrigation System, Marakwet, Kenya.
[81] Ministry of Women and Human Rights Development (Government of Somalia), 2020. Somali Women Forging Alliances to Safeguard Equal Rights For All. Government of Somalia.
[82] World Bank. 2020. From Isolation to Integration: The Borderlands of the Horn of Africa. Washington DC: World Bank.
[83]Woldu, T.; Tadesse, F.; Waller, M-K. 2013. Women's participation in agricultural cooperatives in Ethiopia. Ethiopia Strategy Support Program (ESSP) Working Paper 57. Washington, DC, USA: International Food Policy Research Institute (IFPRI).
[84] World Bank. 2019. Women in Water Utilities: Breaking Barriers. World Bank, Washington, DC.
[85] Data collected as part of a baseline assessment for the Second Ethiopia Urban Water Supply and Sanitation Project (P156433).

women often have lower enrollment in STEM programs; occupational sex segregation policies and practices often limit women's professional aspirations; lower access to training opportunities for female staff; and gender biases in hiring and advancement. Gender inequity at the level of policy, regulation and management limits the voice and participation of women decision-makers and can perpetuate inequities throughout the sanitation sector.[86] The participation of women in agencies governing groundwater management varies between the participating countries, even though women are under-represented in all three contexts. More detailed baseline information on key institutions will be collected during implementation. The diagnosis of this gender gap and the actions to address it will benefit by the analytical work and technical tools of the World Bank Equal Aqua Platform.

B. Citizen Engagement

2. **Citizen engagement is embedded in the design of the project through its community-driven development (CDD) approach, and specifically through the activities that allow communities' participation in groundwater use and management.** The Task Team is mindful about the multiple development dividends of securing an active community participation at all phases of the project's cycle. The team prepared a background paper on groundwater and CDD to better understand the benefits of community engagement in groundwater use and management. Across the participating countries, there is a wide range of community-level management structures that have garnered various degrees of success. The program intends to scale up successful community management structures where possible to ensure complementarity and integration with national level legislation, frameworks and guidelines. In countries where management structures are ill-defined or require establishment, the Program will seek to build on lessons learned from national and regional experiences.

3. **There are multiple development dividends that stem from communities' engagement in the management and use of groundwater.** The Task Team has identified and analyzed lessons learned from groundwater projects conducted through a CDD approach. The main lessons identified suggest that: self-governing groundwater arrangements convened by beneficiary communities are more sustainable than those top-down imposed; communities are the best positioned stakeholders to control groundwater pollution and overexploitation; communities are better positioned than most stakeholders to monitor aquifers' volume; technology can facilitate monitoring efforts; investing in the professionalization of manual groundwater drilling can increase access to water; strengthening the technical capacities of community-based water organizations trumps sustainability; establish bridges of communication with community and faith leaders including those representing SSAHUTLC; involving community members in the construction of small-scale infrastructure works through cash payments benefit buy-in; and, last but not least, community engagement in water-linked activities and services can contribute to prevent communal conflicts and tensions.

4. **Activities under Component 2 will include mechanisms for citizen engagement in the monitoring and efficient use of groundwater resources, local awareness raising and development of context-appropriate standards and enforcement mechanisms with community participation, among others.** Acknowledging that countries are at different stages of preparedness to utilize their groundwater resources, this component will ensure flexibility in the approach towards preparing investment operations (national and transboundary). Activities will include support for innovative groundwater solutions in cross-border areas. Based on country needs and priorities, it can involve technical assistance to identify novel and inclusive bottom-up solutions that ensure local impact, including training opportunities for job creation and entrepreneurship, technology use and youth involvement in groundwater, as well

[86] WSUP, 2020. Barriers for female decision-makers in Kenya's sanitation sector. WSUP.

as gender-inclusive solutions. This can include community-based Groundwater monitoring (on the dynamic water table during draught and early warning systems particularly during flood).

5. **In the context of the Bank's Strategic Framework for Mainstreaming Citizen Engagement in WBG Operations, the project will support mechanisms to enable citizens' feedback in real-time, and will benefit from the CDD approach**. The team is mindful that such channels must be context-specific and will be tailored according to the specificities of the implementation areas in participating countries. FCV-associated considerations will be observed by the team. The channels enabled will be results-focused and will operate throughout the project's operational cycle. The task team is mindful that a citizen-oriented design is key to enhancing citizen participation. The project-level GRM will play a key role in enabling the provision of project-related feedback and grievances, and will be a key element for accountability and transparency.

ANNEX 5. Program's Learning Agenda

Priority Learning Areas of the HoA Groundwater for Resilience Program

a) **Sustainable groundwater service delivery*:*** This learning area focuses on key success factors in the achievement of sustainable and inclusive groundwater service delivery in vulnerable communities, particularly in borderland areas. It includes learning on the following topics:

-*CDD approaches, effective outreach, and engagement of communities in groundwater development*, *operation and maintenance to be better equipped to manage water supply systems and cope with climate shocks*. This will include enhancing community-level knowledge on groundwater and management of water supply systems, promoting best practices on sustainable groundwater management and use, and the integration of traditional knowledge and informal institutions with the formal ones at the local level, researching on improving institutional arrangements to achieve the operational and financial sustainability of the water schemes. Learning will also involve the role and participation of women and youth, and other marginalised groups, and how to ensure that they can benefit more equitably from groundwater management and use for climate resilience.

-*Lessons and good practices on groundwater resources and aquifer recharge potentials* than currently exist in the HoA, including key aspects that need to be considered to inform the future development of groundwater resources to address direct and indirect impacts of climate change, population growth and industrialization, and ensure the sustainability of the resource (including experiences with the use of renewable energy for pumping and irrigation needs, among others). Lessons can also be extracted regarding effective approaches to increase community drought resilience in trans-boundary areas using groundwate*r*, including monitoring, learning and information sharing systems and processes to engender ownership and commitment towards groundwater sustainability..

b) **Groundwater and regional integration:** This learning area addresses the building blocks of regional cooperation around transboundary water resources in the HoA. It will focus on the gradual, long-term process needed to foster increased knowledge sharing on groundwater but also dialogue, and trust among stakeholders (across the local, sub-national, national and regional levels), towards future joint management of aquifers. It involves learning about the role of IGAD at the regional level, but also about the role of countries in fostering complementarities and economies of scale around transboundary resources, the evolution of the regional dialogue throughout the Program's implementation, and mechanisms for overcoming barriers and take advantage of emerging opportunities.

c) **Groundwater's role in addressing fragility in the HoA´s borderlands:** This learning area focuses on the linkages between sustainable groundwater management and fragility including the interactions between the different key variables related to sustainable access and management of the resource, and FCV conditions that characterize the region's borderlands. It includes learning on the following topics:

-*Internalization of effects of rapid population growth, shifting population distribution and livelihood needs/demand on groundwater resources* and how this would inform governance arrangements and management strategies;[87] and

-*Establishment of interlinkages with water security issues: IDPs, refugees, host communities and water.*

[87] World Bank. 2018. Groundswell: Preparing for Internal Climate Migration. World Bank, Washington, DC. © World Bank.

ANNEX 6. Implementation Arrangements and Support Plan

A. IMPLEMENTATION ARRANGEMENTS

The Program's implementation arrangements are country specific. Further details on the arrangements in each country (Phase I) are provided as part of the country proposals included in Annex 1. To the extent possible, the Program will use existing mechanisms and government systems, particularly if they were already included in previous WB operations where capacity is being built.

B. IMPLEMENTATION SUPPORT PLAN

Strategy and Approach for Implementation Support

1. The objective of implementation support is to ensure that the relevant regional and government agencies implement the program properly. It is also to ensure that the resources and staff allocated by the World Bank are sufficient to supervise and support program implementation. The strategy aims at making the implementation support to the client flexible and efficient, and therefore focuses on the principal risks identified and the agreed risk mitigation measures to be undertaken as described in the in the Systematic Operations Risk-Rating Tool (SORT). It will consist of: (i) semi-annual implementation support missions carried out jointly by the World Bank, the participating countries, IGAD, as well as technical partners when technical needs arise; and (ii) technical assistance in areas of weaknesses and where new approaches/procedures have been introduced.

2. **Objective of implementation support.** The implementation support and oversight missions will have the combined aim of reviewing the quality of implementation, providing solutions to implementation problems, and assessing the likelihood of achieving the PDO. More specifically, they will: (i) review implementation progress by component (including the level of implementation of recommendations made by former review missions), including institutional development aspects, ; (ii) provide solutions to implementation problems as they arise; (iii) propose action plans and assess disbursement projections with the national and regional PCU every six months; (iv) review the program's fiduciary aspects, including financial management and procurement; (v) verify compliance of program activities with the fiduciary agreements and the World Bank's environmental and social safeguard policies; (vi) review case studies and survey results to determine progress toward the PDO with regard to the targets set within the results framework, and assess the quality of implementation; and (vii) review the quality of capacity-building activities, which are crucial for an effective implementation of the program. The missions will combine field visits whenever feasible; field-based focus group discussions and interactive workshops with stakeholders for feedback; they will also include regional workshops, as well as national workshops to highlight implementation issues, pick up emerging implementation lessons, and share mission recommendations, including agreements on actions moving forward. Reviews of semi-annual reports and various studies will also be undertaken. The WB team, in its supervision duties, will be informed by the periodical reports produced by the firms hired as Third Party Monitoring and to implement the MPA learning agenda, including recommendations to improve program implementation. The supervision strategy will also use the following instruments to review progress and respond to implementation issues:

(a) **Implementation Support missions.** The World Bank task team will conduct joint semi-annual review and implementation support missions with country teams and IGAD to review overall implementation performance and progress toward the achievement of the PDO. Support from technical partners will be sought when needed. The semi-annual implementation support missions will be followed by regional "wrap-up meetings" that will bring together national teams, IGAD and key regional partners to discuss progress made and also serve as a platform for sharing knowledge and building partnerships. The first implementation support mission will

be fielded as soon as possible after program effectiveness to provide start-up support through direct and timely feedback on the quality of implementation plans.

(b) **Monitoring of project data through the GEMS system:** The World Bank task team will use, along the entire life of the project, the GEMS platform for remote supervision of project activities, tracking progress real-time, and allowing a more accurate and agile risk monitoring and coordination across sub-projects.

(c) **MTR (mid-term review).** An MTR will be carried out midway in the implementation phase. It will include a comprehensive assessment of the progress in achieving program objectives as laid out in the results framework. The MTR will also serve as a platform for revisiting design issues that may require adjustments to ensure satisfactory achievement of the program's objective.

(d) **Other reviews.** Each year, the World Bank and the line ministry in each country will consider the need for additional analytical, advisory, knowledge sharing activities and/or third-party reviews. Such reviews will be planned for over and above the semi-annual implementation support missions.

(e) **Implementation completion.** At the close of the program, each government, IGAD and the World Bank will carry out separate implementation completion reviews to assess the success of the program and draw lessons learned for the preparation of future similar programs.

(f) **Groundwater for Resilience (GW4R) Task Team set up**. Arrangements made for the preparation phase will be maintained during implementation support, involving a regional task team leader (TTL), as well as country-based co-TTLs in participating countries. . This arrangement will enhance interaction with participating countries and improve monitoring of progress.

(g) **Technical assistance**. Implementation support will include specialized technical support from the World Bank and possibly other bilateral/multilateral agencies for critical aspects of the program, including proper FM/procurement and the monitoring of E&S. Such technical assistance will focus on the learning agenda, and draw lessons learned as the program is being implemented to help the program teams and counterparts internalize good practices and resolve implementation bottlenecks. Technical assistance will include training workshops to develop core resource skills within implementing units and program teams, helping finalize manuals, and reviewing and advising on ToRs for required studies and technical support missions.

Implementation Support Plan

3. **Focus of support**. The first two years of implementation will need technical support to put in place the specific tools required for activity planning and implementation; the focus will later change to more routine monitoring of progress, troubleshooting, and assessments based on the results framework. Country implementation support missions will be every six months, followed by regional wrap-up workshops to discuss and exchange views on progress, experiences, best practices and challenges for each country. A common rating process will be done at the end of each wrap-up mission.

4. **Technical support**. The implementation support missions will be complemented by regular short visits by individual specialists to follow up on specific thematic issues as needed, and through the continuous reliance on the GEMS remote monitoring system. The team will also hire consultants to provide technical support to PCUs and implementing agencies. Regional trainings will be provided by the Bank on key thematic areas such as E&S, Procurement, M&E, and Gender. In addition, a number of consultants may be mobilized periodically to provide technical assistance to implementing agencies in the form of hands-on training and mentoring.

5. **M&E support**. The Bank M&E specialist and relevant consultants will provide technical support and organize regional training for the M&E team composed of the IGAD M&E officer and the countries M&E officers.

6. **Fiduciary support**. Fiduciary teams based in each of the four World Bank country offices (procurement and FM specialists) will closely supervise the program's fiduciary management. They will participate in the twice-yearly country implementation support missions and facilitate capacity building for the program's fiduciary staff. At least once a year, the procurement staff will organize a post review of procurement activities. A series of trainings are also being planned to build the capacity of implementation units on procurement and financial management.

7. During implementation support missions, the program FM specialist, based in the country office, will: (i) review the FM systems, including capacity for continued adequacy; (ii) evaluate the quality of the budgets and implementing agencies' adherence thereto; (iii) review the cycle of transaction recording until the end of report generation; (iv) evaluate the internal control environment, including the internal audit function; (v) review IFRs and/or annual financial statements; (vi) follow-up on ageing of the advance to the designated account; (vii) follow-up on both internal and external audit reports; and (viii) periodically assess the program's compliance with the FM manual as well as the Financing Agreement.

8. On procurement, the World Bank will provide implementation support to the client through a combination of prior and post reviews, procurement training to program staff and relevant implementing agencies, and periodic assessment of the program's compliance with the procurement manual. Implementation support missions will be geared toward: (i) reviewing and updating procurement documents; (ii) providing detailed guidance on the World Bank's Procurement Guidelines; and (iii) monitoring procurement progress against the detailed Procurement Plan. Following the recommendations of the fiduciary assessments of the implementing agencies, and in addition to the prior review supervision to be carried out from World Bank offices, the semi-annual supervision missions will include field visits, of which at least one mission will involve post review of procurement actions.

9. **E&S.** The World Bank specialists in E&S will have responsibility for supervising project activities. Each year, they will conduct supervision of the program's safeguard activities, participate in regional meetings to discuss findings, and draft action plans to improve implementation.

10. **Main focus of implementation support**. Table 1 summarizes the main focus of implementation support during the life of the program.

Table 1: Main Focus of Implementation

Time	Focus	Skills Needed
First 12 months	– Project start up – Support to implementation activities (sensitization, community consultations and planning, ownership creation, institution building, strengthening implementation capacity, including M&E) – Guidance on applying safeguard instruments – Development of impact evaluation methodology and oversight of baseline survey – Procurement, FM, M&E, and E&S training of staff at all levels – Establishing coordination mechanisms with complementary projects	– TTL+ operations officer + Co-TTLs – Water specialist – ICT – FM – Procurement – Environment – Social development – Communications – M&E
12-72 months	– Monitoring implementation performance including progress – Review strength of grassroots institutions, quality of participatory processes, and capacity-building initiatives – Review of annual work plans and disbursement schedule – Review quality of quarterly/annual reports, data, and various produced studies – Assess quality of implementation process and data collected – Review of audit reports and IFRs	– TTL+ operations officer + Co-TTLs – Water specialist – ICT – FM – Procurement – Environment – Social development – Communications – M&E

Time	Focus	Skills Needed
	– Review adequacy of the FM system and compliance with FM covenants – Assess quality of E&S instruments as they are applied	