



Project Information Document (PID)

Concept Stage | Date Prepared/Updated: 16-Apr-2021 | Report No: PIDC30538

**BASIC INFORMATION****A. Basic Project Data**

Country Eastern Africa	Project ID P174867	Parent Project ID (if any)	Project Name Horn of Africa - Ground Water for Resilience (P174867)
Region AFRICA EAST	Estimated Appraisal Date Feb 04, 2022	Estimated Board Date Mar 28, 2022	Practice Area (Lead) Water
Financing Instrument Investment Project Financing	Borrower(s) Somalia - Ministry of Finance, Ethiopia - Ministry of Finance & Economic Development, Djibouti - Ministry of Finance, Kenya - Ministry of Finance, Intergovernmental Authority on Development, Sudan - Ministry of Finance and Economic Planning	Implementing Agency Somalia - Ministry of Energy and Water Resource (MoEWR), Ethiopia - Ministry of Water Irrigation and Energy, Djibouti - Ministry of Agriculture and Water, Kenya - The Ministry of Water, Sanitation and Irrigation (MWSI), Intergovernmental Authority on Development (IGAD), Sudan Ministry of Irrigation and Water Resources	

Proposed Development Objective(s)

To strengthen the resilience of targeted entities and selected communities to cope with and adapt to climate shocks through an enhanced management and use of groundwater resources.

PROJECT FINANCING DATA (US\$, Millions)**SUMMARY**

Total Project Cost	325.00
Total Financing	325.00
of which IBRD/IDA	325.00
Financing Gap	0.00

DETAILS



World Bank Group Financing

International Development Association (IDA)	325.00
IDA Credit	320.00
IDA Grant	5.00

Environmental and Social Risk Classification

High

Concept Review Decision

Track I-The review did authorize the preparation to continue

B. Introduction and Context

Regional Context

1. **The Horn of Africa is a region characterised by a complex development context, with varying degrees of conflict and vulnerability, and social, political, and economic variations between and within countries** (Table 1). For the purpose of this project, the Horn of Africa (HoA) includes Djibouti, Ethiopia, Kenya, Somalia and Eritrea (Annex 1, Map 1). High poverty levels in the HoA are most prevalent in the northern parts of Kenya, Somalia and Eritrea (Annex 1, Map 2). A large portion of households remain vulnerable to poverty, with consumption levels only marginally exceeding the poverty line. Some of the countries suffer from protracted conflict and political strife, forced displacement and the region’s overall vulnerability context is characterised by challenges of underdevelopment, resource scarcity, economic shocks, food insecurity, and increasingly, climate change impacts.¹

Table 1. HoA Socio-economic Indicators

Country	Population growth (annual %)	GDP (current US\$) (billions)	GDP growth (annual %)	Poverty headcount ratio at US\$1.90/day (2011 PPP) (% of population)	HDI* (2019) (country’s position out of 189 countries and territories)	Primary School Enrolment (% gross)	Secondary School Enrolment (% gross)	Life expectancy at birth (years)
Djibouti	1.6	3.01	8.4	17.0	0.524 (position 166)	70.3	51	67
Ethiopia	2.6	84.27	6.8	32.6	0.485 (position 173)	101.0	35	66
Kenya	2.3	87.78	6.3	37.1	0.601 (position 143)	103.2	..	66
Somalia	2.8	57

¹ Osiam, S; Indasi, V; Zaroug, M; Endris, H; Gudoshava, M; Misiani, H; Nimusiima, A; Anyah, R; Otieno, G; Ogwana, B. 2018. Projected climate over the Greater Horn of Africa under 1.5C and 2C global warming. Environmental Research Letters, Volume 13, Number 6.



Eritrea	0.459 (position 180)	68.4	48	66
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Source: World Bank, World Development Indicators database, 2018. <https://data.worldbank.org/indicator>.²

2. **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% of the population live in rural areas and exhibit high levels of poverty, ranging from 69.4% in Somalia, to 22.5% in Djibouti. The region’s population is also growing quickly and is expected to reach 250 million by 2030. Most of the population is poor and relies on rainfed agriculture for its livelihood, with a climate characterized by short, irregular and unpredictable rainy seasons and recurrent droughts. High rates of youth unemployment increase young people’s susceptibility to illicit activities and high-risk behavior.³

3. **The region is also characterized by high levels of fragility, conflict and violence (FCV).** According to the World Bank Group FY21 *List of Fragile and Conflict-Affected Situations*, Somalia is experiencing a high intensity conflict and high institutional and social fragility; Eritrea is experiencing high institutional and social fragility, and Ethiopia, Kenya and Djibouti are heavily affected by FCV-associated stresses. The civil war in Yemen, the current situation in Ethiopia’s Tigray region, and the tensions between Kenya and Somalia around the Beled-Hawo area, add additional challenges to the region’s grow and development pathway. Transboundary spillover effects from regional conflicts can trigger an increase in forced displacement. The Horn is home to a large number of forcibly displaced people. 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.⁴ Considering the FCV-water nexus is key to ensuring peace-building potential of water investments.⁵ Ethiopia, Kenya and Eritrea are home to various Sub-Saharan African Historically Underserved Traditional-Local Communities (SSAHUTLC).

4. **The borderlands of the HoA have long been synonymous with marginalization, entrenched poverty, weak state presence, conflict and violence, forced displacement and environmental degradation.**⁶ Vulnerability in the borderlands has been exacerbated by significant climate change risks, including erratic and decreasing rainfall that have contributed to food insecurity and increased tensions over scarce natural resources. Home to large pastoral and semi pastoral communities with a growing young population,⁷ the region’s borderlands are located either on top or near major groundwater aquifers, some of which are transboundary (Annex 1, Map 3). Communal conflicts such as farmer-pastoralists or refugees-host communities disputes, are more likely to occur in areas where access to water is challenging and where groundwater governance is weak. Enhancing access to groundwater sources can contribute to addressing drivers of fragility in the region, including water-related communal disputes.⁸ Social inclusion in groundwater use and

² The HDI is a summary measure for assessing long-term progress in three basic dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living. Source: UNDP Human Development Reports, 2020. <http://hdr.undp.org/en/countries>

³ 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.

⁴ UNHCR, 2020. *Global Trends – Forced Displacement in 2019*. Geneva: UNHCR.

⁵ Sadoff, C., Borgomeo, E., and de Waal, D. 2017. *Turbulent Waters: Pursuing Water Security in Fragile Contexts*. Washington, DC, World Bank.

⁶ Ibid,

⁷ In Kenya, over 60% of the population is under the age of 25 and in Somalia an estimated 70% is under the age of 30. Source: 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.

⁸ Ibid.



management also remains a challenge. Women in rural areas are often the main fetchers of water to the households and walk long distances to boreholes experiencing multiple security and protection risks, including gender-based violence (GBV). Women's participation in the formal decision-making spaces that govern groundwater remains secondary. Within this context, strengthening groundwater management and use can benefit local livelihoods and regional security, reducing fragility and fostering cross-border economic connectivity. National and regional action on groundwater management and use can foster sustainable, win-win solutions for both sides of the border. SSAHUTLC are among the most vulnerable groups in this subregion.

5. **The HoA is characterized by high climate variability, and it will suffer significant impacts as a result of climate change.** A significant part of the region is composed of arid and semi-arid lands (ASALs), where approximately 30% of the total population is found. The region has been affected by longer dry periods since the second half of the 20th century, experiencing several episodes of catastrophic and intense drought. Average temperatures in the region will rise by up to 1.5°C in the next 20 years, and up to 4.3°C by the year 2080.⁹ Changes in both rainfall and temperature are likely to have significant effects on the water cycle and on water resources, on drought frequency and intensity, as well as on erratic floods and untimely precipitation patterns. Increasing inter-annual variation in the length of the rainy season is affecting the groundwater recharge, exacerbating the vulnerability of ASALs. Groundwater is often the main source of water in these areas,¹⁰ having the greatest potential to improve water security and to enable a range of socio-economic benefits (e.g., strengthened livelihoods, health). Climate shocks are key sources of vulnerability. Somalia, which experienced 32 disasters between 1934 and 2000, and 17 disasters between 2000 and 2017 – the equivalent to one disaster per year. Nearly 300,000 people died during the drought/famine of 1992, and 20% of the population was displaced.¹¹ In 2011, the East Africa drought killed more than 250,000 people, displaced almost one million people, and devastated the agriculture and livestock sectors. Drought struck Somalia again in 2016/17, causing losses in crop production, livestock and livestock-related products, estimated at USD 1.7 billion.¹² More recently, a succession of drought and flood events stemmed from a strong El Niño and the Indian Ocean Dipole, producing extraordinary rainfall on the Arabian Peninsula and in East Africa.

6. **There is increasing political momentum in the HoA for strengthening resilience to climate change, among other shocks and stressors.** While there is no standard definition of the term 'resilience', for the purposes of this Program it refers to the capacity of people, assets or institutions to absorb, adapt and potentially transform in the face of the impacts of (short term) shocks and (long term) stressors.¹³ The Covid-19 pandemic has further accentuated the importance of resilience building. The pandemic is likely to have a substantial negative effect on household income, possibly undermining the region's welfare gains of the past decade. The ongoing economic crisis is projected to have a significant impact on reversing the gains in poverty reduction which have been achieved – with Sub-Saharan Africa (SSA) likely to see up to 40 million people being pushed into extreme poverty,¹⁴ as per estimates taking the pandemic into account. Impacts are particularly devastating in the Horn, with the pandemic contributing to worsen the already precarious living conditions of vulnerable households through job loss, price shocks, weakening human capital and other

⁹ IPCC (2015) *Climate Change 2014: Impacts, Adaptation and Vulnerability, Global Water Partnership Eastern Africa and the IPCC, 2015*

¹⁰ Stefan Döring (2020). *Come rain or come wells: How access to groundwater affects communal violence*. Political Geography, Volume 76, 102073. ISSN 0962-6298. DOI 10.1016/j.polgeo.2019.102073

¹¹ World Bank Group, 2019

¹² WB, 2018. *Somalia Drought Impact and Needs Assessment, Volume I, Synthesis Report*. The World Bank, the United Nations and the European Union.

¹³ WB (2017) *Operational Guidance for Monitoring and Evaluation (M&E) in Climate and Disaster Resilience-Building Operations*, Resilience M&E (ReM&E) initiative.

¹⁴ <https://www.worldbank.org/en/region/afr/overview>



adverse factors. The overall water demand for WASH-related purposes has increased in the subregion, adding pressure on scarce resources and capacity.¹⁵ The pandemic has disproportionately affected the forcibly displaced, limiting the mobility of persons and goods through the region's borders, and increasing water demand in refugee camps -most of which are located in ASAL across border areas- and in refugee and IDPs-hosting locations in urban and rural centers.¹⁶ Compounding the effects of Covid-19, countries in the region have been hit by a confluence of negative factors including desert locust, political disruption, communal tensions, internal displacement and, more recently, armed conflict in Ethiopia's Tigray region,¹⁷ heightening the urgency of enhancing resilience and supporting national strategies for 'building back better'.

7. Investments in groundwater can play a key role in strengthening resilience to climate and FCV shocks affecting the HoA region. Groundwater plays a crucial role in the economy of the HoA, and constitutes one of the main sources of drinking water during times of drought.¹⁸ It is estimated that at least 400 million people in Sub-Saharan Africa (about 36% of the total population of Africa) source their domestic water supply from groundwater. This figure can go much higher in the HoA, where rainfall variability is high.¹⁹ Groundwater offers natural storage of a different magnitude than annual rainfall or river flow, is less impacted by evaporation losses, and has longer detention time than surface water. As a consequence, groundwater is better buffered compared to surface water, and therefore is more resilient to droughts over multiple years. While no significant long-term regional decline in groundwater storage has been observed in the past 20 years despite shorter term variability and longer-term decline (>1000 years) associated with increasing aridity, the increasing use of groundwater for irrigation and the fast-expanding urban population in the region is raising the demand for the resource. At the same time, while fragility levels vary across geographic subregions, water resource scarcity and lack of natural resource sharing agreements between states (e.g., on transboundary rivers and aquifers) constitute drivers of fragility. Tensions related to water resources and water security can affect or exacerbate protracted and non-international armed conflicts, tensions between national and sub-national government entities, uneven territorial development and geopolitical interests, among others. Strengthening national and regional capacities for collaborative management of TBA is key to address drivers of conflict and fragility.

8. Five countries (Djibouti, Eritrea, Ethiopia, Kenya and Somalia) launched the Horn of Africa Initiative (HoAI) to forge closer economic ties in the sub-region, highlighting the importance of regional cooperation to build resilience. The initiative was formalized on October 18, 2019 on the sidelines of the World Bank Group/IMF Annual Meetings. The countries agreed on priority projects and programs that will constitute the initiative (requiring financing of up to \$15 billion), which is being developed by the countries with support from the African Development Bank (AfDB), the European Union (EU) and the World Bank (WB). During a Ministerial Roundtable held in October 2020, the HoA Finance Ministers reiterated the initiative's critical role in helping the region overcome the 'triple crisis' of Covid-19, desert locust, and climate shocks. The Ministers requested to further strengthen the resilience and human capital pillars of the HoAI to help deal with the ongoing crisis and identified groundwater among the priority areas of action to strengthen the region's resilience. This project is being supported under the Resilience Pillar of the HoAI.

¹⁵ IOM, 2021: East and Horn Covid 19 Response. Situation Report 41. 27 January 2021. IOM.

¹⁶ UNHCR, 2020. East and Horn of Africa, and the Great Lakes Region. COVID-19 External Update #24. UNHCR.

¹⁷ International Crisis Group, 2020. Steering Ethiopia's Tigray Crisis Away from Conflict. Briefing 162 – Africa. 30 October 2020. ICG.

¹⁸ IWRA, 2018. Policy Brief, International Water Resources Association (IWRA), Number 9, May 2018.

¹⁹ [Environmental Research Letters, Volume 14, Number 9.](#)



Sectoral and Institutional Context

9. **Groundwater is a largely decentralized resource that is widely available in the HoA region, both within national borders and across transboundary areas.** Often available at less than 100 m depth, it constitutes an important source for rural and small town (piped) water supply and is the largest freshwater reservoir which is annually recharged and not affected by evaporation. Aquifers provides a medium to store water, which can be used to prepare for and respond to the impacts of drought, among other shocks, as well as to adapt to climate change impacts (e.g., diversify livelihoods, reduce the dependance on erratic rainfall). Groundwater is often of good quality and protected against man-made pollution. Due to limited quantitative information on groundwater resources, groundwater storage is commonly omitted from assessments of freshwater availability. The HoA has a groundwater storage area of 34,344 km³ (Djibouti 171 km³, Eritrea 333 km³, Ethiopia 12,700 km³, Kenya 8,840 km³ and Somalia 12,300 km³).²⁰ This area includes both shared/TBAs and country-bound aquifers. However, for most sub-Saharan Africa countries including in the Horn, groundwater use remains low.²¹ On average, 1.5% of the cultivated land in the HoA is equipped for irrigated agriculture, and out of this, only 3.4% is equipped for irrigation using groundwater.²² Deeper aquifers are within reach but remain either untapped or inadequately studied, despite their potential for the region's resilience.²³ Most of the region has moderate groundwater availability (with aquifer productivity of 1-5 liter/second) and some pocket areas with high productivity (5-20 liter/second) (Annex 1, Map 4). Groundwater use for irrigation holds potential for increased soil carbon or avoided degradation/erosion, thus contributing to strengthen the region's response to climate change related challenges. The region is known to have 11 transboundary aquifers (TBA). The high yielding productive aquifers are located along cross-country border areas, including the area between Uganda and Kenya, Somalia and Kenya, Eritrea and Ethiopia, and Djibouti and Ethiopia.²⁴ Transboundary aquifers (TBAs) 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. Most TBAs are located in sparsely populated dry lands of the HoA, with a population density of less than 20 people/km² and annual rainfall below 700 mm/year. In these areas, groundwater constitutes the main drinking water source, are key for rural livelihoods and livestock rearing, and are also used for urban water supply.²⁵ Groundwater is also one of the main sources of water for the estimated 4 million of refugees and 9 million and internally displaced persons (IDPs) in the Horn. An important number of refugee camps and informal settlements are located in borderland areas that coincide with transboundary aquifers.

10. **The Intergovernmental Authority for Development (IGAD) is leading the coordination of the region's response to key challenges,** including through IGAD's Drought Disaster Resilience and Sustainability Initiative (IDDRSI), the IGAD Support Platform for refugees²⁶, IGAD'S Livestock Policy Initiative, increased regional collaboration in response to the desert locust crisis, and IGAD's multi-country projects directed resilience-building among pastoral and agro-pastoral communities in cross-border areas. Due to their transboundary nature, the location of key regional aquifers largely coincides with areas of fragility and displacement, and with key livestock corridors along the region's borderlands. They

²⁰ A M MacDonald et al 2012 Environ. Res. Lett. 7 024009

²¹ Cobbing, Jude & Hiller, Bradley, 2019. "[Waking a sleeping giant: Realizing the potential of groundwater in Sub-Saharan Africa](#)," [World Development](#), Elsevier, vol. 122(C), pages 597-613.

²² Siebert et al., 2010.

²³ Tuinhof, A. et.al. 2020. Groundwater Management presentation – WBG and CIWA.

²⁴ A. M. MacDonald et al., 2012 Quantitative maps of groundwater resources in Africa, Environ. Res. Lett. 7 024009.

²⁵ NIJSTEN, G.-J., Journal of Hydrology: Regional Studies (2018), <https://doi.org/10.1016/j.ejrh.2018.03.004>

²⁶ A regional effort under the Global Compact on Refugees (GCR)- aimed at providing support to solving complex or protracted refugee situations in the HOA. The World Bank, EU, Germany, UNHCR and the UNDP are members of the Platform's Core Group.

also coincide with the ‘clusters’ of focus of IGAD, as show in Figure 1, demonstrating the close linkages that exist between water resources, forced displacement, fragility, livelihoods and resilience building in the region.

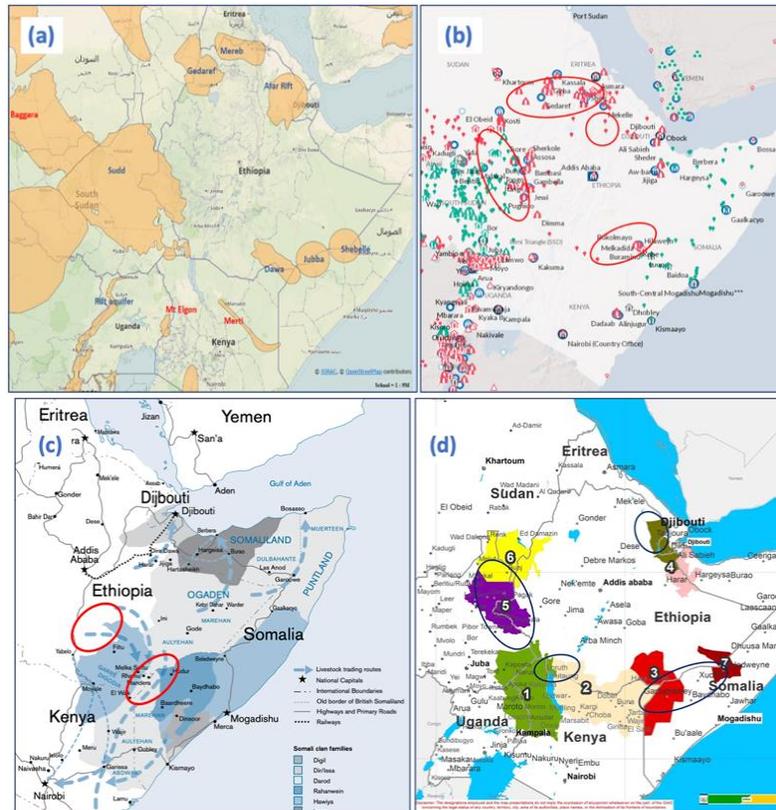


Figure 1. Overlap between (a) the location of trans-boundary aquifers (TBA) in the HoA, (b) location of refugee camps and IDP Centers, (c) livestock trading routes and (d) IGAD Clusters. Sources: IGRAC/TWAP 2015, IGRAC/TWAP 2015; UNHCR, 2021; Chatham House 2010; IGAD, 2020.

11. **Whilst groundwater plays a crucial role supporting social and economic development, the resource is far from being adequately understood and utilized.** Groundwater’s potential is constrained by challenges related to institutions, information, infrastructure and inclusion (the ‘Four I’s’) (Annex 1, Figure 5), as highlighted below:

- **Challenges related to institutions include limited capacity of water authorities, lack of enforcement of planning and regulations, and lack of coordinated, cross-scale (i.e., regional, national, local) monitoring systems.** The groundwater policy environment in the Horn remains weak, as national water policies tend to have a heavy surface water bias. Groundwater quality is impacted by multiple water using sectors – domestic wastewater, industrial wastewater, mining waste, and naturally occurring contaminants. Activities outside the water sector, including land use, urbanization, and agriculture on groundwater recharge areas impact the resource’s recharge rate, quantity and quality. Robust groundwater management requires protecting recharge areas, protecting water quality, and using storage deliberately, among others.
- **In terms of groundwater information, the sub-sector’s potential, level of current use, distribution and quality are largely unknown.** There is a lack of systematic data and information on the resource, and the systems for



gathering, collating and analyzing information are inadequate. The region also lacks targeted groundwater monitoring to support the management and regulation of water allocation and use. Reasons include the lack of clear institutional arrangements and responsibilities, insufficient resourcing, lack of technical expertise, and a disconnect between database management and retrieval systems.

- **The infrastructure investments needed to extract groundwater, as well as for storage and distribution systems, among others, remain low, contributing to the under-utilization of the resource.** Challenges include limited access to the resource (e.g., boreholes, access roads), steep technical requirements to identify and exploit the resource due to deep aquifers, as well as insufficient infrastructure to respond to the increasing needs of rural and urban stakeholders— for domestic and industrial water supply and sanitation, livestock keeping and agriculture. Developing water infrastructure and investing in water retention and irrigation infrastructure can play a key role in the region’s poverty reduction and food security, which are crucial to enhance climate resilience (e.g., water retention and irrigation contribute to the ability of communities to absorb the impacts of drought, to bridge dry periods, and to adapt through livelihoods diversification).
- **Local readiness and community inclusion are key to ensure that vulnerable communities are effectively engaged and prepared to play an active role in the management and use of local groundwater resources.** This involves the sustainable use of the resource as drinking water or for irrigation, its use as part of local livelihoods, as well as the involvement of women and other vulnerable groups in local planning and monitoring. Innovative, cost-effective and inclusive solutions needed to address inefficient water use, increased salinization, and water logging, and help to improve irrigation, among other income-generation opportunities that support preparedness and adaptation to climate shocks and other stressors. 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.²⁷ Securing communities’ active participation in the different phases of the project cycle contributes to the sustainability of the investments, promotes social inclusion, and reinforces community-level resilience.²⁸ The community driven development approach is notably pertinent to contexts affected by FCV, and to work with traditionally marginalized groups.

12. While these challenges are even more evident and acute at the level of transboundary aquifers, regional groundwater collaboration is still at its nascency. Except for the Ethiopia-Djibouti water project (2015),²⁹ a US\$329 million initiative funded by the Exim Bank of China, the region lacks a solid foundation in joint groundwater monitoring, governance and development of the shared resources. In addition to limited capacity and information, the lack of trust between the countries, the lack of a strong convening forum, and the broader political economy of the region have contributed to the underutilization of transboundary groundwater sources. Efforts conducted by regional stakeholders such as IGAD (e.g., under the CIWA funded HoA Groundwater Initiative, P169078) are not bearing the required traction, mainly due to limited institutional capacity and experience, and constraints to becoming a strong convening center.

²⁷ 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).

²⁸ Maheshwari, B. (et al), 2014. The role of transdisciplinary approach and community participation in village scale groundwater management: insights from Gujarat and Rajasthan, India. *Water* 6(11): 3386-3408.

²⁹ This a bilateral arrangement whereby Ethiopia agrees to provide water free of charge for Djibouti for the 30 years. The project includes construction of water wells, reservoirs and 102km water distribution pipeline to supply groundwater from Ethiopia’s Hadagalla town to Djibouti’s key towns of Ali-Sabieh, Dikhil, Arta and the capital. The project is completed and functional providing water for more than 700,000 residents in Djibouti.



Apart from this experience, there are no known ongoing efforts for information sharing and monitoring, joint governance and development of shared aquifers in the sub region. Remaining challenges include the harmonization of systems, methods and data formats for effective information sharing across aquifer boundaries.

13. The current status of groundwater institutions, information, infrastructure and inclusion differs among countries, evidencing the importance of context-appropriate solutions that, over time, could be aligned and complement each other to maximize transboundary benefits. Different approaches in addressing issues related to national and transboundary aquifers are needed in order to take into account the specific country context and the political economy of the borderlands. In Kenya and Ethiopia these aspects are reasonably well developed, but they need to be further strengthened in order to address an increasing water demand and to improve drought resilience. In the case of Somalia and Djibouti, the groundwater situation is weakened by higher aridity, while Somalia faces challenges related to lower and more sparse population density and insecurity.

14. Despite these disparities, the potential for regional collaboration around groundwater is huge. Building and consolidating such collaboration will require a gradual, long-term process addressing the following aspects:

- a) While most of the large groundwater aquifers are transboundary, the region lacks functioning platforms (e.g., in the form of transboundary commissions, basin authorities or others) to facilitate dialogue, information exchange, joint governance and monitoring. Despite ongoing efforts by IGAD, and the countries' good will to advance regional dialogue on shared transboundary aquifers, there is limited country capacity and low regional cooperation towards the achievement of common goals in this area.
- b) While countries are endowed with huge potential aquifers confined within national boundaries, groundwater data, information, and knowledge sharing mechanisms remain weak. Slow progress on establishing a groundwater knowledge base and adequate infrastructure, building institutional capacity and operationalizing information exchange mechanisms continue to hamper progress in this front. The limited knowledge base on groundwater constrains planning and informed decision making, as well as the lack of effective mechanisms for information sharing within and between countries.
- c) The uneven capacity among countries in the region requires both tailored and coordinated solutions. The sub-region comprises two set of countries: Somalia (high-intensity conflict)³⁰, and Djibouti, Ethiopia and Kenya, with more robust institutions and higher capacity. These asymmetries need to be addressed as part of groundwater strategies, while seeking to strengthen synergies and build trust towards future regional cooperation.
- d) The skills and the knowledge needed to explore and understand groundwater resources, as well as the technology to exploit it and ensure its rational use, are expanding globally. However, the HoA region is not benefiting from that progress. Advancements in hydro geophysics, in smarter, cost-effective sensors for continuous monitoring and real-time application, and in solar pumps, among others, are not penetrating the sub-region to the desired level. Groundwater mapping using high resolution satellite data and remote sensing/GIS analysis provide a quick and solid basis for boreholes located in shallow and deep aquifers, and for the selection and design of appropriate Managed

³⁰ As per the WBG FY21 List of Fragile and Conflict-affected Situations



Aquifer Recharge (MAR) structures. However, follow up and implementation are often delayed due to the lack of capacity by responsible entities.

Relationship to CPF

15. **The project is aligned with the WBG's Africa Regional Integration and Cooperation Strategy Update (FY21-FY23)³¹, with the 2020-2025 WBG Strategy for FCV, the 2016-23 WBG Gender Strategy, and the WBG Action Plan on Adaptation and Resilience.** Mainstreaming climate change and addressing climate resilience constitute key priorities in the World Bank's 2025 climate change targets. The 2025 Action Plan outlines a strong commitment to improve the planning and implementation of interventions to address more robustly and systematically climate-related risk. Under its 'reinforcing resilience' thematic pillar, the WB's Africa Regional Integration strategy seeks to enhance resilience to shocks and promote effective management of challenges that cut across boundaries. The pillar focuses on agro-pastoralism; food security and climate change; conflict and forced displacement; and transboundary waters and natural resource management. The HoA is among the strategy's priority FCV regions.

16. **The project is also aligned with the WB's Country Partnership Strategies of participating countries.** The country partnership strategies and engagement frameworks of Djibouti, Ethiopia, Kenya, Somalia³², include a strong focus on water, and recognize the role of water access, sustainable management and improved governance in achieving the goals of economic cooperation, as outlined below:

- a) **Djibouti Country Partnership Strategy (CPS) Program.** Until FY17, Djibouti's CPS included reducing vulnerability in the country as the first pillar, being water mobilization one of the key lending elements. As mentioned in the Program, *"the CPS program will aim to address the following challenges: the lack of access to basic infrastructure, including water and agro-pastoral resources in rural communities and water in poor urban areas of Djibouti-Ville; and the country's poor resilience to climate change and natural disasters"* (CPS FY14-17, signed March 13, 2014, Report No. 83874- DJ).
- b) **Water is also 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"*. In particular, the CPF Focus Area 2- Building Resilience and Inclusiveness- includes increased access to safe water as one of the main objectives (CPF FY18-22, signed May 22, 2017, Report No. 115135-ET).
- c) **The Kenya's 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, signed June 2014, Report No. 88940v2).
- d) **The Somalia Country Partnership Framework** includes selected activities based on the three filters: (a) building on the World Bank Group comparative advantage in Somalia; (b) addressing conflict drivers; 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

³¹ WBG (2020) 'Supporting Africa's Recovery and Transformation: Regional Integration and Cooperation Assistance Strategy Update, FY21-FY23.

³² At the time of this project's preparation, there is no CPS available for Eritrea.



(Objective 2.4) under its second area of focus, which aims at restoring economic resilience and opportunities (CPF2019–2022, Signed September 2018, Report No. 124734-SO).

17. **The project's objectives and approach are also aligned with IGAD's Drought Disaster Resilience and Sustainability Initiative (IDDRSI).** Cross-border cooperation is a key feature of IDDRSI. This initiative promotes cross-border cooperation and articulated solutions, including ecosystem-based management in cross-border ecological zones, capacity building, community cooperation and harmonized policies and procedures, while also recognizing that individual IGAD member states may have their own specificities and areas of emphasis.³³ The project will also integrate activities in selected transboundary areas that coincide with IGAD's geographical 'Clusters' (identified based on their demonstrated importance in terms of human and animal cross-border movement, and the need for regional cooperation). This will allow to reinforce ongoing resilience building efforts in borderlands, as well as to strengthen IGAD's capacity to foster cross-country collaboration.

18. **The project has strong linkages and alignment with other HoA projects, including those supported under the HoAI.** The project will build on their experience and results of similar regional initiatives, to the extent possible. These include the Development Response to Displacement Impacts Project in the HOA (DRDIP) (P161067) (Kenya and IGAD) and 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, and the Nile Cooperation for Results Project (P130694). The project will maintain a close coordination with the proposed HoA Borderlands project, which was also identified as a priority for action under the HoAI. Additionally, the project is in line with the African Groundwater Strategy Note *Assessment of Groundwater Challenges & Opportunities in Support of Sustainable development in Sub-Saharan Africa*³⁴, aimed at supporting groundwater development and management of investments in the region.

C. Proposed Development Objective(s)

19. To strengthen the resilience of targeted entities and selected communities to cope with and adapt to climate shocks through an enhanced management and use of groundwater resources.

Key Results (From PCN)

20. Achievement of the proposed PDO will be measured mainly using the following outcome indicators: (i) number of beneficiaries with improved groundwater access for consumption, including women; and (ii) number of beneficiaries with improved groundwater access for production, including women; (iii) number of national and regional groundwater information systems providing validated data and analyses to decision makers.

D. Concept Description

21. This project corresponds to 'Phase 1' of the Program. Withing the context of the broader Program, the project will contribute to build trust and relationships, and to diffuse tension among HoA countries by supporting selected cross-

³³ 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/>

³⁴ 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.



border projects (i.e., IGAD clusters) through small-scale sub-projects to address the water deficit and reduce conflict potential.

22. The Project's PDO is to increase the capacity of targeted HoA national and regional entities and communities to manage and use groundwater sustainably. Key terminology is defined in Annex 4. The core 'resilience questions' that inform the project's design from a resilience perspective (i.e., resilience of whom, to what, why, where and how) are detailed in Annex 5. The project's structure (components 1-3) is strongly rooted in the need for cross-scale solutions to build resilience to climate shocks across levels (local, sub-national, national and regional levels) (Figure 4).³⁵ The bank has appraised the countries' visions on regional and national priorities for groundwater, and each country has prepared a proposal that articulates their contribution to furthering groundwater management in the region. A summary overview of the project's approach in each country is provided in Annex 6, and the proposals will be detailed in the forthcoming PAD. The implementation arrangements of the project components are country specific. These arrangements will be further detailed in the forthcoming PAD, considering the range of capacities required to achieve the PDO (e.g., capacity to explore groundwater potential, capacity to implement decentralized CDD programs), as well as plans to adapt to the different structures of government and service delivery across the HoA. In order to address the challenges related to the 'Four I's' described above, the project is structured around two main components, described below.

The Phase I of the Program includes the following components:

Component one (IDA US\$ 51.5m, CIWA US\$ 3.5m): Strengthen groundwater institutions and information. This component is focused on activities aimed at strengthening key regional and national entities that play a role in the region's groundwater management and use, as well as on the information needed to support it. The focus on groundwater information and expertise under this component includes novel mechanisms for knowledge sharing on groundwater among countries of the region and across levels, including exchange visits of country experts, collaborative programs with local universities including exploration campaigns and youth training/internships programs, and documentation and dissemination of newly acquired knowledge. It also includes the use of innovative approaches and new technologies to enhance information sharing, data collection and analysis.

Component two (IDA US\$ 199m, CIWA US\$ 1m): Support infrastructure development and community-level use of groundwater. It will support infrastructure and implementation through groundwater development investment operations such as small-scale irrigation investments, peri-urban solar pumped groundwater supply schemes, sand dam pilots for community gardens, nature-based solutions for enhanced groundwater recharge, ecosystem-based approaches, among others. The component will support climate-informed feasibility studies and infrastructure development, community engagement activities promoting the efficient use of groundwater resources, sustainable water management practices, etc.

Component three (IDA US\$ 44.5m, CIWA US\$ 0.5m): Support for project management, knowledge and operations. This component will finance the operational costs of the Project Management Units (PMUs) in participating countries, as well as provide project coordination and fiduciary support. It also covers a Contingent Emergency Response (CERC) subcomponent that will support immediate and rapid response emergency needs.

³⁵ While the project's working definition of resilience includes transformative capacity, the project scope is focused on strengthening absorptive/coping capacity (preparedness and response to short term climate impacts), and on adaptive capacity (adjustment to change in the medium term), recognizing that transformation takes place in the long-term / beyond the timeframe of the project.



Legal Operational Policies	Triggered?
Projects on International Waterways OP 7.50	Yes
Projects in Disputed Areas OP 7.60	TBD

Summary of Screening of Environmental and Social Risks and Impacts

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