



Project Information Document (PID)

Concept Stage | Date Prepared/Updated: 14-Jun-2024 | Report No: PIDDC00458



BASIC INFORMATION

A. Basic Project Data

Project Beneficiary(ies) Burkina Faso, Burkina Faso, Guinea, Guinea, Mali, Mali, Mauritania, Mauritania, Senegal, Senegal	Operation ID P505175	Operation Name Development, Resilience and Valorization of Transboundary Water for West Africa - DREVE	
Region WESTERN AND CENTRAL AFRICA	Estimated Appraisal Date 07-Feb-2025	Estimated Approval Date 22-Jul-2025	Practice Area (Lead) Water
Financing Instrument Investment Project Financing (IPF)	Borrower(s) Senegal, Mauritania, Niger Basin Authority - NBA, Permanent Framework of Coordination and Monitoring of the West Africa Water Resources Policy - PFCM, Mali, Burkina Faso, Guinea	Implementing Agency Permanent Interstate Committee for drought control in the Sahel - CILSS, Senegal River Basin Development Organization - OMVS	

Proposed Development Objective(s)

To improve the management, resilience and development of surface and ground water resources, and strengthen transboundary water cooperation in West Africa.

PROJECT FINANCING DATA (US\$, Millions)

Maximizing Finance for Development

Is this an MFD-Enabling Project (MFD-EP)? Yes

Is this project Private Capital Enabling (PCE)? Yes

SUMMARY

Total Operation Cost	997.00
Total Financing	997.00
of which IBRD/IDA	947.00
Financing Gap	0.00

DETAILS



World Bank Group Financing	
International Development Association (IDA)	947.00
IDA Credit	542.00
IDA Grant	405.00
Non-World Bank Group Financing	
Trust Funds	50.00
Cooperation in International Waters in Africa	50.00

Environmental and Social Risk Classification	Concept Review Decision
High	The review did authorize the preparation to continue

B. Introduction and Context

Regional Context

1. **Climate change is severely affecting West Africa, amplifying risks of instability and conflict especially in Sahel.** The sub-region is particularly vulnerable to climate change and has witnessed more frequent and more severe droughts and floods in recent years. Since 2000, an average of 248,000 people per year have been affected by floods, while droughts impacted over 20 million people from 2016 to 2020. Temperatures are rising 1.5 times faster than the global average rate and the GDP in Sahel could drop by an estimated 11.7 percent by 2050 due to climate-related water scarcity. Climate models predict a reduction in rainfall days and an increase in rainfall intensity, leading to increased incidence and intensity of floods and droughts which will reduce the availability and quality of water resources, and escalate food insecurity and economic disruptions.

2. **The significant population surge faced by West Africa intensifies climate impacts, increasing pressure on water resources and associated socio-economic challenges.** Currently home to half a billion people, the region is projected to see its population rise by 75 percent between now and 2050.¹ This rapid growth, coupled with climatic change and 43 percent of West Africans living below the international poverty line, is straining water resources and exacerbating food insecurity. Fifty five percent of the population resides in rural areas and heavily relies on natural resources for their livelihoods. The urban population is projected to reach 60 percent by 2050,² which will exacerbate challenges linked to water services delivery, wastewater treatment, drainage and food self-sufficiency.

3. **The region already faces food insecurity and institutional upheaval, compounded by security and political stability concerns.** During the lean season from June–August 2023, an estimated 41.47 million people faced acute food insecurity.³ Over 70 percent of the population lives in fragile and conflict-affected areas, with countries like Niger, Mali, Burkina Faso, Chad, and northern Nigeria face security and humanitarian crises. Insecurity events have more than doubled since 2016, spilling over into coastal countries and straining the social compact. These challenges are intensified by competition over scarce resources, notably water and land, and are further compounded by vulnerabilities to water-related climate shocks.

¹ Own calculation based on <https://www.prb.org/international/geography/western-africa/>

² UN World Urbanization Prospects 2018 <https://population.un.org/wup/publications/Files/WUP2018-Highlights.pdf>

³ CILSS Regional Report for West Africa and the Sahel 2023



4. However, the region is endowed with significant resources and potential for economic expansion, particularly through the valorization of water. The economic activity across West Africa is forecasted to grow at an average rate of 4.2 percent annually between 2024 and 2025. The countries within the West Africa Economic and Monetary Union (WAEMU) - including Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo - are expected to witness even higher growth rates of 6.5 percent in the same period. The African Development Bank's 2023 West Africa Economic Outlook emphasizes the critical role of water resources for sustaining this growth and achieving climate and green growth transitions. The region offers significant water-related opportunities for development, with 91 percent of the irrigation⁴ and 83 percent of the hydropower potentials remaining to be developed. Fully harnessing these resources is essential for job creation, food security, and economic resilience.

5. While agriculture represents 30 to 40 percent of national GDPs and up to 80 percent of employment, the regional irrigation potential remains unrealized. The agriculture and food economy represents 40 percent of regional GDP, and accounts for 66 percent of total employment.⁵ While irrigation has the potential to double African food production,⁶ less than 6 percent of total renewable water resources are currently used for irrigation. Groundwater withdrawals represent about 6 percent of annual groundwater recharge, and irrigated lands constitute less than 5 percent of agricultural lands in the Sahel, compared to around 20 percent worldwide. Addressing these gaps is crucial to enhance agricultural productivity and food security by leveraging the availability of vast tracts of land suitable for agriculture.

6. Western Africa's development prospects depend on effective water resources management (WRM) and climate change adaptation. Three out of four jobs in the global workforce are water dependent, while employment rate is negatively correlated with higher frequency of drought and lower soil moisture. A new paradigm that integrates development, resilience, and valorization of water resources is crucial to the region's socio-economic growth, peace, and stability. Addressing cross-sectoral challenges and maximizing the region's agricultural and energy potential, while overcoming trade barriers, will be key to unlocking West Africa's full potential.

Sectoral and Institutional Context

7. West Africa has a relative abundance of annual renewable water resources (1,300 km³) but presents significant spatial and temporal disparities, compounded by management challenges and investment limitations, particularly in rural and arid areas. The region, including its Sahelian zone, is served by major river systems and large aquifers, most of them transboundary, contributing to more than 70% of water resources in the sub-region. In the Senegal River Valley, irrigation demand is already difficult to meet in the dry season. Nations such as Guinea are well-resourced, contrasting with Sahelian countries that face economic water scarcity.

8. The region boasts 63 internationally significant wetlands, which are ecologically and economically vital. These wetlands, found along rivers and lakes and covering 140,000 km², as well as the groundwater-dependent ecosystems, play a crucial role in biodiversity and the economy. However, they face threats from climate change, dam-induced water regime changes, local overexploitation of water resources, and human impacts, endangering their balance and future. Among others, the Niger Inner Delta wetland in Mali sustains around 2 million people's subsistence and livelihoods.

9. The utilization of the region's abundant surface and groundwater resources remains underdeveloped and uncoordinated. This underutilization underscores the need for improved WRM and development strategies that account for all potential uses and their benefits. Only 75 percent of the regional population has access to basic water supply,⁷

⁴ Calculation based on FAO Aquastat data. This number considers the actual irrigated area over the irrigation potential. Remaining potential to be developed is estimated at 13,121,000 ha.

⁵ Allen, T., P. Heinrigs and I. Heo (2018), "Agriculture, Food and Jobs in West Africa", *West African Papers*, No. 14, OECD Publishing, Paris, <https://doi.org/10.1787/dc152bc0-en>.

⁶ <https://agra.org/news/irrigation-doubles-african-food-production/>

⁷ Own calculation based on WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP) 2022 and focusing on ECOWAS countries + Mauritania (DREVE focus countries).



with stark contrasts between urban and rural areas (urban areas often having higher levels of access, compared to significantly lagging rural areas). In Mali for example, despite abundant per capita water endowments, the lack of mobilization of water resources has led to protests in the face of Bamako water supply shortages.

10. Human activities have significantly deteriorated the quality of West Africa’s water resources over recent decades.

Contributing factors include climate-exacerbated floods and droughts, rapid population growth, delayed sanitation infrastructure development, agricultural chemical use, industrial discharge, and unregulated extractive industries. In the Niayes area in Senegal, which draws from the Senegal-Mauritanian Aquifer Basin (SMAB), phosphates, zircon and quarries mining pollute groundwater and erode the landscapes, affecting storage and threatening high-value horticulture. Sanitation access remains low across the region with only 39 percent having access to basic sanitation and health risks are often overlooked in the planning of water extracting works and activities.

11. With the potential to double agricultural productivity and increase resilience to climate change-worsened drought, irrigation remains an untapped and poorly managed service in the Sahel.

Since the 1960s, the Sahel irrigation sector was marked by a shifting emphasis from large to small-scale systems, including a move from public management towards operation by villages, water-user associations, and private parties. However, areas suitable for irrigated agriculture are largely underdeveloped, with growth slowing significantly over the past 15 years. Of more than 2 million ha of irrigable land, only 37 percent (750,000 ha) is equipped for irrigation, and only 60 percent of the equipped area (428,000 ha) is actually irrigated. Small-scale irrigation now represents most irrigated and irrigable areas, but still has large development potential. Many medium and large schemes face maintenance challenges and require recurrent funding to ensure continued operation. Key factors hindering sector performance include: (a) insufficient engagement of local populations in decision-making processes; (b) inadequate consideration of commercial viability; (c) poor technical design and construction quality; (d) no transparent land allocation process; (e) limited access to finance; (g) unclear responsibilities for scheme operation and maintenance (O&M); and (h) poor coordination between stakeholders. Cooperation on transboundary water resources could unlock the region’s potential, including to mobilize groundwater for climate change adaptation by providing a reliable water source during droughts.

12. Transboundary rivers and aquifers are crucial for socio-economic development and resilience in West Africa and require cooperative management at different scales.

West Africa is spanned by 28 transboundary river basins covering 71 percent of the region, and 23 transboundary aquifers covering approximately 52 percent. The 12 largest river basins⁸ are equipped with River Basin Organizations (RBOs), which have broad mandates for socio-economic development and cross-sectoral coordination among member states. On transboundary aquifers, while shared management initiatives exist, such as for the SMAB,⁹ there is still a lack of operational international agreements for cooperation. These organizations, born from the need to prevent conflicts and manage resources collectively, all evolved beyond water management to drive regional development. However, they face challenges in balancing energy generation, irrigation, flood control, and environmental protection, all essential to promote regional and local climate change adaptation and mitigation. Integrating lessons learned from 20 years of engagement in WRM in West Africa¹⁰ and other initiatives worldwide, DREVE will implement truly innovative features such as (i) supporting WRM beyond and below RBO level, (ii) integrating both surface and groundwater resources interventions and (iii) simultaneously boosting the downstream development and economic benefits of water resources.

⁸ Senegal, Niger, Volta, Gambia, Geba, Corubal, Mono, Mano, Comoé, Bia, Tanoé, and Lake Chad basins.

⁹ <https://unece.org/environment/documents/2021/09/reports/declaration-smab-29-september-2021>

¹⁰ https://www.ciwaprogram.org/wp-content/uploads/CIWA_World-Bank-Engagement-Transboundary-Waters-West-Africa.pdf



Figure 1: Transboundary River and Aquifer Basins in West Africa

13. Addressing regional WRM challenges necessitates coordinated interventions and strong political commitment to achieve climate change resilience, food security, and local economic growth. The interconnection of countries through transboundary rivers and aquifers, along with the trade of virtual water, underscores the need for regional cooperation to bolster development and climate resilience. The Global Commission on Economics of Water advocates for collective management and protection of water resources to address global imbalances and climate change impacts channeled through the water cycle, which affect droughts, floods, and biodiversity. In West Africa, WRM occurs at global, regional, sub-regional, national, and local levels, but fragmentation and lack of coordination hinder effective implementation. Since 2000, regional WRM has been expanded¹¹ through Economic Community of West African States (ECOWAS), WAEMU and CILSS (Permanent Interstate Committee for Drought Control in the Sahel) under the Permanent Framework of Coordination and Monitoring of the West Africa Water Resources Policy (PFCM), co-led by the three regional organizations. The existence of such regional framework is a major asset for the region, but implementation and capacity challenges persist and require support from countries and development partners. For groundwater, Sahelian countries and RBOs developed a partnership with the Sahara and Sahel Observatory (OSS) since 1992 to improve knowledge-based management, governance and resource conservation for transboundary aquifers. The region's economy, heavily reliant on agriculture, is at risk from climate-induced changes.

14. Water development and transboundary management in West Africa need the coordination and collaboration of all national and regional institutions as well as international partners. While regional and sub-regional bodies like the *Organisation pour la Mise en Valeur du fleuve Sénégal* (OMVS) and the Volta Basin Authority (VBA) have made strides in participative management, national policies often suffer from scattered responsibilities and inadequate coordination. Further, national water directorates often present gaps in institutional, financial and human capacities for effective WRM,

¹¹ Through key initiatives like the "West African Regional Vision for Water, Life and Environment for 2025" and the "West African Water Resources Policy - WAWRP" https://ecowap.ecowas.int/media/ecowap/related-policy/PREAO_-_West_Africa_Water_Resources_Policy_EN.pdf



particularly in the context of transboundary issues. Relevant stakeholders include all national agencies, sub-regional and regional agencies, RBOs but also technical and financial partners such as bilateral development agencies, International Finance Institutions (IFIs), and agencies of the United Nations (such as the Water Convention hosted by the United Nations Economic Commission for Europe). With support from Cooperation in International Waters in Africa (CIWA) funding, relevant stakeholders have been mapped and consulted as basis for DREVE preparation.

Relationship to CPF

15. The proposed MPA contributes to the African Union Agenda 2063 to build a prosperous Africa through inclusive growth and sustainable development. Participating countries' efforts to develop sustainable and climate-resilient economies and communities will be supported through improved natural resource management and biodiversity conservation, climate and natural disasters preparedness and prevention, and water security improvement for multipurpose uses, including resilient agricultural production.

16. The proposed support directly ties into the African continent's overarching goals of regional integration and resilience, particularly in areas afflicted by fragility and conflict. DREVE is aligned with the ECOWAS Regional Infrastructure Masterplan, which includes WRM projects and outlines essential infrastructure and institutional capacity developments for the next 25 years.¹² DREVE is also aligned with the Africa Water Investment Action Plan released at COP28, positioning water security as a catalyst for growth and prosperity in Africa and the most crucial factor in climate adaptation. The Plan called for a paradigm shift through five actions to unlock investment finance, 90 percent of which could be accessed from African domestic resources given an improved enabling environment for investments, better water governance and higher budget allocations.

17. The proposed program aligns with the 2013 Dakar Declaration on irrigation development signed by the Sahel Heads of States, which remains current and calls for renewed effort to scale up irrigation development (1 million ha) and improve irrigation sector performance in the Sahel based on appropriate policies and strategies, which are integrated in a value chain approach to contribute to regional food security within natural resource limits.

18. DREVE contributes to implementing the World Bank Group's (WBG) revamped mission to eradicate poverty on a livable planet. The Program, through mutually reinforcing interventions targeting water resources development and security, environmental protection and climate-smart agriculture expansion, will help participating countries (i) enhance resilience to climate change, (ii) reduce food insecurity and fragility, (iii) support livelihoods, and (iv) boost rural development and economies.

19. DREVE responds to the World Bank Evolution Roadmap and the Global Challenges Programs (GCP) by addressing socioeconomic development and ecosystem and natural resources sustainability. DREVE is fully aligned with the Water Security and Climate Adaptation GCP, especially to "Pillar 2: Scaling up Climate Resilient Irrigation to increase food production and water productivity" through planned resilient irrigation development for increased food security; "Pillar 3: Reducing Impacts of Floods and Droughts and Sustainably Managing the Water Resource" through its focus on enhancing regional and national WRM and water-related disasters risk management; and the cross-cutting area "Enhancing water security in Fragile, Conflict and Violence (FCV) for peace and stability," through planned flexible approaches for fragile contexts in AFW. DREVE will also support (i) the GCP on Food and Nutrition Security through irrigation and agriculture activities and (ii) the GCP on Energy Transition, Efficiency and Access by supporting hydropower projects preparation.

20. DREVE is closely aligned with key World Bank regional strategies and priorities, focusing on integrating water security with socio-economic development and regional stability. It contributes to all four pillars of the AFW regional

¹² <https://ppp.ecowas.int/wp-content/uploads/2022/04/REVISED-DRAFT-FINAL-REPORT17.pdf>



2021-25 strategy “Supporting a Resilient Recovery”¹³ by supporting governance and institutions, promoting jobs creation, strengthening human capital and empowering women, and boosting climate resilience. DREVE is aligned with the Africa Regional Integration and Cooperation Strategy,¹⁴ and the related Update for the Period FY21-FY23,¹⁵ geographically (through the Sahel focus in Phase 1), thematically (cf. Strategy Pillar 1 - Building Regional Connectivity - and Pillar 4 - Reinforcing Resilience), and on cross-cutting areas such as ‘Coordinated Interventions to Provide Regional Public Goods’ and ‘Strengthening Regional Strategic Planning and Connections with National Development Plans.’ Program interventions will also contribute to the WBG Strategy for FCV (2020–25), particularly Pillar 1 (Prevention) and Pillar 3 (Transition out of fragility). DREVE is fully aligned with the GCP approach to innovate (through the regional revolving fund and groundwater development), replicate (successful approaches from PGIRE¹⁶ and SIIP¹⁷) and scale-up (irrigation, drought preparedness and dam safety) as transformative business models for water resources management and development.

21. DREVE is aligned with the Country Partnership Framework (CPF) of countries participating in Phase 1, namely Burkina Faso, Guinea, Mali, Mauritania and Senegal, as detailed below:

Country	Alignment of DREVE with the CPFs
Burkina Faso	Burkina Faso CPF FY18-FY23 <ul style="list-style-type: none"> • Objective 1.1: Improve agriculture productivity and agribusiness value chains in targeted areas; • Objective 1.5: Address management of extractives and sustainability of natural resources; • Objective 2.4: Expand access to water and sanitation services
Guinea	Guinea CPF FY18-FY23 <ul style="list-style-type: none"> • Objective 3.2: Country NDC objectives/actions related to natural resource management achieve; • Objective 6: Increased agricultural productivity and access to markets; • Objective 7: Better access to energy and water through improved management of utilities
Mali	<ul style="list-style-type: none"> • A new partnership framework for the period 2024-2026 is currently under preparation. DREVE is expected to be aligned with the CPF and is working in close collaboration with the client. Latest Mali CPF FY16-FY19 <ul style="list-style-type: none"> • Objective 2.1: Improve productive capacity and market integration of farmers and pastoralists • Objective 2.2: Agriculture value diversification • Objective 3.2: Strengthen safety nets, improve risk management mechanisms for the poor and vulnerable and adapt to climate shocks
Mauritania	Mauritania CPF FY18-FY23 <ul style="list-style-type: none"> • Objective 1.2: Increase agriculture and livestock production in the face of climate change
Senegal	Senegal CPF FY20-FY24 <ul style="list-style-type: none"> • Objective 2.4 Boost productivity and competitiveness of agriculture and related value chains; • Objective 3.1 Promote and protect resilient livelihoods, ecosystems, and infrastructures in the face of climate change; • Objective 3.2 Ensure access to water and sanitation in the most vulnerable areas.

¹³ Supporting a Resilient Recovery. The World Bank’s Western & Central Africa Region Priorities 2021-2025

¹⁴ Report No. 121912-AFR

¹⁵ Report No. 154458-AFR

¹⁶ Senegal River Basin Multipurpose Water Resources Development Project phase 2, known as PGIRE2.

¹⁷ Sahel Irrigation Initiative Support Project



22. **DREVE addresses regional challenges and priorities in coordination with national projects.** As part of a coordinated programmatic and two-pronged national-regional approach to sectoral transformation, in all priority intervention countries, water sector support is articulated through two instruments: a national operation targeting local water security investments, service provider performance and national WRM, and regional intervention through DREVE to support transboundary water mobilization, valorization and management, focusing on structuring transboundary activities and infrastructure. In each case,¹⁸ DREVE is leveraging the more advanced preparation status of national operations to strengthen national WRM institutional capacity to engage on transboundary issues and to identify priority activities of regional or transboundary impact, which can then be supported through DREVE. DREVE's irrigation investments focusing on transboundary waters are expected to generate positive externalities and synergies with other World Bank-funded national projects. For instance, they will complement the Senegal Water Security and Sanitation Project's pilot activity on reusing urban wastewater for irrigation development. In Burkina Faso, DREVE's irrigation activities will build on the Burkina Faso Water Security Project's water storage rehabilitation to develop irrigated areas. Likewise, national projects under preparation will benefit from DREVE institutional and planning activities aimed at operationalizing community-owned local development plans for integrated irrigation scale-up based on a transparent allocation of land and water resources.

23. **DREVE builds upon past and current WB engagement across the Global Practices (GP) to respond to the cross-sectoral and catalytic role of water.** Project preparation and implementation will be conducted in close collaboration with the Agriculture and Food GP (e.g. irrigated crops and extension services valuation, agricultural inputs provision, processing or storage facilities, organizational support to farmer associations and training, information and communication technologies (ICT), market access), the Environment, Natural Resources, and Blue Economy GP (e.g. landscape and ecosystem protection and restoration), the Social, Sustainability and Inclusion GP (e.g. community-driven development, gender equality and inclusion), the Urban, Disaster Risk, Resilience and Land GP (e.g. floods and droughts), the Energy and Extractives GP (e.g. hydropower), and the FCV and Climate Change Teams.

C. Proposed Development Objective(s)

24. To improve the management, resilience and development of surface and ground water resources, and strengthen transboundary water cooperation in West Africa.

Key Results (From PCN)

25. **Benefits are expected from development impacts related to increased and more impactful regional integration and transboundary cooperation around water resources.** Improvements linked to regional integration would yield significant positive social and economic externalities that will boost economic growth beyond basin and country boundaries.¹⁹ Transboundary cooperation has the potential to generate many significant benefits for cooperating countries, such as accelerated economic growth, improved human well-being, enhanced environmental sustainability and increased political stability.²⁰

26. **Better Hydromet, climate and EWS would improve agriculture and energy sector management and reduce impacts from droughts and floods.** These potential benefits would make the contribution of improved hydromet services to West Africa's socioeconomic development high, as shown by the socioeconomic analysis of the ECOWAS-WMO-WB Hydromet

¹⁸ For phase 1, water security projects include: Senegal Water Security and Sanitation Project (P178673), Mali Water Security Project (P181538), Guinea Water and Sanitation Project (P179017), and Burkina Faso Water Security Project (P177094).

¹⁹ See economic analyses in ECOWAS, WB RI, AfDB regional integration strategies, GCPs Approach Paper – Fast Track Water Security and Climate Adaptation, ECOWAS Vision 2050 (ecowas.int/special_post/vision-2050/)

²⁰ <https://unece.org/environment-policy/publications/policy-guidance-note-benefits-transboundary-water-cooperation>



Initiative.²¹ The benefit-cost ratio ranges from 7 to 10 for each dollar invested. The net present value of the expected benefits for West Africa ranges between US\$770 million and US\$2,217 million depending on the applied discount rate.

27. Improving sustainable access to groundwater can buffer a third of the losses in economic growth caused by droughts and can protect cities against day-zero-type events.²² It is especially important for agriculture, where groundwater can reduce up to half of the losses in agricultural productivity caused by rainfall variability. In the targeted countries, developing the untapped groundwater irrigation potential could be key to improving food security and poverty reduction. By insulating farms and incomes from climatic shocks, the insurance of groundwater translates into protection against malnutrition, resulting in a significant decrease in stunting among children under five years old.

28. Expected benefits from irrigation investments are qualitative and quantitative. Qualitative benefits include stakeholders' improved knowledge and skills to plan, develop, and manage irrigation; institutional strengthening of public and private services in the field of irrigation and land tenure improved at local, national, and regional levels; improved food security in project intervention areas; climate benefits due to renewable energy technologies use; GHGs due to land use changes and efficient fertilizer use; and irrigation knowledge documenting and sharing to enhance the viability and harness the scale up potential for irrigation in the Sahel. In quantitative terms, the program would increase agricultural water productivity/production; provide more reliable and increased number of harvests; create jobs and support livelihoods; and increase household revenues from improved water availability for pastoral and agricultural uses.

29. Navigation will promote the development of trade, agriculture, agro-industries and mining potential. By facilitating river transport, a crucial element for strengthening the socio-economic development of the riparian countries, the Program will reduce transportation costs and connect mineral mining areas to ports.

30. Avoided flood damages, reduced pollution and erosion due to project activities and improved WRM and EWS will be significant. Flooding, erosion and pollution are major challenges in West Africa. They cause death, reduce the quality of life of citizens and result in considerable economic damage representing over 5.3 percent of the GDP of Benin, Cote D'Ivoire, Senegal and Togo.²³ Water pollution (for example, damage caused by the discharge of untreated agricultural and industrial wastewater) is the cause of much damage. The annual social and economic costs of water pollution from agriculture are very high.

31. Based on these expected results, the following Program Development Objective (PrDO) level Outcome Indicators are proposed and will be further fine-tuned during program preparation: (i) Direct program beneficiaries (number and percentage of female beneficiaries); (ii) Volume of water storage secured through dam safety measures and rehabilitation of assets (m³); (iii) Area covered by regional information systems on groundwater and surface water in use for improved management of water resources, droughts and floods (ha); (iv) Share of the groundwater resource sustainably used for resilient economic development (percent); (v) Area equipped or rehabilitated with irrigation and drainage services – estimated at 50,000 ha for phase 1 (Number of ha and share of groundwater serviced ha); (vi) Number of transboundary river basin and countries with flood and drought management plans ready and operational (number); (vii) Areas of watersheds protected for sustainable land management and (surface and ground)water resources protection; and (viii) Regional cooperation and knowledge-sharing events organized to support transboundary river basin and aquifer management (Number).

D. Concept Description

²¹ <https://ecowas.int/wp-content/uploads/2022/03/ECOWAS-Hydromet-Initiative.pdf>

²² See: [The Hidden Wealth of Nations: The Economics of Groundwater in Times of Climate Change](#)

²³ Croitoru, Lelia; Miranda, Juan José; Sarraf, Maria. 2019. *The Cost of Coastal Zone Degradation in West Africa: Benin, Côte d'Ivoire, Senegal and Togo*. World Bank, Washington, DC. © World Bank.



32. The proposed program targets to provide long-term and coordinated support to achieve the previously described regional goals and results for sustainable transboundary water resources development and management. The Program is organized in two phases around the four following Pillars : i) *Transboundary river basin development, resilience and governance* to strengthen RBOs and support investments on priority regional infrastructures; ii) *Groundwater for Development and Resilience* to provide resilient high-quality infrastructure tapping into sustainable groundwater sources to promote drought resilience and to improve associated stakeholder capacity; iii) *Leveraging Transboundary Water for Irrigation and Food Security* to tap into the irrigation and agriculture production potential from transboundary water resources; and iv) *Strengthening Regional Water Security and Climate Resilience* to establish a regional platform and facility for the coordinated development, monitoring and resilience of water resources. Proposed content of Pillars and Phases as discussed with key beneficiaries and stakeholders is summarized in Figure 3 and further detailed below.

Pillar 1: Transboundary River Basin Development, Resilience and Governance

33. Pillar 1 is designed to enhance the management and development of transboundary water resources, with a focus on surface water. In collaboration with existing RBOs, its overarching goal is to foster socio-economic development, resilience to floods and droughts, and peace, and to serve as a pivot for regional integration, food, water and energy security. In Phase 1, this pillar will primarily target investments and governance measures in the Senegal River Basin (through OMVS) and some technical assistance to the Niger River Basin (through NBA) to prepare technical and safeguard studies for investments that would materialize in phase 2. Phase 2 will additionally focus on other RBOs such as for the Volta and the Gambia River basins.

Pillar 2: Groundwater for Development and Resilience

34. Pillar 2 aims to enhance the management and development of groundwater resources at the regional, transboundary and national levels. In this sense, this pillar will (i) strengthen governance on priority transboundary aquifers, (ii) provide water users in targeted countries (Senegal, Mauritania, Mali and Burkina Faso) with resilient high-quality infrastructure tapping into sustainable groundwater sources; and (iii) improve stakeholders' capacity to develop and manage their groundwater resource and its associated uses (irrigation, water supply and ecosystems). This pillar will build on the Sahel Groundwater Initiative Advisory Services and Analytics (ASA) and the latest World Bank report on the economics of groundwater,²⁴ and will be transversal to the other three pillars, bolstering groundwater development for inclusive, socio-territorial development that provides increased access to drought-resilient water resources, thus increasing climate change adaptation. Regarding groundwater governance, phase 1 will focus on the SMAB, where the process was initiated in October 2019 (while the second phase of the program will consider extending to Gambia for the SMAB work) and will provide similar support to the riparian States of the Lullemeden Aquifer System, which have been involved in setting up a transboundary cooperation mechanism since 2009.

Pillar 3: Leveraging Transboundary Water for Irrigation and Food Security

35. Pillar 3 aims to leverage transboundary waters (surface and groundwater) to scale up the development of water and energy-efficient irrigation solutions and their sustainable management to expand climate-resilient agriculture in targeted Sahelian countries. It will build on and expand the accruing results, development outcomes and lessons of past and ongoing irrigation operations, including the closed PGIRE2 and ongoing SIIP. This pillar will (i) strengthen the institutional and planning framework for irrigation in participating countries, (ii) finance resilient irrigation investment solutions and (iii) support irrigation solutions knowledge management, information sharing and coordination. Phase 1

²⁴ Rodella, Aude-Sophie; Zaveri, Esha Dilip; Bertone, Francois. (2023) *The Hidden Wealth of Nations : The Economics of Groundwater in Times of Climate Change (English)*. Washington, D.C. : World Bank Group. <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099257006142358468/idu0fb2550de013100434708d920a3e3bec6afb1>



will focus on Burkina Faso, Mali, Mauritania, and Senegal while phase 2 will scale up interventions in these countries and extend to Chad.

Pillar 4: Strengthening Regional Water Security and Climate Resilience

36. **Pillar 4 will leverage and strengthen the existing regional cooperation mechanisms to operationalize a platform dedicated to the development, valorization, and resilience of water resources in West Africa.** This pillar will support both regional and national organizations involved in surface and groundwater resources management, including RBOs such as OMVS and NBA, as well as the PFCM, including CILSS, WAEMU and the Water Resources Management Center (WRMC) of ECOWAS, OSS, and national stakeholders. The primary goal is to create a hub of competence and knowledge, pooling resources and skills to catalyze action on WRM and climate change adaptation across the region. Phase 1 will support the development of the regional facility and a revolving fund that will be accessible to public and private entities for preparing upstream studies (such as strategies, diagnostics, as well as technical and safeguard studies towards bankability of investments). It will also include carrying out of key studies for early warning systems, floods and drought management, and dam safety, while phase 2 will focus on operationalizing these various tools and developing critical projects studied under phase 1. Pillar 4 is designed based on the findings of an extensive stakeholder mapping and sounding supported by CIWA.

Legal Operational Policies

	Triggered?	
	Last approved	Current
Projects on International Waterways OP 7.50	No	
Projects in Disputed Area OP 7.60	No	

Summary of Screening of Environmental and Social Risks and Impacts

CONTACT POINT

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Pierre Jacques Lorillou
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Mauritania

Niger Basin Authority - NBA

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APPROVAL

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