

With increasingly limited and erratic water resources availability, the challenge of providing reliable water supplies to its population and economy, while safeguarding the environment, is becoming increasingly complex.

The Law mandates a bold reform of the regulatory framework, promotes private sector's participation in service delivery, and introduces credit enhancement mechanisms. The new State administration in office since early 2023, confirmed universal access to WSS a priority and is drafting a Law to align

⁵ Floods risks only affects a small share of the territory in the south coastal region.

⁶ Water security is defined here as the combination of water resources management and water services delivery, the later including water supply and sanitation as well as irrigation.

⁶ Pernambuco RWSS management model study, State of Pernambuco, 2018.

⁹ Pernambuco RWSS management model study, State of Pernambuco, 2018.

Securing a water source in a context of climate change-exacerbated droughts and water scarcity is one of the two main challenges to reach universal RWSS access in Pernambuco.

The second main challenge to reach universal access is to set-up sustainable management models for service delivery. New RWSS systems are frequently abandoned by the local communities they are supposed to serve (known as self-supplied), sometimes because the technology is too complex, but mostly because of the lack of prolonged technical assistance to the rural community in charge of its O&M and insufficient tariff payment.

This situation may lead to increased conflicts over water use and migration as well as further investment needs to reach universal access, as alternative, more costly water supplies must be tapped. Finally, while limited to the southern coastal region (Mata Sul) and a very small share of the Project area, the expected future increases in floods intensity and frequency highlight the need to increase the overall resilience of RWSS systems to such events through better design and contingency plans.

On-going financed activities include: (i) developing the complementary state-level infrastructure to the PISF to reach the end users, notably for RWS and (ii) setting-up the financing and management model for sustainable O&M of

² Trata Brazil.

⁵ The water transfer from the São Francisco River to four Northeastern States, known as Projeto de Integração do Rio São Francisco - PISF is a Federal Government project, which aims to secure water sources for WS and to promote the development of the driest areas of the states of Pernambuco, Ceará, Paraíba and Rio Grande do Norte. The project transfers water from the São Francisco River through two main axes, with a total of 477km of canals, 04 tunnels, 14 aqueducts, 9 Pumping Stations and 27 reservoirs: North Axis has 260 km of extension, and East Axis 217 km of extension.

Beyond hydraulic infrastructure, securing water quantity and quality for rural water requires improving the management of water resources, including better knowledge of the sedimentary aquifers capacity, better water monitoring of the rural water sources, better control of water uses in those sources notably through water rights administration and negotiated allocation, developing and implementing drought preparedness and contingency plans for rural water, activities that will be supported by the Project to secure the water sources of its RWSS systems. To address flood risks in the south coastal area, the State is building four dams to contain floodwaters and has a hydrometeorological system managed by APAC that issue flood alerts.

To address the challenge of setting-up sustainable management models, the State Government, with support from two IBRD-financed and completed projects (Pernambuco Sustainable Water PSH (P108654) and the Pernambuco Rural Economic Inclusion Project PRS or Prorural (P120139)), created a RWS information system with incentives for rural communities to self-register (7,000 communities have registered) and developed a strategy that defines the institutional framework to reach rural universal access ²⁶

Water Resources Management. The Pernambuco water and climate agency (APAC), ascribed to the Secretariat of Water Resources and Water Supply & Sanitation (Secretaria de Recursos Hídricos e Saneamento - SRHS), is the main government entity in charge of water resources management. It oversees the execution of the 2005 State Water Resources Policy ²⁷. Its main functions include : (i) water resources and climate information ²⁸; (ii) water resources planning; (iii) the emission, control and enforcement of water rights, discharge permits and hydraulic works authorizations; (iv) setting ambient water quality targets in coordination with environment; (v) the definition and collection of water user fees; (vi) encourage the creation and support the functioning of river basin councils; (vii) mediation of conflicts over water resources; (viii) enforce dam safety regulations; (ix) plan and promote actions to reduce the effects of droughts and floods; (viii) control and enforcement of dam safety; (ix) define the rules and criteria of hydraulic infrastructure operation; and (x) control with police power, the use of water and the bulk water service delivery from the PISF and collect related bulk water tariff. The main issues that APAC faces to implement its functions are: (i) limited financial resources as the water use resource fees foreseen in the State Water Law have not been approved yet ²⁹; (ii) the absence of local offices while most of its functions require presence in the field; and (iii) insufficient staff positions considering recently increased functions and unfilled existing positions. Another relevant institution for water resources management is the Water Infrastructure Executive Secretariat (SEIH) under SRHS which is responsible to build some of the major water infrastructure owned by the State, including bulk water pipelines, canals and dams, while the O&M of those infrastructure is the responsibility of their main users, including in the case of water supply, the State Water Utility and the State Executive Secretariat for Water Supply and Sanitation (SESAN).

²⁸ Including, the management of the State Integrated Water Resources Information System, including the water user and water infrastructure registries. the coordination of the state hydrological (quantity and quality) and meteorological monitoring and forecasting system; the coordination of water and climate studies and research.

²⁹ The water resource use fees are designed to complement APAC's budget and as an incentive for efficient use of water resources and are expected to be introduced following their approval by the State Assembly early 2024. Those fees are not to finance the O&M of potable water supply infrastructure which is to be financed by a water tariff.

The State strategy to structure the RWS sector, which is under implementation since 2021, is designed to address the sustainability issue of RWS systems as well as substantially increase investments in the sector to reach universal water access in rural areas

The State Government decided to start with the implementation of the semi-professional schemes, ranging from 80 to 1,500 families, centered around the Integrated Scheme for Rural Water Supply and Sanitation (Sistema Integrado de Saneamento Rural) model, successfully implemented in other Brazilian states.

They are expected to fully cover their expenses (mostly energy and local operator) through tariff collection.

- b. SISARs are responsible for carrying out specialized RWS maintenance at scale; the acquisition of chemicals for water treatment, supporting the establishment, strengthening and technical assistance to community associations to ensure their sustainability over time; and carrying out socio-environmental education activities. They are financed from a share of the tariffs charged by the community associations to water users.
- c. State sector institutions (Compesa and/or SRHS/SESAN) define technical standards for designs and works; monitor results and water quality delivered by the RWS systems; subsidize SISARs during their incubation phase, estimated to be the first three years of each SISAR implementation.

The SISAR model is currently designed to supply water to communities between 80 and 1,500 families, which cover a large share of the rural population.

Sanitation solutions for emptying and disposing the sludge/excreta will be studied as part of the

World Bank's studies (World Bank, 2017).

Estudo de modelos de gestão de serviços de abastecimento de água no meio rural no Brasil) have recognized SISAR's scheme as implemented in the State of Ceará as best practice for servicing drinking water supply.

The Government requested IBRD's support for the implementation of this initial Government RWSS strategy centered around climate-resilient water sources and RWSS systems and the SISAR model which is still at an initial stage of implementation.

During the 'incubation' phase, SISAR's functioning are subsidized by Compesa and SRHS, until the water tariffs collected from the community associations cover their full costs.^{3,2} The State Government also requested support to strengthen its capacity for scaling-up and reaching universal access, including for developing a Universal, climate-resilient RWSS access strategy and key instruments to implement it (planning, design studies, financial model studies and RWSS information system strengthening).

The Project is consistent with the priorities of the World Bank Group's (WBG) Country Partnership Framework (CPF) for Brazil, 2024-2028,^{3,3} and WBG Corporate commitments. It directly supports the CPF's High Level Outcome 2 ('Greater Inclusion of the Poor and Underserved Populations') and related objective 2.1 'Improve access to essential services and products'; High Level Outcome 3 ('A Greener Economy with Reduced Vulnerability to Climate Shocks') and related objective 3.1 'Improve management of natural resources' as well as cross-cutting theme of Governance and institutions. The Project is aligned with the following corporate priorities: (i) WBG's Evolution Roadmap, by contributing to the WBG Scorecard 'Planet' indicator #6 'Inclusive and equitable water and sanitation services'; (ii) the Global Challenges Program 'GCP #1 'Fast-track Water Security and Climate Adaptation'; (iii) closing some of the Gender gaps identified in the 2016-2023 WBG's Gender Strategy by mandating adequate female participation in key Project's activities such as training, capacity building, water user association mobilizations and management, interventions planning and/or design (see Annex 3 for more details); (iv) Climate change adaptation and mitigation supporting the objectives set in the Brazil CCDD and IBRD Climate Change Action Plan; (v) the WBG's Goals of poverty reduction and shared prosperity on a livable planet, by closing the WSS access gap between more prosperous urban areas and rural areas where the concentration of poor is the highest, improving rural sanitation, thereby reducing contamination and increasing the state capacity for water resources management; and (vi) the Bank's Green, Resilient and Inclusive Development (GRID) Strategy.

More broadly, the Project is aligned with the State's 2014 Development Strategy.^{3,4} which specifically calls for 'improving WSS services and increasing water security in rural areas', as well as reducing the public service and development gaps between urban and rural areas; slowing-down rural migration and improving the quality of life and health of rural population and their resilience to climate change risks.

In their latest Updated NDC, on mitigation, Brazil commits to a reduction of 37 percent and 50 percent in its GHG emissions by 2025 and 2030, respectively, compared to its 2005 level, and to achieve climate neutrality

^{3,2} SESAN is discussing the potential creation by Decree of well-structured two units to replace the UGSR in giving more robust support to the RWSS sector and to SISAR.

The Project is not expected to be emissions intensive and will not jeopardize NDC mitigation goals, having the potential of reducing GHG emissions by promoting the use of appropriate and climate resilient water and sanitation systems. Moreover, NDC and the National Adaptation Plan promote the integration of climate risk management into planning and management instruments as well as increasing understanding on climate vulnerability and risks, in vulnerable sectors, including water. The Project will directly contribute to these climate adaptation efforts at the State level by improving drought and flood forecasting and climate projections (through improved hydromet observation networks and better radars calibration) and climate risks preparedness (State drought preparedness plan and RWS drought/flood contingency plans when required), integrate climate risks management into the State WSS strategy and RWSS plans for universal access and, RWSS systems designs, and prioritize water sources that are resilient to climate risks. The Project is also aligned with the Ecological Transformation Plan's Circular Economy pillar by extending water and sanitation coverage; and the New Infrastructure and Adaption pillar by supporting the implementation of climate resilient RWSS systems.

In addition, once fully operational, the SISARs should be able to leverage donors and private financing for RWSS investments as happened in the State of Ceará

The Project Development objectives (PDOs) are to increase access to sustainable, safely managed drinking water supply and improved sanitation³⁷ in selected rural communities and to build the Borrower's capacity to reach universal RWSS services

In this Project, 'sustainable', considers two dimensions: institutional (with management models in place for O&M operation) and climate resilience (water source resilient to climate risks³⁷ with contingency plan).

Improved sanitation, in this Project, is defined as Basic or Safely managed sanitation, which as per the JMP standards mean, in both cases, designed to hygienically separate excreta from human contact and are not shared with other households, and, in addition, in the case of safely managed, where excreta are safely disposed of in situ or removed and treated offsite.

³⁷ A climate-resilient potable water supply system guarantees access to potable water in case of severe droughts or more pronounced water scarcity brought about by climate change. This could be either because the source of water for the system is not vulnerable to climate variability or because contingency plans exist to activate an alternative source of potable water if the first one fails.

The proposed project sets the basis for a programmatic approach addressing one of the most pressing water security challenges in the Northeast of Brazil. The Project is a steppingstone towards addressing one of the most critical water security challenges facing the Northeast region of Brazil under a changing climate and of high relevance to its States Governors agenda; that is providing sustainable, universal access to potable water supply and sanitation services in rural areas. Given the magnitude of the challenge, the current operation is conceived as the first in a sequence/suite of projects that will support the State of Pernambuco in its path to reach the sustainable, universal access goals by 2033. To this end, the current Project will build the State and community capacities to reach and sustain this goal by developing a Universal access RWSS strategy; setting-up the institutional, planning, policy and financial frameworks and preparing feasibility studies for works and technical assistance to be carried out in subsequent operations.

Moreover, this operation is expected to serve as a template for other States' engagements in rural WSS in the North-East of Brazil and is very much aligned with the upcoming Water Security and Climate Adaptation Global Challenge Program approach and vision.

The proposed Project is a US\$113 million Investment Project Financing (IPF) operation, financed by a US\$90 million IBRD loan and US\$23 million in State counterpart funds.^{3,9}

This component aims at increasing rural population's access to safely managed drinking water supply resilient to water scarcity, droughts and floods, and improved on-site sanitation solutions, thereby contributing to the State universal WSS access goal and increasing the rural population's resilience to climate change exacerbated water scarcity, droughts and floods.

Subcomponent 1.1 · Increase access to safely-managed RWS and improved on-site sanitation solutions with climate-resilient designs (US\$69.50 million of which US\$66.50 million IBRD financing and US\$3 million counterpart funds).

It will also finance feasibility studies and engineering designs of RWSS systems that will be implemented in subsequent projects.

Subcomponent 1.2 · Improve climate-resilience of water sources (US\$20.80 million of which US\$0.80 million IBRD financing and US\$20 million counterpart funds). The subcomponent will increase water source resilience to climate risks and respond to IBRD's Environmental and Social Framework (ESF) requirements on dam safety for RWSS subproject

³ 8 Index to assess the institutional sustainability dimension of the PDO including the quality and sustainability of the WS service provided by SISAR considering financial equilibrium and chlorine content in distributed water.

⁴ 0 Water supply systems would include water source intake, treatment, storage, conveyance and distribution network at household level.

This is fully financed with counterpart funds; and (b) instrumentation and basic maintenance^{4,3} identified in the safety action plans of the existing dams on which RWS financed under component 1.1. rely upon^{4,4} No rehabilitation.^{4,5} of existing dams nor construction of new dams will be eligible for financing.

Subcomponent 1.3 · Innovate with climate-resilient, safely-managed RWSS pilot solutions for universal access (US\$0.97 million, fully IBRD financed). The subcomponent will implement innovative technical and management pilot solutions to prepare for climate-resilient, universal access in those rural water supply market segments not covered by SISARs (especially small villages and scattered housing) and to transition fully to safely managed sanitation designed to be resilient to increased scarcity, floods and droughts (design elements detailed in the Technical Analysis section). Financed activities include development of studies and designs for water scarcity, flood and drought resilience, implementation of pilots, monitoring of results, evaluation for replicability and scalability, incorporation in RWSS strategy and investment plans and dissemination of results, including in RWSS strategy and investment plans developed under 2.1.

This component aims at building the capacity of the public and private, not-for-profit entities (State, SISAR, community's associations) that have a key role in delivering sustainable, safely managed, and flood and drought-resilient RWS and improved sanitation solutions to reach universal and climate-resilient access.

Subcomponent 2.1 · Build the Borrower's capacity to reach universal RWSS access and sustainably managed RWS systems (US\$7.95 million, fully IBRD financed).

Subcomponent 2.2 · Strengthen the resilience of the Borrower's RWS systems' water sources under climate risks (US\$7.80 million, fully IBRD financed). This subcomponent, in complement to the system-specific activities supported under subcomponent 1.2, aims at strengthening the resilience of the State's RWS system's water sources against climate risks. More specifically, it will:

⁴ Botafogo water system supplies water to around 910,000 mostly urban inhabitants.

³ Basic maintenance includes services to a dam to prevent safety problems.

⁴ Better instrumentation and maintenance of dams would reduce risks of flooding from dam failure, especially in areas where peak water flows in the river is expected to be higher due to climate change, such as in the coastal south.

⁵ Rehabilitation would include services to recover a dam from safety problems.

Increase APAC's capacity to carry out its water resources management (WRM) and São Francisco inter-basin transfer (PISF) O&M and regulation functions where they will contribute to secure rural water sources. This includes, inter alia: (i) the construction or renovation and equipment of APAC's headquarters and two regional offices to increase its presence in the field and its working environment taking into account climate dimensions; (ii) the promotion of a public awareness campaign to increase water users' registration and water rights emission; (iii) the development of hydrogeological studies of sedimentary aquifers to identify drought resilient sources; (iv) the strengthening of hydromet monitoring^{4, 8} to better manage rural water sources, improve drought and flood forecasting and climate projections; (v) the development of a state-wide drought preparedness plan, (vi) the carrying out of feasibility studies for urban riverfront park to improve riverfront public access and recreational use as well as improve river and banks ecological state; and (vii) the design and implementation of hydraulic infrastructure and sanitation planning platform.

Increase SESAN's and APAC's capacity on dam safety and resilience to extreme flood events, including through (i) the preparation or update of dam O&M plans, dam safety plans and emergency preparedness plans; (ii) the evaluation of dam safety status; (iii) a risk-based inventory of dams in the Borrower's territory; and (iv) the adoption of risk management approaches and tools; as well as staff training.

This component strengthens the Borrower's capacity to carry out the Project through, inter alia, (a) the setting up and operationalization of the PMU, in particular with respect to (i) the coordination, management and administration of Project's activities; (ii) the hiring of staff and of key consultancy firms; (iii) the delivery of training; (iv) the provision of equipment; (v) the carrying out of financial management and procurement activities; (vi) the carrying out of monitoring, supervision and Project evaluation activities; (vii) the carrying out of the environmental, social and dam safety aspects of the Project, as well as the implementation of a grievance redress mechanism; (viii) the carrying out of technical and financial audits; and (ix) the carrying out of citizen and gender engagements, and communication and outreach activities; and (b) the strengthening of internal controls of the Borrower through the provision of support to the State Comptroller General.

The Project will also build the State institutional capacity (SESAN COMPESA APAC) to deliver sustainable, universal RWSS access, ultimately benefiting Pernambuco's entire rural population, estimated at 1.6 million people. Moreover, the strengthening of APAC's capacity to implement its WRM, dam safety and PISF functions should indirectly benefit, both rural and urban populations (about 10 million people), as well as most of the economic activities on which they rely for their livelihood.

^{4, 8} Disdrometers and thermohydrometers, automatic rain gauges, hydrological data collection platforms, topographic surveying equipment.

Drawing on long and successful engagement in Pernambuco's water sector and the Northeast overall and its extensive global experience in RWSS and WRM, the Bank can play a unique role in supporting the State of Pernambuco in reaching its universal WSS access goal in rural areas through lending and technical assistance, particularly in advising the State on ways to enhance the sustainability of RWSS investments, in particular through the strengthening of SISARs, participatory approaches, community participation, climate change mitigation and adaptation, and provide technical, managerial, operational, and supervisory expertise, enhancing investment sustainability and delivering added value to local communities.

The Avina Foundation fosters public-private partnerships for RWSS interventions and is planning to fund a few RWS systems where SISARs are already operating.

Project design ensures that RWS relies on climate resilient water sources or includes contingency plans in case their water sources are still vulnerable to multi-year droughts. It also strengthens the capacity of the State in WRM, to improve knowledge, monitoring, and control of water sources from illegal uses.

d Scaling-up safely managed sanitation solutions, the highest service level, in rural areas has been a challenge.

However, transitioning to safely managed solutions is particularly challenging as it implies being able to either safely dispose excreta on site or remove them and treat them offsite.

(subsidizing sludge removal by accredited trucks; grey water re-use and composting) have had limited durable results and uptake, whether it is dependent or not on household participation and financing. For this reason, the Project commits to at least reaching basic sanitation while striving to provide safely managed solutions where possible by promoting knowledge exchanges; piloting solutions successfully implemented and scaled-up elsewhere; including suitable arrangements for their O&M and financing, in order to find solutions that could be replicated and considered in the WSS plan and universal RWSS strategy.

The Secretariat of Water Resources and Sanitation (SRHS), through the Executive Secretariat of Water Supply and Sanitation (SESAN), will be responsible for overall Project implementation and coordination with other participating institutions, for which a Project Management Unit (PMU) will be created within SESAN by State decree. The PMU will be responsible for Project coordination, implementation and supervision, including procurement and contract management, monitoring and evaluation, financial management (accounting and disbursement procedures), and environmental and social management. The PMU will be established, and its Key Staff and a focal point for dam safety within SRHS will be hired or designated prior to effectiveness.

Technical support to the PMU will be provided by Compesa, APAC, SRHS, and the State's Secretariat of the Controller General (SCGE) with, inter alia, the preparation of the terms of references/technical specifications and contracts supervisions and management.

The SRHS will enter into cooperation agreements with Compesa, APAC, and SCGE, all under terms and conditions acceptable to the Bank, that establish their respective roles and responsibilities in Project implementation.

The SRHS will enter into operational agreements with each of the six SISARs to specify their respective responsibilities in the management of the RWSS schemes not later than 30 days (i) after Project-s effectiveness (for the existent SISARs) or (ii) after SISAR-s creation (for the new ones to be established).

The PMU will be responsible for Project-s Monitoring and Evaluation (M&E), consolidating information from SISARs management reports, civil works supervision reports, beneficiary surveys, and information provided by the technical cooperating entities, among others.

access, notably to close the service gap with urban areas, is a key priority of the current Government

Universal RWSS

The State Government has been prioritizing actions in the sector by securing additional funding through negotiations with the Federal Government. Moreover, it is considering the Project as a stepping-stone to prepare a large RWSS program for universal access, possibly through a vertical MPA, and is currently mobilizing financing from other sources that will follow the Project-s approach.

Project design places a significant emphasis on the sustainability of its outcomes, by addressing the main causes of RWSS system failure: O&M management and financing models and the climate-resilience of water sources. To do so, it will support the implementation of the proven SISAR management model that is enshrined in the State-s RWSS strategy and will rely on climate-resilient water sources, or develop contingency plans if the sources present residual climate risks.

and prioritization criteria were developed.

Investment needs exceed Project's financial capacity, so a set of eligibility

Studies are being carried out for the first two SISARs that are operational to define the tariff structure, investment needs, number of connections and minimum SISAF capacity in order to reach O&M sustainability (or maturity) while providing quality service provision, and thereby better calibrate the level of efforts needed from the State to support the SISAR schemes.

While there are standard solutions for rural sanitation from other projects in Brazil that have been customized to Pernambuco's rural reality, RWS designs will only be prepared during Project implementation. The bidding process of a first batch of sanitation works will occur early into implementation in communities that have recently received RWS systems financed with counterpart funds. In addition, taking advantage of the time lapse from the invitation to negotiate to effectiveness (usually more than six months), the State will be able to prepare ToRs, bidding documents, and launch the bidding processes of key Project activities before signing.

The Project is not at risk of having a negative impact on the

⁵⁰ State sector policy approved; sector institutions legally set up; and SISAR legally authorized to deliver RWS services to rural State.

⁵² The climate risks and vulnerabilities posed by climate change in the Project area are included in the State and Sectoral contexts.

Also, mitigation measures, when technically feasible and financially viable, are incorporated in Project design:

- a. Component 1 finances the construction, rehabilitation and expansion of RWSS systems, including drinking water treatment, and on-site sanitation facilities (toilets and septic tanks). For sanitation solutions, it may also include, on a pilot basis, resource recovery technology (wastewater and sludge reuse, biogas as biofuel). These investments meet the eligibility criteria and conditions of the UA list. Project's RWS systems will be connected to the electricity grid which relies primarily on renewable energy. The use of back-up energy from fossil fuel is not envisaged as the electricity grid is reliable. Septic tanks incorporated in Project's design will lower their GHG emissions as they will be sealed to prevent leakage and capacity building of SISARs, community associations and households awareness campaigns and training will be carried out to foster their frequent emptying, moreover the business case for pursuing reuse of biogas and sludge will be assessed through pilots.

The Project will not finance any large-scale anaerobic treatment plants with high unabated methane emissions or sanitation systems that significantly rely on the use of on-site fossil fuels.

Component 2 finances non-physical investments aimed at strengthening the capacity for the sustainable management of rural WSS systems and their water sources, including education and capacity building, emergency preparedness and hydro-meteorological observation networks which are in the Universally Aligned List. It also finances the rehabilitation of APAC's regional offices and headquarters which will include energy efficient design.

While the exposure risk from the Project location is 'High', the overall Project risk is 'Moderate' considering the design of the physical and non-physical components.

Indeed, Project activities will enhance resilience of both the beneficiaries and the RWSS systems, in the Project area, through the adoption of climate resilient designs for RWSS systems (i.e.

Moreover, non-physical Project components will support capacity building for dam safety and water resources management, water and climate information, early warning system, and the preparation of contingency and preparedness plans to reduce these climate risks.

Annex 2 provides information on the expected Project's climate co-benefits.

Its main results are a Project Net Present Value (NPV) of US\$165 million and an Economic Internal Rate of Return (EIRR) of 25.8 percent (excluding GHG emissions), much above the opportunity cost of capital estimated at 6 percent.

If overall benefits are reduced by 30 percent, the EIRR is still 19 percent and the NPV US\$109 million; likewise, with a cost overrun rate of 30 percent, the Project remains viable with an EIRR of 18 percent and a NPV of US\$137 million. Project benefits have been estimated conservatively based on: (a) time savings arising from collecting water, expected to translate into increased time allocation to productive activities and (b) benefits resulting from a reduction in health expenditures on waterborne diseases and in corresponding losses of output due to morbidity and premature death. Costs included in the analysis are: (a) the costs of construction, feasibility studies and supervision of works; and (b) the cost of management and implementation as well as the O&M and replacement costs of the WSS schemes constructed under the Project.

GHG Accounting confirms that the Project net emissions are small and will not have a negative impact on the country's low-GHG emissions development pathways.

The water supply sub-component will lead to a net reduction in emissions of 37.5 thousand tCO₂-eq from energy savings resulting from a shift from water trucks delivery to piped-water. While providing access to improved sanitation services will lead to an increase in net emissions of 137.9 thousand tCO₂-eq.

Studies on tariff structure for business planning is currently being carried out for the first two operational SISARs and will be carried out for each follow on SISAR during Project implementation. These studies will propose the tariff structure, SISAR staffing and the minimum number of household connections needed to make the schemes financially sustainable. Given that these SISARs will be set up in rural low-income areas, it is worth noting that the financial objective is to cover Operations and Management (O&M) costs, not to recover capital investments.

The existing Public Financial Management System of Pernambuco has satisfactory internal rules and controls, with a clear definition of responsibilities and institutional arrangements.

Procurement will be carried out in compliance with the World Bank's Procurement Regulations for IPF Borrowers, dated September 2023.

Possible delays in procurement processes due to the lack of knowledge about World Bank's procurement regulations, especially by SAD, will be mitigated by procurement training to be provided by the IBRD to all staff involved.

Possible conflicts regarding the applicability of World Bank's procurement regulations over the national regulations will be mitigated by offering training to the implementing agencies and State legal advisors involved in procurement, including those of the State's Attorney Office (PGE), SRHS and SAD

C. Legal Operational Policies

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Legal Operational Policies

Triggered?

The Borrower also prepared an inclusive Stakeholder Engagement Plan (SEP) proportional to the nature and scale of the Project and associated risks and impacts.

An Involuntary Resettlement Process Framework was developed in case land acquisition is needed. Based on it, Resettlement Action Plans (RAP) will be prepared as necessary, during implementation.

The Bank will not finance any type of land expenditures nor cash compensation or other assistance paid in cash for involuntary resettlement.

IBRD and the Borrower have agreed on a Dam Safety Action Plan for already identified dams, which has included actions the Borrower will need to carry out.

The Project is expected to generate a positive E&S impact in improving the quality of life of the benefited families, giving them access to drinking water, improved sanitation, hygiene and environmental education. Additionally, broad environmental gain is expected, resulting from the increase in the State's general capacity to manage water resources.

The risks and impacts can be easily mitigated in a predictable manner, with well-known E&S control and mitigation measures.

Soft activities, i.e., preparation of feasibility/analytical studies, engineering designs, training and capacity building, refurbishment, acquisition of goods, and development of a hydraulic and sanitation planning platform are considered of Low Risk.

Applicable mitigation measures for the above-mentioned E&S risks and impacts are provided within the Project's ESMP. It also includes inter alia (i) management and screening procedures for the Project interventions, taking into consideration the environmental legislation, OHS regulations, ESF requirements and the WBG General EHS Guidelines, including Life and Fire Safety (L&FS) measures for buildings; (ii) roadmap for environmental licenses and permits, as applicable; (iii) guidelines and templates for the preparation of specific E&S instruments for the Project interventions (i.e., E&S impact assessments, E&S management plans, etc)

The Project will not finance the construction of new dams, nor the rehabilitation of existing dams, but it will rely on the performance of existing dams which will be the water sources for some RWS systems financed by the Project. ~~Mentioned E&S risks and impacts are provided within the Project's~~ During application of the E&S management plan, the Project will ensure that those should not present indication of serious dam safety issues applicable to the Project. ~~ESF and L&FS guidelines and templates for the preparation of specific E&S instruments for the Project interventions (i.e., E&S impact assessments, E&S management plans, etc)~~ Notwithstanding the above, given the client institutional capacity for dam safety, and as a precautionary approach, the risk is rated substantial.

Two existing dams are involved in the Project, namely, the existing dams which will be the water sources for the Project. So far, two existing dams on which Project's financed RWS systems will rely upon were identified during Project preparation. Moxoto and Campos, owned by the federal government and part of PISF East Canal infrastructure.

Both dams have an effective dam safety program in operation, including safety plans (Instrumentation plan, O&M plan and EPP), full-level inspections and regular dam safety assessments, which are considered satisfactory to the Bank. The existing documentation on the existing dams provided the technical inputs for the dam safety actions defined in the ESCP, mainly, regular maintenance works. E&S risks and impacts are provided within the Project's screening process. RWS systems that depend on such dams will not be eligible for Project financing. APAC has the authority (Law 16.778-2/09) to oversee the PISF operation in Pernambuco and will oversee and monitor the existing dams' safety related measures.

The Bank assessed the Borrower's system and capacity for dam safety management. APAC is responsible for dam safety regulations and enforcement in the State and will provide technical support to the Project on dam safety related issues. It has a unit dedicated to dam safety and comprehensive dam safety regulations, promoting numerous activities applicable; (iii) guidelines and templates for the Project's screening process. The Project will not finance the construction of new dams, nor the rehabilitation of existing dams, but it will rely on the performance of existing dams which will be the water sources for the Project. So far, two existing dams on which Project's financed RWS systems will rely upon were identified during Project preparation. Moxoto and Campos, owned by the federal government and part of PISF East Canal infrastructure.

The State is willing to improve its dam safety management practices and the Project will finance dam safety capacity building activities, including the inventory of existing dams, staff training and adoption of risk management tools. There will be no RWS relying on the Pirapama dam under the Project.

The Client agreed to implement the dam safety requirements defined in IBRD Environmental and Social Standard 4 (Annex 1 - Safety of dams). The ESMP details the applicable dam safety requirements for the two dams already identified and for additional dams identified during implementation. The requirements for eligible dams are: (a) an inspection and evaluation of their safety status; (b) an evaluation and potential revision of the owners' O&M procedures and Emergency Action Plans; and (c) an independent dam safety review in accordance with the Bank Good Practice Note on Dam Safety. The dam safety requirements are defined in more details in the ESCP.

These participatory fora will, for example, support participatory monitoring of the works and quality of the Project and support the use of the grievance redress mechanism (GRM) at the community level, and in generating feedback on the progress of project activities. The GRM will be linked to the Project's web-based monitoring platform (to be customized for PROSAR's demands) will collect information on beneficiary feedback and close the feedback loop with stakeholders.

A beneficiary feedback indicator will track beneficiaries' satisfaction with water services and improvement in the quality, quantity, and regularity of access to water.

Communities and individuals who believe that they are adversely affected by a project supported by the World Bank may submit complaints to existing project-level grievance mechanisms or the Bank's Grievance Redress Service (GRS)

Getting SISARs to mature up to a stage of financial sustainability takes time and is relatively challenging to implement, as enough communities need to adhere to the system and water users & communities need to pay their tariffs and fees.

Compesa is going to be restructured to comply with the 2020 law, expected to have a greater private participation and Pernambuco Regulatory Agency (Agência Reguladora de Pernambuco - ARPE), while responsible for regulating the WSS sector among other sectors, is not currently exercising this function in the rural space. These reforms may slow-down Project implementation and, in the case of Compesa's increased private participation, may reduce its support to the SISARs, to which it is, along with SESAN, providing technical expertise and subsidies during their incubation phase.

The Project will not finance the construction of new dams, nor the rehabilitation of existing dams, but it will rely on the performance of existing dams which will be the water sources for some RWS systems financed by the Project. Most of the existing dams related to the Project will only be known during implementation when RWS systems are identified, but those should not present indication of serious dam safety issues or demand rehabilitation works, because, following a rigorous screening process, RWSS systems that depend on such dams will not be eligible for Project financing. Notwithstanding the above, given the client institutional capacity for dam safety, and as a precautionary approach, the risk is rated substantial. Mitigation measures include for the dams on which the Project may rely, the following dam safety requirements including: (a) an inspection and evaluation of their safety status; (b) an evaluation and potential revision of the owners' O&M procedures and Emergency Action Plans; (c) an independent dam safety review in accordance with the Bank Good Practice Note on Dam Safety; and (d) dam safety capacity building activities, including the inventory of existing dams, staff training and adoption of risk management tools.

RESULTS FRAMEWORK AND MONITORING

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PDO Indicators by PDO Outcomes

Baseline	Closing Period
Increase access to sustainable, safely managed, climate-resilient drinking water supply	
Rural people benefiting from access to safely-managed drinking water supply from climate-resilient water source (number), disaggregated by gender and race/ethnicity (Number)	
Nov/2023 3	Jun/2032
(0	48,000
· Rural people benefiting from access to safely-managed drinking water supply from climate-resilient water source by gender and race/ethnicity (Text)	
Nov/2023 3	Jul/2032
Not applicable.	Percentage of Project beneficiaries per gender and race/ethnicity
SISAR Service Quality Index (Text)	
Nov/2023 3	Jun/2032
Not applicable e	Good
Increase access to improved sanitation	
· People provided with at least basic sanitation services , disaggregated by gender and race/ethnicity.	

Oct/2023 3

(0

· People provided with water which is safely managed (Percentage).

Jun/2032

TBI D

(Number)

The Secretariat of Water Resources and Sanitation (SRHS), through the Executive Secretariat of Water Supply and Sanitation (SESAN), will be responsible for overall Project implementation and coordination with other participating institutions. [REDACTED] SRHS has three Executive Secretariats (SESAN; the Executive Secretariat of Water Infrastructure, SEIH; and the Executive Secretariat for Institutional Management, SEG).

SESAN will house the Project Management Unit (PMU), which will be created via State Decree.

[REDACTED] This includes Project implementation and supervision, procurement and contract management, monitoring and evaluation, financial management (accounting and disbursement procedures), and environmental and social management.

[REDACTED] They will be responsible for providing technical support in the preparation of the terms of references/technical specifications, contracts supervisions and management. Compesa, the State WSS Utility, will bring its WSS expertise to deliver technical assistance to the SISARs and rural communities, prepare terms of reference/technical specifications, contracts supervision and management; and will manage the RWSS information system. In addition, it is responsible for the implementation and supervision of the Arataca II pipeline works. APAC, which is a special agency of the State, will participate in the implementation of Component 2.2, except for the development of the Hydraulic Infrastructure and Sanitation Planning Platform. APAC's technical support on dam safety and PISF aspects will also be needed. SCGE will provide technical cooperation regarding risk management and will support the PMU in the consultancy for institutional strengthening under Component 3. [REDACTED]

[REDACTED] In addition, SEIH, while not a technical cooperating entity, will provide support to the PMU in the preparation of the terms of reference/technical specifications and in the supervision of contracts to set-up the hydraulic infrastructure and sanitation planning platform.

[REDACTED] In addition, Operational Agreements between the SRHS and the six SISARs will be signed to specify their respective responsibilities in the management of the RWSS schemes.

The State Secretariat of Planning, Management and Regional Development (SEPLAG) will be responsible for allocating the necessary budget for the execution of the Project, and the State Treasury Office (SEFAZ) for allocating the necessary financial resources for its execution.

The implementation of the Project will be supported by the IBRD's Project task team. The type and level of support is guided by the Project's scope, activities, risks and institutional capacity. Implementation support by IBRD will consist of semiannual full supervision missions, short technical missions, virtual meetings between IBRD and the client representatives, including senior management and the PMU team, as appropriate.

Additional support will be provided by IBRD's procurement, FM, and safeguards specialists, on Project contracts and overall compliance with the Environmental and Social Framework (ESF) and fiduciary requirements. Technical experts from IBRD technical team will provide advice to the client, as required, regarding ToRs, engineer designs, feasibility studies, management models, technical assistance needs, knowledge exchange activities and will promote/share innovative approaches.

Supervision missions will meet with the client representatives to: (i) review progress on the Project's activities; (ii) discuss strategic alignment of relevant stakeholders around Project's

^c 9 Project will advance to define key performance monitoring indicators to apply to the SISARs in order to assess progress and results.

Supervision will concentrate on ensuring the technical quality of bidding documents ToRs, evaluation reports, construction plans, products delivered by consultants. During construction and commissioning, technical supervision will be provided to ensure that technical contractual obligations are met.

Moreover, technical assistance including capacity building and institutional strengthening will be provided to enhance performance of the Project-supported activities.

- c. **Fiduciary support.** Periodic supervision of procurement and FM support will be carried out by IBRD semiannually or annually to: (i) perform desk reviews of the Project IFRs and audit reports, following up on any issues raised by auditors, as appropriate; (ii) assess the performance of control systems and arrangements; (iii) update the FM rating in the FM Implementation Support and Results Report as needed; (iv) provide training and guidance on carrying out procurement processes in compliance with the Procurement and Anti-Corruption Guidelines, PPSD and the POM; (v) review procurement documents and provide timely feedback to the PMU; (vi) carry out the post review of procurement actions; and (vii) help monitor the Project's progress against the Procurement Plan.

The coordination that began during preparation would continue throughout Project implementation, especially to ensure that relevant environmental and social concerns are included in the works financed under Components 1 and 2 through due diligence from applications of the site-specific ESF instruments and effective mitigation measures.

It will have the primary FM fiduciary responsibilities for the Project (as PMU), including (i) coordinating and supervising Project implementation; (ii) submitting disbursement requests and documentation of expenditures to the Bank; (iii) preparing and submitting IFRs to the Bank; (iv) preparing and providing all financial documentation and Project reports/information requested by external auditors and Bank staff; and (v) preparing and updating the Project Operational Manual (POM) and ensuring that all Project executors follow it.

SRHS will create a PMU, which must be composed of at least, one Project Financial Management Specialist (FMS) to be primarily responsible for coordinating the Project's financial/accounting demands in accordance with terms of reference to be agreed upon with the Bank.

All the Project's budgeting and accounting transactions will be processed through the e-Fisco, which complies with Decreto 10.540/2020, establishing the minimum requirements for the subnational's Integrated and Unified System for Budget Execution, Financial Management, and Control.

E-fisco ensures proper recording of the Project's financial execution by processing accounting and financial information. The Project will also rely on the Program Management, Monitoring, and Evaluation System - SGMAP developed to manage Programs based on External Credit Operations, which was successfully used in the Environmental Sanitation Program for the Ipojuca River Basin - PSA Ipojuca (BR-L1314) financed by the IDB and will be customized for use in PROSAR.

SEFAZ releases funds to the PMU based on the presentation of supporting documentation detailing the object of expenditure.

The expenditures will be accounted under a chart of accounts structure that must follow the Project's design to appropriately reflect the project structure to allow the SRHS to monitor the project implementation and run reports for monitoring and auditing purposes.

SRHS will have access to the Bank's Client Connection system for up-to-date information relating to the disbursement of the proceeds of the Loan.

The amount to be financed from the loan for the internal control activities will depend on the SCGE-PE-s working plan. The costs for IA-CM implementation will be shared among other projects financed by the Bank in the State.

The POM will comprise descriptions, flow charts, policies, templates and forms, user-friendly tools, tips, and techniques to ensure that the approval and authorization controls continue to be adequate and are appropriately documented and followed with adequate safeguarding of the Project-s assets (including the following topics in the FM and Disbursements section: the flow of funds, chart of accounts, Project organizational structure and responsibilities, oversight lines, authority limits, internal and external audit arrangements, accounting practices, disbursement procedures and the financial reporting arrangements). A draft POM was prepared by the PMU ; and the final version of the POM approved by the Bank is an effectiveness condition.

The disbursement of Project funds will be processed in accordance with Bank procedures as stipulated in the Legal Agreement and the Disbursement and Financial Information Letter (DFIL).

The funds will be transferred to a specific segregated bank account (DA), opened specifically for the Project and administered by the SEFA⁶⁷. This account will be opened at a commercial bank acceptable to the Bank. [REDACTED] Project payments will be made from the treasury single account and reimbursed by the funds from the designated account within one day (D+1). [REDACTED] Payment processes will be registered in e-Fisco System by the SRHS, and the records will be reconciled at the end of each month. [REDACTED]

[REDACTED] The Minimum Application Size (MAS) for Direct Payment Withdrawal Applications (WA) will be US\$1,000,000 equivalent.

[REDACTED] SRHS will sign off on the WAs documenting expenditures, based only on actual expenditures, ensuring that the Loan proceeds were exclusively used for eligible expenditures. The Project Application Deadline Date (final date on which the Bank will accept WAs from the Borrower or documentation on the use of loan proceeds already advanced by the Bank) will be four months after the Loan Closing Date. This Grace Period is granted to allow the orderly Project completion and closure of the Loan Account via the submission of WAs and support documentation for expenditures incurred before the Closing Date. [REDACTED]

[REDACTED] No withdrawal shall be made for payments made prior to the date of the Legal Agreement, except that withdrawals up to an aggregate amount (in US\$ equivalent) not to exceed 20 percent of the Loan amount may be made for payments made prior to the Signing Date, but in no case, more than one year prior to the Signing Date, for Eligible Expenditures as set out in the Legal Agreement. [REDACTED]

[REDACTED] SRHS will prepare and submit to the Bank bi-annual IFRs, no later than 45 days after the end of each reporting period. [REDACTED] These IFRs will be produced with information extracted from the e-Fisco System and will consolidate the Project's financial data for all components using cash basis. The IFRs and SOEs will be issued by the SGM system that needs to be customized to reflect the Bank's formats. [REDACTED]

[REDACTED] The following bi-annual IFRs (to be prepared in Reais) will be prepared for Project monitoring and management purposes and be submitted to the Bank: [REDACTED]

⁶⁷ Secretaria de Fazenda do Estado de Pernambuco - State Treasury.

For Project purposes, the external audit of the Project will be performed by independent external auditors following the agreed TOR acceptable to the Bank and in accordance with International Standards on Auditing (ISAs) issued by The International Auditing and Assurance Standards Board (IAASB) of the International Federation of Accountants (IFAC) or national auditing standards if, as determined by the Bank, these do not significantly depart from international standards.

The TOR should be prepared by the SHRS and be approved by the Bank within three months after effectiveness.

Conditions or Nonstandard/Significant Financial Covenants .

Strengthening and institutional capacity activities to support TCM-PE will be assessed throughout project implementation as part of the Project's technical assistance component.

2.1.1.1 Build the Borrower's capacity to reach universal RWSS access and sustainably managed RWS systems (IBRD: US\$7.95 million)

carry out functions such as O&M of hydromet stations and piezometric networks; O&M of water inter-basin transfer infrastructure to reduce drought and scarcity risks; control of water uses and dam safety; which will be made possible by the creation of two regional offices.

However, their decision-making power on the utilization and management of resources is often limited by traditional values and customs.

management. water resources

In the community O&M management scheme (SISAR) that the Project will support, community associations play a fundamental role in providing participation, decision-making, and access to water services for the population.

