## I. STRATEGIC CONTEXT

### A. Country Context

**Brazil Context**

1. **Brazil's economy continued to recover after negative GDP growth in 2014-2019 and the drastic impact of COVID-19.** After having achieved the rates of 4.8 percent in 2021 and 3.0 percent in 2022, propelled by robust private consumption, strong labor market, fiscal stimulus, social transfers, and by a favorable external environment benefiting exports, especially from agriculture, GDP growth slowed to 2.9 percent in 2023. With economic activity slowing since 2023 and 2023's unusually high agricultural output not being matched in 2024, GDP growth is expected to further moderate to 1.7 percent in 2024. Medium-term growth projections remain at around 2 percent per year based on the expected levels of total factor productivity growth.

2. **The poverty rate fell to 21.3 percent in 2023 (US$ 6.85 per day), due to improvements in economic conditions and social protection policies.** Unemployment reached 7.4 percent, the lowest since 2014. The Bolsa Familia Program helped reduce poverty: its coverage expanded by two million families, reaching 21.3 million, with the average monthly transfer increasing from R$394.48 to R$670.36. Finally, the real minimum wage increased by 2.8 percent, boosting the incomes of about 24.5 percent of the households in the bottom 40 percent with at least one formal worker.

3. **Brazil has one of the highest climate risk index scores among 182 countries, making it highly vulnerable to natural disasters and extreme weather events**. Although deforestation decreased by 22.7 percent in the Amazon region, climate change risks are still pressured by the high levels of land use emissions in the Amazon and Cerrado ecosystems. Brazil's greenhouse gas (GHG) emissions are driven by land use change (41 percent) and agriculture (31 percent). Climate change is altering temperature and rainfall patterns in the country, resulting in reduced water availability and extended droughts; it could push another 800,000 to 3 million Brazilians into extreme poverty as soon as 2030.

**State Context**

4. **Pernambuco is a relatively small State in the Northeast region that experienced modest economic growth and poverty reduction over the past two decades.** The State accounts for 1.2 percent of Brazil's territory, 4.5 percent of Brazil's population of 203 million total and 2.6 percent of its GDP in 2022. Its overall population only slightly increased over the past 20 years (+1 million inhabitants). It is today at 9.06 million inhabitants[1] - with 79,000 afro-descendants and 107,000 indigenous peoples. Its economy grew at a rate of 2.2 percent/year in real term between 2002 and 2020, slightly above the national average at 2 percent[2]. Over the past 20 years, its GDP per capita grew modestly at 1.1 percent p.a. in real term and its Human Development Index (IDH) improved from 0.544 to 0.719, remaining at the 15$^{th}$ position among the 27 states. In 2021, Pernambuco had the 4$^{th}$ highest poverty rate among the 27 states and the 3$^{rd}$ of the Northeast region, with about 50 percent of its population below the poverty line.[3]

5. **The State's rural areas are increasingly lagging cities in terms of socio-economic performance and population.** Over the past two decades, the State's population has become increasingly urban (83 percent people live in cities)[4], while its rural population shrunk from 1.83 million in 2000 to 1.6 million in 2019. This is attributed to rural-urban migration as cities offer better services, including water supply and sanitation (WSS), and better economic opportunities than rural areas. Most GDP is generated in urban areas with an economy heavily based on services (75 percent of GDP). Most of the

[1] IBGE, population census 2022 and projections, edition 2018.
[2] IBGE. Sistema de contas regionais: Brasil 2020.
[3] "Mapa da Nova Pobreza", Marcelo Neri – 40 págs., Rio de Janeiro, RJ – junho/2022 - FGV Social. https://cps.fgv.br/MapaNovaPobreza https://cps.fgv.br/en/NewPovertyMap. The poverty line is estimated at R$497 a day (equivalent to US$5.5/day, 2021 PPP). The states with higher poverty rates are Maranhão (57.90 percent), Amazonas (51.42 percent) and Alagoas (50.36 percent).
[4] IBGE. https://cidades.ibge.gov.br/brasil/pi/panorama [Access on 03.09.2023].

rural population relies on agriculture and animal husbandry for its livelihood, which is generally of low productivity in Pernambuco and highly vulnerable to climate change-exacerbated droughts, floods[5] and water security risks. Extreme poverty rate in rural areas is more than double the rate in cities (23 percent and 10 percent, respectively).

6. **Water security[6] is recognized as a significant constraint to socio-economic development in the Northeast[7][8].** With high evapotranspiration rates, long dry seasons, intermittent rivers and limited groundwater storage, the region faces chronic water scarcity and recurrent droughts on more than ¾ of its semi-arid territory - where overall population has been shrinking migrating to more prosperous areas. Providing secure drinking water services to its population is a challenge, as is flooding along the more humid coastal areas, where most urban population and economic activities are located. Between 2000 and 2022, climate hazards affected 32 million people and costed an estimated US$14 billion in damages in the Northeast[9]. Drought is by far the dominant climate disaster in the region, being responsible for 75 percent of cost in damages and 90 percent of affected residents. 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.

7. **Climate change is expected to exacerbate these water security challenges** further impacting the well-being of Pernambuco's population, its economy and the environment. Historical climate records and projections for the Northeast region reveal that climate change is playing a pivotal role in the increased frequency and intensity of droughts and floods, as well as in the increased intensity of water scarcity. According to the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment, the Northeast region has seen increasing temperatures over the past decades, decreasing precipitation and increasing number and strength of droughts (*virtually certain*). Moreover, average temperatures are very likely to continue rising in the region at a pace higher than the global average, precipitations are expected to further decline (*high confidence*), the severity of droughts is expected to increase (*high confidence*) and extreme precipitations and floods are expected to increase (*medium confidence*). The combination of higher temperatures and lower precipitations is expected to progressively increase water scarcity[10], which, according to the Brazil's Country Climate and Development Report (CCDR), could turn the semiarid Northeast into an arid region, and would reduce water availability for all uses, impacting commercial activities, subsistence farming and population health, fueling further migration to cities and other regions. While wildfires are frequent in Pernambuco, they are short-lived and limited in size because the vegetation is sparse in the drylands and they represent a low risk to Rural Water Supply and Sanitation (RWSS) schemes and the proposed Project. Pernambuco exposures to non-climate natural hazards, such as volcanic activity and earthquake is low.

## B. Sectoral and Institutional Context

### Sector context

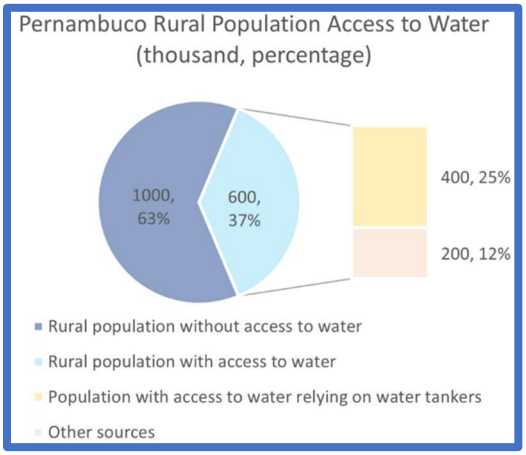
8. **Universal access to water and sanitation is a federal and Pernambuco State goal.** In 2020, the basic WSS Federal Law[11] was approved, calling for universal access by 2033. The Law mandates a bold reform of the regulatory framework, promotes private sector's participation in service delivery, and 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.
[7] The Northeast region includes the states of: Alagoas, Bahia, Ceara, Maranhão, Paraiba, Pernambuco, Piaui, Rio Grande do Norte, Sergipe.
[8] National Water Security Plan, ANA, 2022.
[9] EM-DAT: The emergency events database – Université catholique de Louvain. 2023.
[10] Pernambuco Hydrological Atlas, 2022.
[11] In Brazil, *Saneamento Básico* (Basic Sanitation) includes water supply, sanitation, sewerage, and wastewater treatment, in addition to solid waste and pluvial draining.

with the Federal Government's target of 2033[12].

9. **Reaching universal access has been challenging, notably in rural Pernambuco.** Overall 82 percent of Pernambuco's population has access to water supply systems and 31 percent to sewerage networks.[13][14] In rural areas, however, access to water supply is lower at 37 percent[15]. Moreover, many water supply systems are not functioning at any given time, because of inadequate operations and maintenance (O&M) or because the water sources dry-up. Villages without a WS system, or with a non-functioning one, rely on water tankers[16], which is estimated to amount to about 400,000 people[17], with significant fiscal costs for municipalities and the army. The quality of drinking water is also a concern: based on a field survey in selected rural communities, 59 percent of the systems did not treat water and none monitored its quality[20]. Moreover, water provided by water trucks is usually not treated. As for rural sanitation in Pernambuco, little is known. In Brazil, in 2010l[18], 16 percent of the rural population practice open defecation; out of the ones with access to sanitation, 64 percent were connected to rudimentary pits, 16 percent to septic tanks and 4 percent to sewerage; while the remaining 16 percent would use rivers, lakes, ocean, etc. According to the Pernambuco State Rural Water Supply and Sanitation (RWSS) platform, 99 percent of the families use some sort of individual sanitation solution they maintain themselves, but in many cases, the structures are in disrepair, causing health and environmental risks, especially for children. The cost to reach universal access in rural areas in Pernambuco is estimated at about US$690 million[19]. Moreover, planning is also a challenge, as only 22 percent of the municipalities have WSS plans[20][21].

**Graph 1: Access to rural water supply in Pernambuco**




10. **Poor access to WSS has significant socio-economic impacts in rural Pernambuco.** Various studies show clear

[12] Draft bill of law dedicated to setting the State's goals and institutional arrangements for WSS service provision is being developed and is expected to be approved early 2024.
[13] As a comparison, in 2021, 84 percent of Brazilians had access to adequate water supply and 56 to adequate sanitation, with the Northeast region lagging behind with 75 percent access to water and 30 percent to sanitation. [13] Rural areas home to 30 million people nationwide are also lagging behind with 76 percent access to water and 40 percent to sanitation (as opposed to 94 and 75 percent, respectively, in urban areas).
[14] Trata Brasil think tank. https://tratabrasil.org.br/principais-estatisticas/dados-regionais/.
[15] The State's RWSS database, (http://www.compesa.com.br/saneamentorural/).
[16] Pernambuco RWSS management model study, State of Pernambuco, 2018.
[17] Portal da Operação Pipa (eb.mil.br).
[18] FUNASA. PNSR, 2019. http://www.funasa.gov.br/documents/20182/38564/MNL_PNSR_2019.pdf/08d94216-fb09-468e-ac98-afb4ed0483eb.
[19] Pernambuco RWSS management model study, State of Pernambuco, 2018.
[20] State Audit Court – (TCE-PE)'s study, (https://www.tce.pe.gov.br/internet/index.php/mais-noticias-invisivel/421-2023/setembro/7209-estudo-do-tce-mostra-situacao-do-saneamento-no-estado).
[21] As a comparison, investment needs for reaching universal access in urban areas are estimated at around US$4 billion.

linkages between the lack of access to safe WSS services and higher morbidity and mortality rates, particularly among children below 5-years-old and women, with incidence on labor productivity, family incomes and expenditures, as well as school attendance. Women are impacted disproportionally as caretakers of sick family members and because they are usually responsible for fetching water when not available at home. In Pernambuco, in 2019, 10.15/10,000 inhabitants were hospitalized and 0.225/10,000 inhabitants died because of water-borne diseases (compared to 13.01/10,000 and 0.13/10,000 for Brazil overall). [22] During severe droughts, the lack of sustainable access to potable WS has been one of the drivers for accelerated migration to urban areas and out of State.

11. **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**. Pernambuco faces chronic water scarcity and recurrent droughts on 90 percent of its territory (Sertão and Agreste regions). In these regions, during the dry season, rivers not regulated by dams dry-up and, during multi-year droughts, water availability even in regulated rivers decrease substantially and sometimes dry-up.[23] In those years, RWSS systems in the Sertão and Agreste regions that rely on surface water other than from the São Francisco River, are at risk of temporary failure. Moreover, while sedimentary aquifers can be a resilient source of water during drought, those are rare in Pernambuco. Water quality is another issue. It is mostly not monitored in rural areas, and where it is, water quality is often low, in part because of untreated effluents and salinity[24]. This is concerning for Rural Water Supply (RWS) as most systems do not treat water.

12. **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. In addition, the lack or limited continuity in policy, institutions, regulations, and strategy supporting the sector impact the long-term sustainability of the service provision.

13. **These challenges to reach universal RWSS access have been exacerbated by climate change.** The increases in water scarcity and droughts due to climate change are expected to adversely impact rural water access, as existing water sources may become increasing insufficient to meet competing demands, may dry-up more frequently and water quality may worsen due to reduced dilution capacity. 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.

14. **To address the challenge of securing water source for drinking supply**, the State and Federal Governments have been deploying significant efforts to develop hydraulic *infrastructure***,** including dams, transfers from the São Francisco River (PISF)[25], wells in sedimentary aquifers less subject to climate variability, bulk water networks of canals and pipelines crisscrossing the State and small desalinization plants to tap low productivity, brackish aquifers for small rural communities. 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

[22] Trata Brazil. Saneamento e doenças de veiculação hídrica DATASUS e SNIS, 2019. Water-borne diseases in this case include diarrheic diseases, dengue, malaria e leptospirosis.
[23] State Water Resources Plan - *Plano Estadual de Recursos Hídricos de Pernambuco, 2022*.
[24] Sistema Nacional de Informações sobre Saneamento, https://www.gov.br/mdr/pt-br/assuntos/saneamento/snis.
[25] 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. Pernambuco receives water from both Axes through 18 intake points (dams called “Portais de Entrega”).

the PISF infrastructure at federal and state levels. 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 hydrometeorogical system managed by APAC that issue flood alerts.

15. **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]. In 2021, the State initiated the implementation of this strategy (see next section on institutional context for more information).

**Institutional context**

16. **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).

17. **Rural Water Supply and Sanitation.** SRHS, through the Executive Secretary for WSS, is responsible for RWSS policy development and managing the RWSS information system. In rural areas, very few RWS systems are operated by the State Water Utility (Companhia Pernambucana de Saneamento - Compesa) or by Municipal-Owned WSS Institutions (*Serviço Autônomo de Água e Esgoto* – SAAE). They are usually operated by the local communities themselves (known as self-supplied); or are not operated at all and are facing major sustainability issues. When existent, on-site rural sanitation

[26] Pernambuco RWSS management model study, State of Pernambuco, 2018.
[27] Law No. 12,984 of 2005.
[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.

solutions are typically for single households who take care of their O&M, including sludge disposal.

18. **State Strategy for universal access in rural space.** 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. This strategy proposes complementary approaches for four ranges of population size as indicated in the table below. Regarding sanitation, the strategy recommends prioritizing single-household sanitation solutions, with sludge management serviced by semi-professional entities or, in the rare cases a sewerage network is necessary, serviced by a professional entity.

**Table 1: Approach to universal RWS service provision based on the number of families to be served.**

| Size of rural communities | Estimated State population | Proposed approach for RWS service provision |
|---|---|---|
| From 0 to 30 families | 300,000 (very dispersed) | Self-supply solutions with support from the State to potentially be integrated to multi-village solutions |
| From 31 to 100 families | 400,000 | |
| From 101-1,250 families | 400,000 (communities of small size) | Served by a semi-professional operator (community associations with support from a federation of associations or municipality) |
| Above 1,251 families | 800,000 (peri-urban areas) | Served by a professional operator (e.g. Compesa) |

19. **Approach to sustainability: the SISAR model.** 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)*[30] model, successfully implemented in other Brazilian states[31]. SISARs are not-for-profit civil society organizations, which are regional federation of community associations (their members) located in their jurisdiction. Community associations are composed of household water users at community level. The State aims to establish twelve SISARs that together cover the entire State's rural area. Association membership is not mandatory and is subject to eligibility criteria that are described in para. 54. In the SISAR management model, responsibilities are shared as follows:

a. Community associations (through selected community members) operate the local RWS systems and carry out minor maintenance. They read meters, deliver water bills and collect tariffs. 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.

20. **SISAR model and universal access**. 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. For smaller communities, other solutions will be considered and defined in the State regional WSS plans and Universal RWSS Access Strategy. For population greater than 1,500 families, a professional entity (e.g., Compesa) is expected to provide WSS access. As for sanitation, SISAR is not yet providing this service. Sanitation solutions for emptying and disposing the sludge/excreta will be studied as part of the

[30] Bank's studies (World Bank, 2017. Sustainability Assessment of Rural Water Service Delivery. Findings of a Multi Country Review; and World Bank, 2016. *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.

[31] Besides the Ceará, other similar examples of SISAR are being implemented in the States of Bahia and Piaui (the latter is the only SISAR that provides sanitation-related services by emptying and disposing the sludge and charges for them).

pilots to be implemented by the Project and integrated in the regional WSS planning and universal RWSS strategy.

21. **Request for Bank support**. 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. So far, four SISARs have been created (Moxotó, Alto Pajeu, Sertão Central & Araripe, and São Francisco) covering 43 municipalities; the first two are newly operational, but still in their "incubation" phase; the latter two are not yet operational. During the "incubation" phase, SISARs functioning are subsidized by Compesa and SRHS, until the water tariffs collected from the community associations cover their full costs.[32] 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).

### C. Relevance to Higher Level Objectives

22. **The Project is consistent with the priorities of the World Bank Group's (WBG) Country Partnership Framework (CPF) for Brazil, 2024-2028[33] 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 CCDR 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. The Project intends to reduce in its area of intervention, the vulnerability of residents to climate change-exacerbated droughts, water scarcity and floods by increasing the climate resilience of the area's rural WSS infrastructure and services.

23. **Alignment with the Borrower's high-level objectives for the sector**. The Project supports the country and State national goals of reaching universal WSS access by 2033 as stated in the 2020 Basic WSS Federal Law. It also supports the implementation of the State 2020 strategy to structure the RWSS sector. More broadly, the Project is aligned with the State's 2014 Development Strategy.[34], 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.

24. **The Project's is consistent with the country's Nationally Determined Contribution (NDC) and the Ecological Transformation Plan[35]**. 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

[32] 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. See Annex 1 for more details.
[33] Brazil CPF FY24-FY28 as discussed by the Board on April 9, 2024.
[34] Estratégia de Desenvolvimento de Pernambuco e Carteira de Projetos Públicos - Pernambuco 2035, 2014.
[35] Plan for Ecological Transformation. Brazil Government - Ministry of Finance. 2023.

(net-zero emissions) by 2050. On adaptation, the country aims to implement adaptation actions to reduce vulnerability in terms of water, energy, food, social and environment security. 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. The Project is also aligned with the CCDR as mentioned in para. 22 above.

25. **Maximizing Finance for Development**. During the development of the WSS plans and the Universal WSS strategy, alternatives for leveraging private participation will be considered, especially for RWSS and peri-urban areas, mostly lagging behind. 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.

## II. PROJECT DESCRIPTION

### A. Project Development Objective

#### PDO Statement

26. The Project Development objectives (PDOs) are to increase access to sustainable, safely managed drinking water supply and improved sanitation[36] in selected rural communities and to build the Borrower's capacity to reach universal RWSS services.

27. 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 risks[37] with contingency plan).

**PDO Level Indicators**

- Rural people benefiting from access to safely-managed drinking water supply from climate-resilient water source (number), disaggregated by gender and race/ethnicity (percentage)
- Rural people provided with at least basic sanitation services (Number), disaggregated by gender and race/ethnicity (percentage)

[36] Safely managed drinking water – as per the Joint Monitoring Program for Water Supply and Sanitation's (JMP) standards – is drinking water from an improved water source that is accessible on premises, available when needed and free from contamination, whereas Basic drinking water is drinking water from an improved source that is , provided collection time, including queuing is no more than 30 minutes. 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.

- SISAR Service Quality Index[38]
- State's universal, climate-resilient RWSS strategy and regional WSS plans adopted and under implementation

### B. Project Components

28. 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. Those subsequent operations would start in parallel to this Project, as soon as the foundation has been set. 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.

29. 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[39]. The Project has three components:

30. **Component 1 – Increase access to climate-resilient, safely-managed RWS and improved sanitation (US$91.27 million of which US$68.27 million IBRD financing and US$23 million counterpart funds)**. 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.

31. ***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).*** This subcomponent finances the feasibility studies, engineering designs, works and supervision of works of water scarcity, drought and flood resilient, safely managed RWS systems[40] (climate resilient infrastructure design elements are discussed in the Technical Analysis section) and improved sanitation solutions[41] in selected rural communities, including where required, in community health centers and schools. It will also finance feasibility studies and engineering designs of RWSS systems that will be implemented in subsequent projects. RWSS systems will have climate-resilient designs considering flood and drought risks, and will be ethnicity, race and gender sensitive. As a result, the activities are expected to support closing the gender gap by reducing the disproportionate burden of time spent by women beneficiaries on WSS related tasks in the Project area.

32. ***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 subprojects

[38] 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.
[39] Client's Concept Note as approved by the Federal Government. Resolution n. 053 from COFIEX, 2022.
[40] Water supply systems would include water source intake, treatment, storage, conveyance and distribution network at household level.
[41] Sanitation solutions would include construction of onsite sanitation structures– complete household sanitary kits (*módulos sanitários domiciliares* - MSD) or treatment units for existing sanitary kits - in the communities identified to receive new water systems. Complete sanitary kits include, inter alia, water-flushed toilet, water tank, laundry, washbasin, shower, inspection box, and wastewater treatment.

financed under component 1.1. The subcomponent will finance: (a) works and their supervision to implement the Arataca II water conveyance system to increase the drought and water scarcity resilience of the Botafogo water system[42], by providing an alternative water source in case its current ones fail. This is fully financed with counterpart funds; and (b) instrumentation and basic maintenance[43] identified in the safety action plans of the existing dams on which RWS financed under component 1.1. rely upon[44]. No rehabilitation[45] of existing dams nor construction of new dams will be eligible for financing.

33. ***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.

34. **Component 2 – Build the Borrower's capacity to reach universal and climate-resilient RWSS access and sustainably managed RWS systems and their water sources (US$15.75 million, fully IBRD financed)**. 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.

35. ***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)***. This subcomponent will finance: (a) the establishment of SISAR's in six regions[46], including through activities such as the drafting and implementation of the SISARs capacity building and business plans, the refurbishment and equipment of their office buildings considering climate dimensions and acquisition of vehicles; (b) the improvement and expansion of the Borrower's RWSS information system, including collection of in-situ data; (c) the development and initial implementation of the Borrower's climate-resilient, universal access WSS strategy and regional plans[47]; (d) a sludge management study of alternatives; (e) the strengthening of the Borrower's dedicated RWSS capacity to deliver technical assistance to the SISARs and the community associations through training, equipment and consultant services; (f) the improvement of the Borrower's monitoring and evaluation of the SISARs' performance; and (g) the strengthening of the rural communities' capacity to, *inter alia*, promote hygiene, the rationale use of water in drought and water-scarce situation and sanitation solutions. To increase women voice and increase their access to paid work, trainings will prioritize women's participation at community level and the Project will promote their participation in management and decision-making.

36. ***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:

[42] Botafogo water system supplies water to around 910,000 mostly urban inhabitants.
[43] Basic maintenance includes services to a dam to prevent safety problems.
[44] 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.
[45] Rehabilitation would include services to recover a dam from safety problems.
[46] The selected regions include: Moxotó, Alto Pajeú, Sertão Central and Araripe, Sertão do São Francisco, Agreste Central and Mata Sul.
[47] The regional plans would cover the two WSS microregions (Sertão and RMR Pajeú). Those regional plans consider both urban and rural WSS and would be articulated with the State's drought preparedness plan.

a. 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[48] 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.

b. 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.

37. **Component 3 - Project Management (total of US$5.98 million, fully IBRD financed)**. 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.

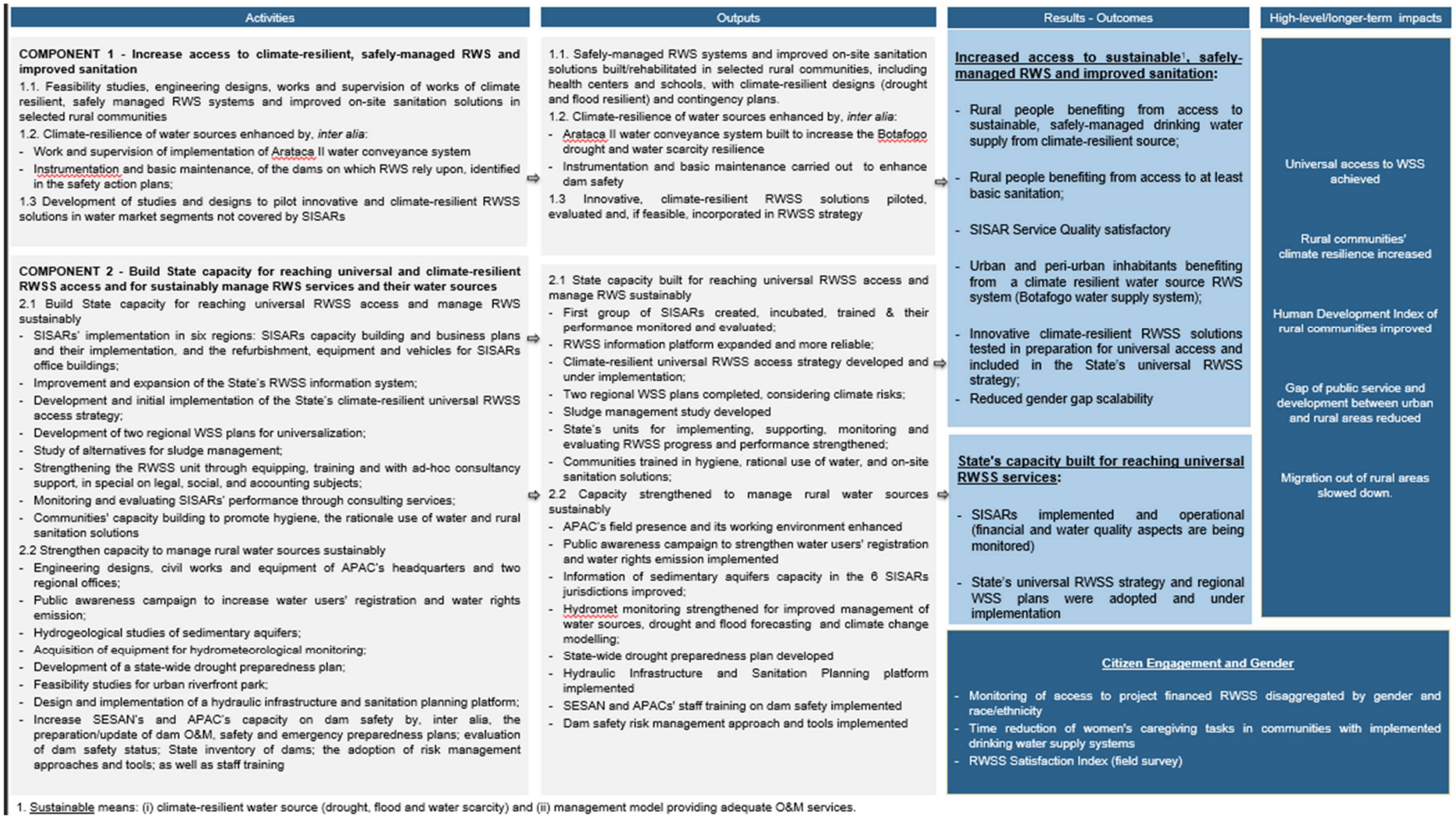
### C. Project Beneficiaries

38. The Project is expected to directly benefit about one million people. This includes 48,000[49] rural people with sustainable, safely-managed RWS systems of which 39,000 rural people also with improved rural sanitation solutions (increasing rural access by 3 and 2 percentage points respectively to 40 and 22 percent) and 910,000 mostly urban and peri-urban inhabitants by securing the water source needed to maintain the production of the Botafogo water supply system from drought and water scarcity risks. It should be noted that the people benefiting from the improved Botafogo system are not accounted for in the PDO indicators as the Project focuses on *rural* WSS access. 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. Finally, women, girls and young rural population are expected to benefit from reduced time spent fetching water and caring for children with water-born diseases, improved participation in decision-making process, increased job opportunities and reduced number of missing school days.

[48] Disdrometers and thermohydrometers, automatic rain gauges, hydrological data collection platforms, topographic surveying equipment.
[49] According to the 2022 Census, there are on average 2.89 people per household in the Project area.

### D. Results Chain

39. **Theory of change.** The theory of Change links the Project's expected higher-level impacts, outcomes and outputs tracked by PDO and intermediate-level indicators.


Activities
COMPONENT 1 - Increase access to climate-resilient, safely-managed RWS and improved sanitation
1.1. Feasibility studies, engineering designs, works and supervision of works of climate resilient, safely managed RWS systems and improved on-site sanitation solutions in selected rural communities
1.2. Climate-resilience of water sources enhanced by, inter alia:
- Work and supervision of implementation of Arataca II water conveyance system
- Instrumentation and basic maintenance, of the dams on which RWS rely upon, identified in the safety action plans;
1.3 Development of studies and designs to pilot innovative and climate-resilient RWSS solutions in water market segments not covered by SISARs
COMPONENT 2 - Build State capacity for reaching universal and climate-resilient RWSS access and for sustainably manage RWS services and their water sources
2.1 Build State capacity for reaching universal RWSS access and manage RWS sustainably
- SISARs' implementation in six regions: SISARs capacity building and business plans and their implementation, and the refurbishment, equipment and vehicles for SISARs office buildings;
- Improvement and expansion of the State's RWSS information system;
- Development and initial implementation of the State's climate-resilient universal RWSS access strategy;
- Development of two regional WSS plans for universalization;
- Study of alternatives for sludge management;
- Strengthening the RWSS unit through equipping, training and with ad-hoc consultancy support, in special on legal, social, and accounting subjects;
- Monitoring and evaluating SISARs' performance through consulting services;
- Communities' capacity building to promote hygiene, the rationale use of water and rural sanitation solutions
2.2 Strengthen capacity to manage rural water sources sustainably
- Engineering designs, civil works and equipment of APAC's headquarters and two regional offices;
- Public awareness campaign to increase water users' registration and water rights emission;
- Hydrogeological studies of sedimentary aquifers;
- Acquisition of equipment for hydrometeorological monitoring;
- Development of a state-wide drought preparedness plan;
- Feasibility studies for urban riverfront park;
- Design and implementation of a hydraulic infrastructure and sanitation planning platform;
- Increase SESAN's and APAC's capacity on dam safety by, inter alia, the preparation/update of dam O&M, safety and emergency preparedness plans; evaluation of dam safety status; State inventory of dams; the adoption of risk management approaches and tools; as well as staff training
Outputs
1.1. Safely-managed RWS systems and improved on-site sanitation solutions built/rehabilitated in selected rural communities, including health centers and schools, with climate-resilient designs (drought and flood resilient) and contingency plans.
1.2. Climate-resilience of water sources enhanced by, inter alia:
- Arataca II water conveyance system built to increase the Botafogo drought and water scarcity resilience
- Instrumentation and basic maintenance carried out to enhance dam safety
1.3 Innovative, climate-resilient RWSS solutions piloted, evaluated and, if feasible, incorporated in RWSS strategy
2.1 State capacity built for reaching universal RWSS access and manage RWS sustainably
- First group of SISARs created, incubated, trained & their performance monitored and evaluated;
- RWSS information platform expanded and more reliable;
- Climate-resilient universal RWSS access strategy developed and under implementation;
- Two regional WSS plans completed, considering climate risks;
- Sludge management study developed
- State's units for implementing, supporting, monitoring and evaluating RWSS progress and performance strengthened;
- Communities trained in hygiene, rational use of water, and on-site sanitation solutions;
2.2 Capacity strengthened to manage rural water sources sustainably
- APAC's field presence and its working environment enhanced
- Public awareness campaign to strengthen water users' registration and water rights emission implemented
- Information of sedimentary aquifers capacity in the 6 SISARs jurisdictions improved;
- Hydromet monitoring strengthened for improved management of water sources, drought and flood forecasting and climate change modelling;
- State-wide drought preparedness plan developed
- Hydraulic Infrastructure and Sanitation Planning platform implemented
- SESAN and APACs' staff training on dam safety implemented
- Dam safety risk management approach and tools implemented
Results - Outcomes
Increased access to sustainable[1], safely-managed RWS and improved sanitation:
- Rural people benefiting from access to sustainable, safely-managed drinking water supply from climate-resilient source;
- Rural people benefiting from access to at least basic sanitation;
- SISAR Service Quality satisfactory
- Urban and peri-urban inhabitants benefiting from a climate resilient water source RWS system (Botafogo water supply system);
- Innovative climate-resilient RWSS solutions tested in preparation for universal access and included in the State's universal RWSS strategy;
- Reduced gender gap scalability
State's capacity built for reaching universal RWSS services:
- SISARs implemented and operational (financial and water quality aspects are being monitored)
- State's universal RWSS strategy and regional WSS plans were adopted and under implementation
Citizen Engagement and Gender
- Monitoring of access to project financed RWSS disaggregated by gender and race/ethnicity
- Time reduction of women's caregiving tasks in communities with implemented drinking water supply systems
- RWSS Satisfaction Index (field survey)
High-level/longer-term impacts
Universal access to WSS achieved
Rural communities' climate resilience increased
Human Development Index of rural communities improved
Gap of public service and development between urban and rural areas reduced
Migration out of rural areas slowed down.
1. Sustainable means: (i) climate-resilient water source (drought, flood and water scarcity) and (ii) management model providing adequate O&M services.

### E. Rationale for Bank Involvement and Role of Partners

40. **Rationale for Bank's involvement.** 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.

41. **Role of other development partners that would support Project's activities or objectives** Two key development partners, UNICEF and the Avina Foundation, are active in the RWSS sector in Pernambuco and will support the Project objectives by contributing to the State's universal access goal and by helping SISARs reach operational sustainability by promoting communities' adhesion to the system. More specifically, UNICEF is supporting municipal governments to increase water access (mostly) and sanitation and to promote hygiene and menstrual health in schools. The Project will build on UNICEF's training material and approaches in these fields. The Avina Foundation fosters public-private partnerships for RWSS interventions and is planning to fund a few RWS systems where SISARs are already operating. While none of these development partners will formally join the Project, close coordination will be pursued during implementation.

### F. Lessons Learned and Reflected in the Project Design

42. Project design reflects the following lessons learned from the State of Pernambuco and global experience:

a. **Multi-village federation of community associations in charge of maintenance and TA, such as SISAR, combined with prolonged expert support is a proven solution to reach sustainable RWSS schemes O&M.** Past experiences with single-village, self-supplied service provision, without significant technical assistance, have yielded limited, sustained results. Based on years of lessons learned from various IBRD-funded projects and analytical work, in Brazil and beyond, the Project follows a multi-scheme solution, SISAR, with prolonged expert support from the State WSS institutions, which the client chose, based on successful implementation in similar Northeastern states. While the SISAR model is recognized as sound and sustainable, it requires extensive, prolonged guidance to reach maturity along with continuous technical assistance from WSS institutions.

b. **RWSS projects must consider the resilience of water sources to climate risks**. Past experiences show in Pernambuco and beyond, that, in arid and semi-arid areas, the failure of the water source due to drought or increasing water scarcity, is a significant share of RWSS systems failures. 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.

c. **A robust State-level RWSS information system is key to inform policies and investments for reaching universal access**. Experience shows that all too often little reliable information is available on the state of RWSS access and the quality of service. However, this is fundamental information to design RWSS strategies, policies and public investment programs to reach universal access, as well as to monitor and evaluate progress and impacts of those programs and improve them along the way. The proposed Project will strengthen the State information system which will inform the design of its strategy, investment plans

and state program to reach universal access in rural areas, as well as future World Bank and other financiers' engagements.

d. **Scaling-up safely managed sanitation solutions, the highest service level, in rural areas has been a challenge.** As mentioned earlier, both basic and safely managed sanitations are significantly improved solutions from current rural sanitation used in rural Pernambuco. 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. The solutions tested so far in the Northeast of Brazil (i.e. 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.

e. **Ensuring that schools and health centers have adequate access to WSS should also be considered in RWSS projects** because of their relevance for school attendance, especially girls, and health impacts, as seen during the COVID-19 pandemic. Moreover, all too often in rural areas, these services are not provided, are poorly designed or managed. The Project will provide RWSS facilities in the schools and health centers of the benefitted communities.

f. **Knowledge Exchange is a potent way to spread knowledge and innovation and foster long-lasting partnerships.** Project design includes provisions to facilitate knowledge sharing and mutual learning with other countries and States in Brazil (e.g., Bahia, Paraíba, Acre, Ceará, Piauí), particularly on critical issues like hygiene, menstrual health, and gender-sensitive approaches in rural settings.

## III. IMPLEMENTATION ARRANGEMENTS

### A. Institutional and Implementation Arrangements

43. **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. Additional staff of the PMU including the hiring of individual consultants, as set out in the Project Operation Manual and the ESCP will be hired, in a manner acceptable to the Bank, not later than 120 days after effectiveness. An external consulting firm and/or individual consultants will be hired to support the PMU in carrying out Project management activities, as set out in the Operational Manual, not later than 12 months after effectiveness.

44. **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. More specifically, Compesa will support the PMU with the Arataca II pipeline under subcomponent 1.2, APAC with Subcomponent 2.2, except for the development of the Water and Sanitation Infrastructure Planning Platform, for which SRHS will take the responsibility; and SCGE for the consultancy for institutional

strengthening under component 3. All other activities are under the exclusive technical responsibility of SESAN.

45. A **Project Steering Committee (SC),** including representatives of SRHS, APAC, SAD, SCGE, SEPLAG, and Compesa will be created by decree, not later than 90 days after effectiveness. It will be responsible for Project oversight, strategic management, ensuring inter-agency collaboration, mediating conflicts and monitoring progress.

46. **Cooperation agreements**. 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.

47. **Operational agreements.** 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).

48. More detailed information is available in Annex 1.

### B. Results Monitoring and Evaluation Arrangements

49. 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. The PMU will prepare and transmit to the Bank and to the SRHS/SESAN and Project Steering Committee, Project progress reports every six months. It will contract a firm to conduct the Project mid-term review and the final evaluation.

### C. Sustainability

50. **Borrower's commitment to and ownership to the Project and its targeted outcomes is high**. There is a strong demand in the State for improved RWSS services, as seen in the news and communities' consultations. Universal RWSS access, notably to close the service gap with urban areas, is a key priority of the current Government. The State institutions in charge of Project preparation have shown steadfast dedication from the inception of the Project's proposal to the present day. The State Government is restructuring the sector to reach its universal access goals, having established a dedicated State Secretary to oversee the WSS sector in 2023, having defined and started implementing a strategy to structure the RWSS sector based on the SISAR model and currently developing legislation for RWSS. The State Government has been prioritizing actions in the sector by securing additional funding through negotiations with the Federal Government. Moreover, itis 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.

51. **Institutional and climate sustainability is at the core of the Project's design**. 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. Moreover, the Project places a strong emphasis on building the State's capacity so that it can replicate and scale up the Project's approach, after Project closing, to reach its universal WSS access goals.

## IV. PROJECT APPRAISAL SUMMARY

## A. Technical, Economic and Financial Analysis (if applicable)

***Technical Analysis – Technologies and design approach***

52. **Project implementation period.** Considering the client's low capacity, the dispersed areas of interventions, the needed community mobilization and commitment, and previous similar experiences in Brazil (e.g. Ceará and Bahia States), the implementation of the SISAR scheme does need time to consolidate and mature. As such, the Project will be implemented over eight years.

53. **Project design is laying the foundations for a State-wide program to reach universal access in rural areas**, by putting in place the institutional and regulatory framework[50], tariff structure and capacity, preparing the State strategy and plans, strengthening the RWSS information system, piloting innovative technologies and preparing a batch of RWSS systems feasibility studies.

54. **Eligibility and prioritization criteria.** Investment needs exceed Project's financial capacity, so a set of eligibility and prioritization criteria were developed. Eligibility criteria include the size of the community (between 80 and 1,500 families), their location in one of the 6 SISARs[51] supported by the Project, the absence of a WSS system, the presence of a climate-resilient water source nearby. Eligibility criteria also include availability of areas for works interventions, and the community commitment to join SISAR. Priority will be given to RWS systems with a drought resilient water source (i.e. São Francisco River, unstressed deep sedimentary aquifers), and if still after applying the priority process the Project was to finance a RWS system with a water source vulnerable to severe droughts, a contingency plan will be developed and implemented.

55. **Maturity level for SISAR.** 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 SISAR 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. Similar studies will be developed for the other four SISARs during implementation.

***Technical Analysis – Readiness.***

56. **Counterpart funded activities** are already close to completion and fully funded.

57. **Readiness of designs**. 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.

***Technical Analysis – Climate change co-benefits and Paris Alignment[52]***

58. **The Project is aligned with the goals of the Paris Agreement on both mitigation and adaptation[53]**.

59. **Assessment and reduction of mitigation risks.** 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.
[51] The 6 SISARs supported by the Project are Moxotó, Alto Pajeú, Sertão Central and Araripe, Sertão do São Francisco, Agreste Central and Mata Sul.
[52] The climate risks and vulnerabilities posed by climate change in the Project area are included in the State and Sectoral contexts. The way the Project accounts for the risks and vulnerabilities into its design by showing link between the identified risks and the Project activities is presented in the Project component description, the theory of change and in the paragraphs below.
[53] This is based on the assessment using the three-step IPFs Investment Method for Assessing Paris Alignment. Step 1 which assesses the Project's consistency with the country's climate strategies is discussed in the Higher-level objectives section.

country's low-GHG emissions development pathways as it supports activities that are on the Universally Aligned list or are expected to have low impact on GHG emissions and will not present a carbon lock-in risk. 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 septic tanks do not present a carbon lock-in risk as they could easily be changed in the future, if affordable, lower-carbon alternatives become available. 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.

b. 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. These activities are low-risk because their energy supply will be mainly from the electricity grid .

60. **Assessment and reduction of adaptation risks.** Overall, the Project area is highly exposed to climate and disaster risks – particularly drought, water scarcity, high temperature and flood (only in the southern part of the coastal area called Mata Sur)[54]. 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. The Project design takes into consideration the climate risks mentioned above that threaten its outcomes. 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. reinforcing surface water intakes against erosion/floating debris, upgrading intake screens to minimize blockages, reinforcing distribution system appurtenances, ensuring location of system away from flood prone areas, installing submersible pumps) and climate resilience water sources (i.e. diversifying water sources, relying on drought proof water sources). 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.

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

***Economic Analysis***

62. **The Project economic analysis shows a robust economic justification**. A cost-benefit analysis was carried out. 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. The sensitivity analysis reveals that the results are robust to the risks associated with Project implementation, variations in the discount

[54] While ThinkHazard considers fire risk high in the drylands of Pernambuco based on meteorological data, it does not consider the fact that vegetation is sparse in the drylands area, providing little fuel for fires to last and spread and resulting in a low risk to the Project.

rate, and reductions in time savings. 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.

63. **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.** Net emissions from Project interventions are estimated at 100.4 thousand tCO2-eq over the life of the Project (30 years), while gross emissions are estimated to be 186.4 thousand tCO2-eq. On average, the Project will generate an estimated net emission of 3.3 thousand tCO2-eq annually. 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. as people move away from open defecation and unimproved latrines to septic tanks. In conclusion, the analysis confirms that the Project will not significantly increase GHG emissions.

64. **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 goal is to make the SISARs sustainable, by been able to cover their O&M costs, while keeping WSS services affordable for households living below the poverty line.

### B. Fiduciary

65. **Financial Management and Disbursement**. The existing Public Financial Management System of Pernambuco has satisfactory internal rules and controls, with a clear definition of responsibilities and institutional arrangements. The FM assessment concluded that SHRS has sufficient capacity to fulfill its FM responsibilities for the Project as the FM systems are adequate to provide reasonable assurance that the Projects funds will be used for the intended purposes, with due attention to the principles of economy, efficiency, effectiveness, transparency, and accountability, and with the implementation of the proposed mitigating measures and agreed actions to strengthen the FM systems. See Annex 1 for more information.

66. **The FM risk is moderate**. The FM Assessment identified a central risk to achieving the PDO: the internal controls weaknesses. The proposed mitigation measures to address this risk include: (i) detailing the financing arrangements procedures in the Project Operational Manual; (ii) appointing a dedicated FM Specialist for the Project within the PMU; (iii) strengthening the State's internal control structure; and (iv) reaching level 3 of IA-CM60 by the closing date.

67. **Procurement** will be carried out in compliance with the "World Bank's Procurement Regulations for IPF Borrowers," dated September 2023**.** SESAN will handle daily procurement-related routine; while specific procurement processes will be carried out by the Secretary of State Administration (SAD) which will create a Special Bidding Committee (CEL) for the centralized execution of the Project's procurement. The PMU will be responsible for procurement internal procedures such as drafting of bidding documents and proposals' evaluation. Training on Bank's Procurement Regulations will be provided before implementation begins. The Project Procurement Strategy for Development (PPSD) defines the approach for high value and/or high-risk procurement and sets the bases for the first 18-month Procurement Plan, uploaded in STEP before negotiations. Due consideration will be given to sustainable procurement and gender aspects in

procurement. SESAN and SAD defined clear workflows and monitoring routines to address procurement demands. In addition, focal points from both teams were designated to enhance communication.

68. **The procurement risk is moderate**. 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. The PPSD and the procurement plan for the first 18 months are the basis to prepare fit-for-purpose training. Possible delays due to undefined institutional roles in the contracting process, where internal procurement routines will be handled by the PMU and the external procurement process by the Secretary of State Administration (SAD), will be mitigated by establishing clear workflows and monitoring routines, to be detailed in the Project's Operations Manual (POM). Moreover, focal points from both teams will be designated to enhance communication. 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

| Legal Operational Policies | Triggered? |
|---|---|
| Projects on International Waterways OP 7.50 | No |
| Projects in Disputed Area OP 7.60 | No |

## D. Environmental and Social

69. **Environmental and Social assessment**. The Project involves civil works in locations yet to be defined. Thus, a draft Environmental and Social Management Framework (ESMF) was prepared and disclosed by the Borrower and on the Bank's website on November 1, 2023, before Project appraisal. The Borrower also prepared an inclusive Stakeholder Engagement Plan (SEP) proportional to the nature and scale of the Project and associated risks and impacts. Specific identification of vulnerable groups and their inclusion in stakeholder engagement was carried out. The draft SEP was disclosed on the Bank's website on November 1, 2023, prior to Appraisal allowing enough time for review and feedback from interested parties. 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 Resettlement Process Framework was disclosed on the Bank's website on December 21, 2023. The Bank will not finance any type of land expenditures nor cash compensation or other assistance paid in cash for involuntary resettlement. A updated draft of an Environmental and Social Commitment Plan (ESCP) has been agreed to between the IBRD and the Borrower and disclosed on the Bank's website on April 12, 2024. 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. In case of retroactive financing, an E&S Audit shall be carried out prior to retroactive disbursements in accordance with the ESCP.

70. **The overall environmental risk is Substantial** because of the Safety of Dams risk. 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.

71. The civil works for the WSS systems are located in rural areas which may have some level of anthropic activities (crops, pastures, etc.). Other civil works include the implementation of APAC's headquarters and regional offices in

consolidated urban areas, already altered by anthropic interventions. Their Environmental impacts may derive from waste and wastewater generation, dust and noise emissions, vibration, traffic disturbances, erosion and soil displacement or handling of fuel/chemicals. These interventions are not complex and/or large, do not involve activities that have a high potential for harming people or the environment, and will be located away from environmentally or socially sensitive areas. As such, the potential risks and impacts on human populations and or the environment are likely to be: (i) predictable and expected to be temporary and/or reversible; (ii) low in magnitude; (iii) site-specific, without likelihood of impacts beyond the actual footprint of the Project; and (iv) low probability of serious adverse effects to human health and/or the environment. The risks and impacts can be easily mitigated in a predictable manner, with well-known E&S control and mitigation measures. Thus, the Project's aforementioned activities are considered of *Moderate risk*.

72. 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. Their potential adverse risks to and impacts on human populations and/or the environment are minimal or negligible. Downstream effects of those activities, mainly the ones resulting from technical studies and engineering designs which could entail civil works/project implementation, are preliminarily considered of *Moderate Risk*.

73. Applicable mitigation measures for the above-mentioned E&S risks and impacts are provided within the Project's ESMF. 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.); (iv) Project's exclusion list; and (v) E&S monitoring and reporting arrangements.

74. **Safety of Dams risk is rated substantial**. 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[55]. Notwithstanding the above, given the client institutional capacity for dam safety, and as a precautionary approach, the risk is rated substantial.

75. So far, two existing dams on which Project's financed RWSS systems will rely upon were identified during Project preparation: Moxotó and Campos, owned by the federal government and part of PISF East Canal infrastructure. The Bank preparation team visited both dams and reviewed their safety plans and inspection reports. 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. APAC has the authority (Law 16.778-2109) to oversee the PISF operation in Pernambuco and will oversee and monitor the existing dams' safety related measures.

76. 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 to improve dam safety in the State. However, the State has not finalized the implementation of the Pernambuco Sustainable Water Project (P108654) post-closing action plan, agreed in 2020, including the rehabilitation of the Pirapama

[55] In preparation for follow on projects, based on improved information and State's capacity, this criteria would need to be reviewed in order to consider more dam reservoir as water sources to supply RWS, and add equivalent resources to support any dam safety rehabilitation needs.

Dam[56], highlighting the need to improve its dam safety practices. 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.

77. 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.

78. **The social risk is rated Moderate**. The Project interventions are small-scale and community-based in nature. They are not expected to have any significant or unmitigated social impacts and there will likely be no adverse impacts linked to resettlement or land acquisition. The expected impacts are predictable, site specific, have minimal adverse impacts and easily mitigated. There is a risk of exclusion of disadvantaged and vulnerable social groups from the benefits of the Project, especially indigenous people and other traditional communities. To reduce this risk, the Project will engage these groups as early as possible and will identify specific needs and approach that could enable the inclusion of these groups among the beneficiaries.

79. Although Project-supported activities can take place in remotely located communities, they are not expected to increase risks ordinarily associated with the influx of workers on small rural communities as this number is expected to be low. The Project is expected to bring about better social outcomes through improved access to RWSS facilities, leading to better health and hygiene. Especially for women – menstrual hygiene, privacy, security, access and comfort will be greatly improved. Women are disproportionately affected by the lack of access to water and sanitation. Therefore, the Project will address gender gaps which are reflected in the Project's indicators and targets.

80. **Citizen Engagement**. The Project has a robust citizen engagement approach. The participatory process, that includes consultations during preparation and implementation, will play a key role in engaging with stakeholders and receiving feedback from beneficiaries. The Project will use grassroot-level committees (i.e. RWS committees, community associations) or other local participatory forum to support community participation and monitoring. 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. The Project will track the percentage of grievances responded to and resolved, in relation to the delivery of Project's activities. The Project will also conduct at least three beneficiary satisfaction survey. The first at the start of the Project to establish the baseline, the second by Project's mid-term and the third at Project's closure. A beneficiary feedback indicator will track beneficiaries' satisfaction with water services and improvement in the quality, quantity, and regularity of access to water.

81. **Gender**. Access to safe WSS is critical for human development. It is seen as particularly relevant for women and girls. Prevalent social norms assign the majority of water fetching work for domestic purposes to women. Such division of tasks results in women often bearing more of the burden associated with household water and sanitation insecurity, such as disproportionate health and social burdens including greater exposure to water-related diseases, discriminatory taboos, and unrealized economic productivity. The most recent national data (IBGE 2022) indicate that Pernambuco has the third-highest working hours in Brazil consumed in carrying out domestic work and/or caring for people. In the state, women dedicate an average of 24 hours a week to domestic work and/or caring for people, while men spend an average of 12.7

[56] SESAN/SRHS has sent a formal letter to the Bank, dated September 1, 2023, informing that agreed actions will be implemented in 2024 with secured resources from Federal Bank funds (*Caixa Econômica Federal*). During PROSAR implementation, the Bank will monitor their compliance.

hours. Black women spend even more hours per week than white women in domestic work.[57] This data incorporates urban and rural areas but does not include additional time dedicated to collecting water outside the home. It is estimated that in communities where there is a need to collect water, women and girls have an additional burden of at least 4 hours per week (30 minutes or more per day) dedicated specially to collecting water.

82. **Closing the gender gap**. The proposed activities will provide better conditions for women, reducing the time spent searching for water by improving existing and new connections to piped drinking water supply systems in their homes leading to better health and hygiene. Dedicated indicators and targets will monitor how the identified gaps have been included in the M&E framework. Component 1 activities will support the closing of the gender gap by reducing the disproportionate burden of time spent by women beneficiaries on WSS related tasks in the Project area. As result, women will have more time and opportunity for education and paid work. In addition, Component 2 activities will promote opportunities for training, paid work, since women's groups will be a priority for training at community level, as well as young people; in addition to fulfilling job vacancies offered by the Project, especially during the construction and maintenance periods. Component 2 will also promote the participation of women in management, decisions on the implementation of works, and operation of the system. Annex 3 details the gender gap analysis and the Project's actions to reduce these gaps.

## V. GRIEVANCE REDRESS SERVICES

83. ***Grievance Redress.*** 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). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the Bank's independent Accountability Mechanism (AM). The AM houses the Inspection Panel, which determines whether harm occurred, or could occur, as a result of Bank non-compliance with its policies and procedures, and the Dispute Resolution Service, which provides communities and borrowers with the opportunity to address complaints through dispute resolution. Complaints may be submitted to the AM at any time after concerns have been brought directly to the attention of Bank Management and after Management has been given an opportunity to respond. For information on how to submit complaints to the Bank's Grievance Redress Service (GRS), visit http://www.worldbank.org/GRS. For information on how to submit complaints to the Bank's Accountability Mechanism, visit https://accountability.worldbank.org.

## VI. KEY RISKS

84. The overall risk rating for the Project to achieve its PDO is **Substantial**. The PAD's Data Sheet includes a table with all risks and their ratings. The substantial risks are discussed below.

85. **Sector strategies and policies risk is Substantial.** The State's Government RWSS initial Strategy based on the SISAR model supported by the Project is recent and needs consolidation. 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. This requires prolonged commitment from the State and support to the SISARs and communities. There is a risk that State's commitment to the Project falters if a change in Government administration occurs at the next election in 2027. Project design features to reduce this risk include: a longer implementation period, to allow time for SISARs to mature and the State agencies to build sufficient capacity, and the

[57] https://biblioteca.ibge.gov.br/index.php/biblioteca-catalogo?view=detalhes&id=2102020.

preparation and adoption of a State WSS Strategy and regional WSS Plans to institutionalize the approach.

86. **Institutional capacity for implementation and sustainability is Substantial.** SRHS and SESAN are new entities, established in January 2023, from the restructuring of pre-existing institutions, and still in the process of being staffed and strengthened. 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 following design features are expected to mitigate this risk: the setting-up of a PMU within SESAN for overall Project coordination and implementation, the hiring of consulting firms and individual consultants to support the PMU and supervise contracts, training and capacity building for the State entities.

87. **Environmental and Social risk is substantial** because of the Safety of Dams risk**.** 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.

88. Please refer to 'section D' of the PAD and the ESMS for more detailed information.

## VII. RESULTS FRAMEWORK AND MONITORING

### 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 | 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 | Jul/2032 |
| Not applicable. | Percentage of Project beneficiaries per gender and race/ethnicity |
| **SISAR Service Quality Index (Text)** | |
| Nov/2023 | Jun/2032 |
| Not applicable | Good |
| **Increase access to improved sanitation** | |
| **• People provided with at least basic sanitation services , disaggregated by gender and race/ethnicity. (Number)** | |
| Nov/2023 | Jun/2032 |
| 0 | 39,000 |
| ➢People provided with at least basic sanitation services (text) by gender and race/ethnicity (Text) | |
| Nov/2023 | Jul/2032 |
| Not applicable | Percentage of Project beneficiaries per gender and race/ethnicity |
| **Build the Borrower's capacity to reach universal RWSS services** | |
| **• State's universal, climate-resilient RWSS strategy and regional WSS plans adopted and under implementation (Yes/No)** | |
| Nov/2023 | Jun/2032 |
| No | Yes |

### Intermediate Indicators by Components

| Baseline | Closing Period |
|---|---|

| 1–Increase access to climate-resilient, safely-managed RWS and improved sanitation | |
|---|---|
| **Communities with feasibility and design studies for rural water supply systems (Number)** | |
| Nov/2023 | Jun/2032 |
| 0 | 180 |
| **Communities with feasibility and design studies for rural sanitation solutions (Number)** | |
| Nov/2023 | Jun/2032 |
| 0 | 195 |
| **Communities with climate resilient water supply systems implemented by the Project (Number)** | |
| Nov/2023 | Jun/2032 |
| 0 | 100 |
| **Communities with improved sanitation solutions implemented by the Project (Number)** | |
| Nov/2023 | Jun/2032 |
| 0 | 100 |
| **Climate-resilience of Botafogo water system increased (Yes/No)** | |
| Nov/2023 | Jun/2032 |
| No | Yes |
| **Innovative RWSS solutions implemented (Number)** | |
| Nov/2023 | Jun/2032 |
| 0 | 30 |
| **Time of women's caregiving tasks per day/week, in communities with drinking water supply systems implemented by the Project (Number)** | |
| Nov/2023 | Jun/2032 |
| 24 | 21 |
| **People provided with water, sanitation, hygiene (Number), of which percentage is safely managed (Percentage). (Number)** | |
| Oct/2023 | Jun/2032 |
| 0 | TBD |
| ➢People provided with water which is safely managed (Percentage). (Percentage) | |
| Nov/2023 | Jul/2032 |
| 0 | 100 |
| **2-Build the Borrower's capacity to reach universal RWSS access and sustainably manage RWS systems** | |
| **SISAR collaborators trained (Number)** | |
| Nov/2023 | Jun/2032 |
| 0 | 100 |
| **SISAR Customer Service Satisfaction Index (Percentage)** | |
| Nov/2023 | Jun/2032 |

| | |
|---|---|
| 0 | 80 |
| **APAC's headquarters and regional offices installed and operational (Number)** | |
| Nov/2023 | Jun/2032 |
| 0 | 3 |
| **Municipalities in Pernambuco with hydrogeological monitoring supported by the Project (Number)** | |
| Nov/2023 | Jun/2032 |
| 0 | 34 |
| **Share of WASH jobs created by the project occupied by women (Percentage)** | |
| Nov/2023 | Jun/2032 |
| 0 | 30 |
| **Implementation of the Water Infrastructure Planning Platform (Yes/No)** | |
| Nov/2023 | Jun/2032 |
| No | Yes |
| **Average resolution time of complaints (Days)** | |
| Nov/2023 | Jun/2032 |
| - | 30 |
| **3-Project Management** | |

## Monitoring & Evaluation Plan: PDO Indicators by PDO Outcomes

| | |
|---|---|
| **Increase access to sustainable, safely managed 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 | |
| Description | **The indicator will measure the cumulative number of rural people benefiting from access to safely-managed drinking water supply from climate-resilient water source from Project interventions monitored disaggregated by gender and race/ethnicity.** |
| Frequency | **Per semester** |
| Data source | **SISAR data base** |
| Methodology for Data Collection | **Number of households that are in the SISAR data base who benefitted from project's water interventions, multiplied by the average percapita of 2.89.**<br>**The PMU will also monitor the percentage of beneficiaries per gender and race/ethnicity benefitted from the Project informed by the household cadaster. It will also compare with State's equivalent 2022 Census data for reference.** |
| Responsibility for Data Collection | **SISAR to inform and PMU to consolidate** |
| **SISAR Service Quality Index (Text)** | |
| Description | **Qualitative service index to consider the O&M performance of SISAR, considering quality and efficiency of service delivery through financial balance and water quality aspects for SISAR service delivery.** |
| Frequency | **Per semester** |
| Data source | **SISAR performance report** |
| Methodology for Data Collection | **Residual chlorine (RC) must be higher than 0,3 mg/L to obtain a "good" qualification. If cash sufficiency (CS) (revenue/expenditure) is equal or higher than 105%, it is considered "good". If CS is equal or higher than 100% but lower than 105%, then is "regular". If either CS or RC are lower than 100% or 0,3 mg/L respectively, then is "bad". Data collection will be monthly, report semester average.** |
| Responsibility for Data Collection | **SISAR to collect and PMU to consolidate** |
| **Increase access to improved sanitation** | |
| **Rural people provided with at least basic sanitation services (Number), disaggregated by gender and race/ethnicity (Number)** | |
| Description | **The indicator will measure the cumulative number of rural people benefiting from access to at least basic sanitation services from Project interventions, disaggregated by gender and race/ethnicity** |
| Frequency | **Per semester** |
| Data source | **Supervision firm's works completion reports** |
| Methodology for Data Collection | **Number of households that are in the supervision firm's report who benefitted from project's sanitation interventions, multiplied by the average percapita of 2.89.**<br>**The PMU will also monitor the percentage of beneficiaries per gender and race/ethnicity benefitted from the Project informed by the household cadaster. It will also compare with State's equivalent 2022 Census data for reference.** |

| | |
|---|---|
| Responsibility for Data Collection | **PMU** |
| **Build the Borrower's capacity to reach universal RWSS services** | |
| **State's Climate Resilient, Universal RWSS strategy and regional WSS plans adopted and under implementation (Yes/No)** | |
| Description | **The indicator will report on the development, approval and advance to implementation of the two microregional climate resilient WSS plans and the climate resilient Universal RWSS access Strategy.** |
| Frequency | **Per Semester** |
| Data source | **SESAN** |
| Methodology for Data Collection | **Approval of the plans by the respective region's body and strategy approved by SESAN** |
| Responsibility for Data Collection | **PMU** |

## Monitoring & Evaluation Plan: Intermediate Results Indicators by Components

| **1 – Increase access to climate-resilient, safely-managed RWS and improved sanitation** | |
|---|---|
| **Communities with feasibility and design studies for rural water supply systems (Number)** | |
| Description | The indicator will measure the cumulative number of communities benefitting from RWS designs prepared by the Project to support the universal access goal |
| Frequency | Per Semester |
| Data source | Number of designs delivered to SESAN |
| Methodology for Data Collection | Number of communities that have had RWS designs completed with support from the Project |
| Responsibility for Data Collection | PMU |
| **Communities with feasibility and design studies for rural sanitation solutions (Number)** | |
| Description | The indicator will measure the cumulative number of communities benefitting from sanitation solutions designs prepared by the Project to support the universal access goal |
| Frequency | Per Semester |
| Data source | Number of designs delivered to SESAN |
| Methodology for Data Collection | Number of communities that have had sanitation solutions designs completed with support from the Project |
| Responsibility for Data Collection | PMU |
| **Communities with climate resilient water supply systems implemented by the Project (Number** | |
| Description | The indicator will measure the cumulative number of communities benefitting from RWS implemented by the Project to support the SISAR schemes |
| Frequency | Per Semester |
| Data source | SISAR data base |
| Methodology for Data Collection | Number of communities that are in the SISAR data base who benefitted from project's water interventions |
| Responsibility for Data Collection | SISAR to collect and PMU to consolidate |
| **Communities with improved sanitation solutions implemented by the Project (Number)** | |
| Description | The indicator will measure the cumulative number of communities benefitting from sanitation solutions implemented by the Project |
| Frequency | Per Semester |
| Data source | Supervision firm's works completion reports |
| Methodology for Data Collection | Number of communities that are in supervision firm's report who benefitted from project's sanitation interventions. |

| | |
|---|---|
| Responsibility for Data Collection | PMU |
| **Climate-resilience of Botafogo water system increased (Yes/No)** | |
| Description | The indicator will measure the capacity of the Botafogo water system to produce an average monthly water of 1,600 l/s once the Arataca II becomes operational. |
| Frequency | Per Semester |
| Data source | Botafogo production system report from Compesa |
| Methodology for Data Collection | Assessment of Botafogo water production system to be maintaned at least at 1,600 l/s. |
| Responsibility for Data Collection | Compesa to collect and PMU to consolidate |
| **Innovative RWSS solutions implemented (Number)** | |
| Description | The indicator will measure the number of innovative pilots, per typology and per pilot areas of interventions, that have been implemented with support from the Project |
| Frequency | Per Semester |
| Data source | Pilot Implementation reports from SESAN |
| Methodology for Data Collection | Number of innovative pilots implemented per typology of techniques and per number of pilots areas interventions tested |
| Responsibility for Data Collection | PMU |
| **Time of women's caregiving tasks per day/week, in communities with drinking water supply systems implemented by the Project (Number)** | |
| Description | The indicator will measure the time spent by women in caregiving tasks by applying surveys before and after Project implementation in each specific community |
| Frequency | Per semester |
| Data source | The baseline was estimated based on data from the Household Sample Survey (*Pesquisa Nacional da Amostra por Domicilio* from IBGE 2022) for Pernambuco. During implementation the monitoring tool will be developed with support from the social team. The baseline for each community will be refined during the diagnosis of each community and same tool will be applied after a year of works implementation by the supervision firm's social team. |
| Methodology for Data Collection | Comparison of data collected from community women before project interventions and after a years of works conclusion. |
| Responsibility for Data Collection | PMU to consolidate |
| **People provided with water, sanitation, hygiene (Number), of which percentage is safely managed (Percentage)** | |
| Description | The indicator will measure the number of people provided with water or sanitation or hygiene as well as the percentage of which provided with safely managed water services. |
| Frequency | Per semester |
| Data source | SISAR database |
| Methodology for Data Collection | Number of communities who benefitted from project's water or sanitation or health interventions as per Project data base.<br>Percentage of safely managed water services would be monitored using SISAR's data base where SISAR is fully operational. |
| Responsibility for Data Collection | SISAR and the Project supervision firm to collect and PMU to consolidate |
| **2 – Build the Borrower's capacity to reach universal and climate-resilient RWSS access and sustainably manage RWS systems and their water sources** | |
| **SISAR collaborators trained (Number)** | |
| Description | The indicator will measure the cumulative number of SISAR collaborators trained with support from the Project, monitored disaggregated per gender and race/ethnicity. |
| Frequency | Per Semester |
| Data source | SISAR reports |

| | |
|---|---|
| Methodology for Data Collection | Counting the cumulative number of SISAR participants of capacity building trainings delivered by the Project |
| Responsibility for Data Collection | SISAR to inform and PMU to consolidate |
| **SISAR Customer Service Satisfaction Index (Percentage)** | |
| Description | The satisfaction index will measure the customer's satisfaction regarding quality, quantity and regularity of the SISAR service provision. |
| Frequency | Community diagnosis, at MTR and End of the Project |
| Data source | Customer service survey consolidated report. |
| Methodology for Data Collection | Customer service survey to be applied at community level by SESAN. |
| Responsibility for Data Collection | PMU |
| **APAC's headquarters and regional offices installed and operational (Number)** | |
| Description | This indicator will monitor the conclusion of APAC's offices works, their staffing and operation |
| Frequency | Per Semester |
| Data source | APAC reports |
| Methodology for Data Collection | Assessment of works reports, and APAC's management reports to check if offices are providing service to the population. |
| Responsibility for Data Collection | APAC to inform and PMU to consolidate |
| **Municipalities in Pernambuco with hydrogeological monitoring supported by the Project (Number)** | |
| Description | The indicator will measure the cumulative number of municipalities in Pernambuco with hydrogeological monitoring supported by the Project |
| Frequency | Per Semester |
| Data source | APAC monitoring reports |
| Methodology for Data Collection | Number of municipalities with hydrogeological monitoring instruments implemented by the Project |
| Responsibility for Data Collection | APAC to inform and PMU to consolidate |
| **Implementation of the Water Infrastructure Planning Platform (Yes/No)** | |
| Description | Hydraulic Infrastructure and Sanitation Planning Platform implemented |
| Frequency | Per Semester |
| Data source | SEIH |
| Methodology for Data Collection | Platform launched |
| Responsibility for Data Collection | PMU |
| **Share of WASH jobs created by the project occupied by women (Percentage)** | |
| Description | The indicator will measure the cumulative number of women participating in WASH jobs promoted by the Project |
| Frequency | Per Semester |
| Data source | SISAR reports |
| Methodology for Data Collection | Percentage of women operating water supply systems financeed by the Project compared to total number of operators |
| Responsibility for Data Collection | SISAR to inform and PMU to consolidate |
| **Average resolution time of complaints (Days)** | |
| Description | Monthly average of time needed to resolve Project-related complaints |
| Frequency | Per Semester |
| Data source | GRM channels |

| | |
|---|---|
| Methodology for Data Collection | Identify monthly average of time of all registered complains to be responded |
| Responsibility for Data Collection | PMU |
| **3 - Project Management** | |

## ANNEX 1: Implementation Arrangements and Support Plan

**COUNTRY: Federative Republic of Brazil**
**Brazil: Pernambuco Rural Water and Sanitation Project (PROSAR)**

**Project's institutional and implementation arrangements**

1. **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. SRHS was created in early 2023[58] with the new State government administration. SRHS has three Executive Secretariats (SESAN; the Executive Secretariat of Water Infrastructure, SEIH; and the Executive Secretariat for Institutional Management, SEG). SRHS managers have had previous experience with IBRD Projects. SRHS is still being staffed mainly with professionals from other state institutions, such as Compesa and APAC, and from academia. Staff's previous experience with internationally financed projects varies.

2. **SESAN will house the Project Management Unit (PMU)**, which will be created via State Decree. The PMU is responsible for overall Project management and coordination with the other participating institutions. This includes Project implementation and supervision, procurement and contract management, monitoring and evaluation, financial management (accounting and disbursement procedures), and environmental and social management. The preparation of financial reports (IFRs) and disbursement requests will also be under the responsibility of the PMU, based on inputs from other participating institutions. The PMU will be composed of specialists from SESAN and individual consultants. An external consulting firm and/or individual consultants will be hired to support the PMU in carrying out its functions.

3. **The technical cooperating entities are APAC, Compesa, and SCGE**. 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. It will also provide governmental support through the implementation of the Internal Audit Capability Model (IA-CM). 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.

4. The roles and responsibilities of the technical cooperating entities, plus SRHS (SESAN and SEIH included) within the framework of this Project, will be clearly stated and defined via State Decree, which will also create the PMU. Specific bilateral Cooperation Agreements will be signed between SRHS and each cooperating entity. 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.

5. The key roles of each implementing entity for each Project component are presented below:

[58] By State Law 18.139, January 18, 2023.

| | |
|---|---|
| Implementation Component | Technical Implementation (overall SHRS, through SESAN) |
| Component 1 | SESAN/COMPESA (only 1.2) |
| Component 2 | SESAN/APAC (2.2) /SEIH (only hydraulic-infra platform) |
| Component 3 | SESAN/SCGE (only SCGE strengthening activities) |

**Coordination**

6. **A Steering Committee (SC), including representatives from SRHS, APAC, SAD, SCGE, SEPLAG, and Compesa** will be created via State Decree to oversee the strategic management of the Project and better coordinate State efforts in the sector. It will review progress, recommend actions, and management eventual conflicts.

7. **Other State institutions will be involved in the Project's implementation, when necessary, by fulfilling their respective roles.** The **State Attorney Office (PGE)** will provide legal support regarding procurement or any other related issue. The **Environmental State Agency (CPRH)**, which is a special agency of the State, will be responsible for analyzing and approving the environmental licensing requested by the SRHS, following standard practice**. The Secretary of State Administration (SAD)** will provide governmental support through the Special Procurement Commission (Comissão Especial de Licitação – CEL). 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. Finally, the **Regulatory Agency of Pernambuco (ARPE**), will provide regulatory support if needed, given that RWSS service provision -related regulation is still limited, if any[59].

**Strategy and Approach for Implementation Support**

8. 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. Field visits to key construction and rehabilitation sites will be conducted during supervision missions. 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. When available, the team will seek resources from the Water GP Global Solutions Groups and/or from available trust funds to support the client during implementation of specific activities, including, *inter alia*, related to gender approach, hygiene, behavior change applied to WASH (especially in schools and health care facilities). This Implementation Support Plan is indicative and may be revised during the Project implementation based on emerging Project challenges.

**Implementation Support Plan**

9. Semiannual supervision missions, short follow-up technical missions or virtual meetings and field visits will focus on the following areas:

a. **Strategic support.** 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

[59] Project will advance to define key performance monitoring indicators to apply to the SISARs in order to assess progress and results.

activities, especially at the planning level; and (iii) evaluate progress on cross-cutting themes such as M&E, training, communication, knowledge exchange, behavior change, social and gender approach, innovation, dissemination of the Project results and experiences, and coordination between relevant stakeholders.

b. **Technical support.** 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. Regular site visits will be carried out during Project implementation and involve technical specialists as needed. 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.

d. **ESF support.** 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. Supervision from IBRD specialists will take place at least twice a year.

**Implementation Support Resource Estimates**

| Time | Focus | Skills Needed | Resource Estimates (Staff Weeks) |
|---|---|---|---|
| First 12 months | Project rollout, management, and implementation support coordination | Task team leads | 6 per task team lead per year |
| | Refine subcomponent activities and ensure quality of detailed designs | Task team leads/technical specialists | 2 per task team lead per year |
| | Social and environmental compliance activities, including risk mitigation measures, and safety of dams | Social, environmental, and dam safety specialists | 4 per year |
| | Technical and procurement review of ToRs and bidding document | Task team leads, technical specialists, procurement | 6 per year |
| | Fiduciary arrangements and FM systems | Financial management | 3 per year |
| | Promoting innovation in the project | Task team leads/technical specialists | 3 per year |
| | Operational support | Operations Analyst | 6 per year |
| 12 to 84 months | Procurement review and feedback of bidding documents and consultant contracts | Procurement specialist | 6 per year |

| Time | Focus | Skills Needed | Resource Estimates (Staff Weeks) |
|---|---|---|---|
| | Technical review of ToRs, technical reports, and bidding documents | Task team leads, technical specialists | 6 per year |
| | Non-lending technical assistance, capacity, and institutional strengthening efforts | Task team leads, technical specialists | 4 per year |
| | FM supervision | FM specialist | 3 per year |
| | Social compliance —supervision | Social specialist | 4 per year |
| | Environmental compliance—supervision | Environmental specialist | 4 per year |
| | Dam safety compliance – supervision | Dam safety specialist | 4 per year |
| | Project management, M&E, and project supervision coordination | Task team leads, technical specialists | 8 per year |
| | Operational support, M&E, lessons learned, progress and final reporting | Technical specialists and operations analyst | 6 per year |

**Skill Mix Requirements**

| Skill Needs for Supervision | Comment |
|---|---|
| Task team leaders | Headquarters and country based |
| WRM / WSS specialists | Headquarters and country based |
| Infrastructure engineer | Country based |
| FM specialist | Country based |
| Procurement specialist | Country based |
| Social specialist | Country based |
| Environmental specialist | Country based |
| Dam safety specialists | Headquarters and country based |
| M&E specialist | Headquarters and country based |
| Operations analyst | Headquarters and country based |
| Lawyers | Country based |
| Disbursement officers | Country based |

**Financial Management**

10. The State Governor has appointed all key PROSAR positions duly publicized through the State *Diário Oficial*[60].

11. SRHS has an appropriate management structure, and the PMU is an independent senior management unit. 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.

12. 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. The FMS should be appointed within one month after effectiveness. Any new

[60] Official document that aims to publicize all municipal, state, and federal government actions or other relevant matters that have social impacts.

staff joining the Project, unfamiliar and inexperienced with the Bank's policies and procedures, must participate in the Bank's fiduciary training session when available.

13. ***Planning and Budgeting.*** The Project will follow the laws and procedures applicable to the budget cycle at the state level. The SRHS must create specific program(s)/line(s) in the LOA to for the Project. This will enable the recording and reporting of Project operations using the State's FMIS.

14. 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. Payments will follow the official commitment (*empenho*), verification (*liquidação*), and payment (*pagamento*) routines[61]. Actual expenditures are compared to budgeted expenditures with reasonable frequency, and justifications are provided for variations relevant to the budget.

15. 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.

16. This Project does require counterpart funding, which the review of the IFRs will monitor. The counterparts will be implemented with the State budget resources and become eligible if related expenditures are paid to contribute to the PDO. The state budget will earmark counterpart funds for Project activities. SEFAZ releases funds to the PMU based on the presentation of supporting documentation detailing the object of expenditure.

17. The procedures to plan Project activities, prepare related budgets, and collect information are adequate. The Project plans and budgets (to be reflected in the state LOA) will be realistic, based on valid assumptions, and prepared for all significant activities in sufficient detail to provide a meaningful tool to monitor subsequent performance (budget vs. actual variance analysis).

18. ***Accounting.*** The SRHS is subject to the TCE-PE's accounting, operational, and asset management oversight, including the legality, legitimacy, and economy of expenditures, acts, contracts, and revenues. The fiscal year coincides with the calendar year.

19. The Project will be implemented using the state's existing systems, and national accounting standards (Modified Accrual[62]) will be followed as they are deemed acceptable to the Bank. 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. The system should be updated within a month after the effectiveness. The POM will reflect the standard Project structure that should apply throughout the project life.

20. 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 Project's accounting records in e-Fisco and the Project Management System SGMAP will need to be reconciled on a regular basis with this information.

[61] At the commitment stage (*empenho*) proposed expenditure is verified to ensure that spending proposals have been approved by an authorized official, that funds have been appropriated in the budget, that sufficient funds remain available in the proper category of expenditure, and that the expenditure is proposed under the correct category. At the verification stage (*liquidação*) the documentary evidence that the goods have been received or that the service has been performed is verified. Before the payment stage (*pagamento*) confirmation is needed that a valid obligation exists, that the competent person has signed that the goods or services have been received as expected, that the invoice and other documents requesting payment are correct and suitable for payment, and that the contractor is correctly identified.

[62] It recognizes revenues when they become available and measurable and records expenditures when liabilities are incurred.

21. ***Internal Controls.*** Transaction processing will use the state's internal approval processes and systems for reasonable segregation of duties, supervision, quality control reviews, and reconciliation. The process flow is well understood by the state's civil servants.

22. All Project transactions will be processed within e-Fisco, which enforces strict segregation of duties, controls the preparation and approval of transactions to ensure that these transactions are properly executed and recorded (i.e. different units or persons authorize the transaction and record the transaction), and guarantees the confidentiality, integrity, and availability of data. All accounting and supporting documents are retained on a permanent basis, using a system that allows for easy retrieval for the authorized user. All documents are digitalized and kept in the *Sistema Eletrônico de Informações* – SEI.

23. The recently implemented prior World Bank operation implemented by the State[63] faced relevant issues related to weak internal control arrangements at the PMU level; in this regard, SCGE-PE[64] will undertake the relevant Project's internal control activities, working with the SRHS to strengthen its internal controls and execute audits of procedures as part of the Project that will be programmed as technical assistance activities. In addition, the Project will support the implementation of the Internal Audit Capability Model – IA-CM in the State.

24. The SCGE-PE will prepare a working plan containing the activities needed to reach level 3 of IA-CM by the closing date. 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 SCGE-PE is expected to evaluate the adequacy and effectiveness of internal control in the PMU throughout project implementation.

25. The Project's bank account is automated, generated, and reconciled daily. Satisfactory segregation of functions is applied to review and approve all unusual items.

26. An adequate system[65] for protecting the Project's assets from fraud, waste, and abuse is in place. Asset management is undertaken by the SAD[66], which regulates all procedures and standards relating to asset management, which are available at www.sad.pe.gov.br.

27. The Project's internal control system will be documented in a POM. 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 POM must be maintained/updated throughout the Project's life.

28. ***Flow of Funds and Disbursement Arrangements.*** 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). Funds will be disbursed in respect of eligible expenditures incurred or to be incurred under the Project and will be disbursed in accordance with agreed financing percentages.

29. The primary disbursement method will be Advances. The Project will also be able to process Reimbursements and

[63] P120139 – Pernambuco Rural Economic Inclusion
[64] Controladoria Geral do Estado de Pernambuco - State General Comptroller's Secretariat
[65] The State uses the Sistema Integrado de Gestão de Compras, Contratos, Licitações, Patrimônio e Almoxarifado – Sistema PE-INTEGRADO, following decree # 40.222 from December 24, 2013.
[66] Secretaria de Administração – Secretariat of Administration

Direct Payments if required. The funds flow will rely on existing State's (i.e. Country) systems: all payments will be made by SRHS using the e-Fisco system once payment obligations have been committed and verified.

a. The funds will be transferred to a specific segregated bank account (DA), opened specifically for the Project and administered by the SEFAZ[67]. This account will be opened at a commercial bank acceptable to the Bank. The account will be denominated in Brazilian Reais (BRL). Project payments will be made from the treasury single account and reimbursed by the funds from the designated account within one day (D+1).
b. Payment processes will be registered in e-Fisco System by the SRHS, and the records will be reconciled at the end of each month.
c. The Statements of Expenditures (SOEs) will be prepared by the SRHS, with information available in e-Fisco, and they will be supported by the accounting records[68].

30. The DA ceiling will be fixed. The Minimum Application Size (MAS) for Direct Payment Withdrawal Applications (WA) will be US$1,000,000 equivalent. The frequency for the presentation of eligible expenditures paid from the DA, is at least once every three months.

31. The Project will report on the use of Advances and process Reimbursement requests, through WAs supported by SOEs. Direct payments will be documented by Records. 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.

32. 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.

33. ***Financial Reporting.*** SRHS will prepare and submit to the Bank bi-annual IFRs, no later than 45 days after the end of each reporting period. 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 SGMAP system that needs to be customized to reflect the Bank's formats.

34. At the end of each fiscal year, SRHS will prepare the annual financial statements for the Project that will be audited. The second semester IFRs, with accompanying notes, will serve as the Projects' annual financial statements to be audited.

35. 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:

[67] Secretaria de Fazenda do Estado de Pernambuco – State Treasury.
68 The General Conditions require the Borrower to retain all records (contracts, orders, invoices, bills, receipts, and other documents) evidencing eligible expenditures and to enable the Bank's representatives to examine such records. They also require the records to be retained for at least one year following receipt by the Bank of the final audited financial statements required in accordance of the Legal Agreement or two years after the Closing Date, whichever is later. Borrowers are responsible for ensuring that document retention beyond the period required by the Legal Agreement complies with their government's regulations.

a. IFR 1-A –Sources and Uses of Funds by Disbursement Category (period to date, year-to-date, Project-to-date) showing budgeted amounts versus actual expenditures (i.e., documented expenditures), including a variance analysis;

b. IFR 1-B –Uses of Funds by Project Component (period to date, year-to-date, Project-to-date) showing budgeted amounts versus actual expenditures (i.e., documented expenditures), including a variance analysis;

c. IFR 1-C – DA bank reconciliation and accompanying bank statements; and

d. Cash flow for the following period.

36. **External Auditing.** For Project purposes, the external audit of the Project will be performed by independent external auditors[69] 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.

37. The audited financial statements will be prepared in accordance with accounting standards acceptable to the Bank. The TOR should be prepared by the SHRS and be approved by the Bank within three months after effectiveness.

38. The audit report (and any accompanying management letter) should be submitted to the Bank no more than six months after the end of the fiscal year. The Bank will review the audit report and periodically determine whether the recommendations are satisfactorily implemented. The Bank also requires that the Borrower/Recipient disclose the audited financial statements in a manner acceptable to the Bank, and following the Bank's formal receipt of these statements from the Borrower/Recipient, the Bank will also make them available to the public in accordance with *The World Bank Policy on Access to Information*.

39. ***Conditions or Nonstandard/Significant Financial Covenants .*** There are no significant FM-related conditions for Board and/or Effectiveness.

[69] The Bank consulted with the State Court of Accounts (Tribunal de Contas do Estado de Pernambuco-TCE-PE) regarding its availability to perform the Project's Annual Financial Statement Audit, subject to a review of the results of the MMD-QATC report. ATRICON (the Association of Supreme Audit Institutions for both the Federal and State level) customized the International Organization of Supreme Audit Institutions (INTOSAI) "SAI-Performance Measurement Framework" (SAI-PMF) for the Brazilian context. Thirty-three TCEs used this customized SAI-PMF assessment (MMD-QATC) in 2015, 2017 and 2019. Strengthening and institutional capacity activities to support TCM-PE will be assessed throughout project implementation as part of the Project's technical assistance component. Private auditors will be used if the TCE-PE is not available to audit the Project.

## ANNEX 2: Climate Co-benefits Annex

The table below provides additional information on Project activities' IBRD financing and contributions to climate adaptation and mitigation.

| Project activities | IBRD financing (US$ million) | Contribution to climate adaptation | Contribution to climate mitigation |
|---|---|---|---|
| **1.1. Increase access to safely-managed RWS and improved on-site sanitation solutions with climate-resilient designs (IBRD: US$66.50)** | | | |
| Construction and rehabilitation of Rural Water Supply Systems | 46.88 | Water scarcity, drought and flood resilient design in areas prone to those risks | The new RWS systems would lead to substantial reduction in GHG emissions as the majority of beneficiaries would switch from water brought by trucks running on diesel oil to piped systems powered by renewable energy or the existing electricity grids which relies heavily on renewable energy. |
| Construction or rehabilitation of on-site Rural Sanitation | 19.62 | Flood resilient design in areas prone to flood. | Reduction in the use of energy generated by fossil fuels in rural areas through the financing of biodigesters/septic tanks. |
| **1.2. Improve climate-resilience of water sources (IBRD: US$0.8 million)** | | | |
| Arataca II system | 0.00 | | |
| Instrumentation and basic maintenance of dams | 0.80 | Improved dam safety could reduce flood risks due to dam failure in a context of increased peak flows due to climate change | |
| **1.3 Innovate with climate-resilient, safely-managed RWSS pilot solutions for universal access** | **0.97** | **Wastewater reuse would be one of the solutions to be piloted.** | |
| **2.1 Build the Borrower's capacity to reach universal RWSS access and sustainably managed RWS systems (IBRD: US$7.95 million)** | | | |
| 2.1.1. Establishment of 6 SISARs:<br>(i) business plans<br>(ii) training SISARs + communities<br>(ii) refurbishing and equipping office building | <br>0.82<br>1.00<br>3.43 | Training will include sessions to be better prepared in case of flood and/or drought | Refurbishment will include measures to increase building energy efficiency and use of renewable energy. |
| 2.1.2. State's RWSS information system | 0.50 | Includes information related to flood, drought and water scarcity risks faced by RWSS systems in the database | Includes information about community RWSS systems related to GHG emissions (specifying the types of energy and sanitation solutions used) |

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| 2.1.3. State climate resilient universal WSS strategy and regional climate resilient WSS plans | 2.00 | The strategy and plans will include policy measures, climate risks mapping and promote technologies to increase RWSS systems resilience to drought, flood and water scarcity risks | The strategy and plans will include policy measures and consider technological choices that promote energy efficiency, the use of renewable energy and sanitation solutions with low GHG emissions. |
| 2.1.4. SISARs performance M&E and technical assistance | 0.20 | | Dissemination of best practices for reducing GHG emissions through training of SISARs technicians. |
| **2.2. Strengthen the resilience of the Borrower's RWS systems' water sources under climate risks (IBRD: US$$7.80 million)** | | | |
| Construction/renovation/equipment of APAC's HQ and 2 regional offices | 3.82 | APAC' s management of drought, flood and increased water scarcity risks requires strong presence in the field to 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. | Energy efficient design for building construction and renovation and use of renewable energy. |
| Strengthening of hydromet monitoring | 0.84 | This will allow improving drought and flood forecasting and climate projections as well as a better monitoring of the water sources used for rural water to avoid over-use. | Better upstream management of water sources would allow a reduction of emissions as less water trucks would be needed during drought events |
| Development of hydrogeological studies of sedimentary aquifers | 0.86 | This will allow the identification of drought resilient sources for RWSS in the project area | Use of water sources close to communities, reducing the use of energy to transport water. |
| Public awareness campaign to increase water users' registration and water rights emission | 0.38 | This will increase resilience to increase water scarcity and droughts in the project area by allowing a better protection of formalized water rights in a context of increasing water scarcity and carrying a process of negotiated allocation in times of droughts | |
| State-wide drought preparedness plan | 0.34 | It will be an instrument for updating the methodologies and practices currently used by the State, defining the use of environmentally sustainable | |

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| | | technologies and tools, enabling water security in dry periods. | |
| Feasibility studies for urban riverfront park to improve riverfront public access and recreational use as well as improve river and banks ecological state | 0.35 | | |
| Hydraulic infrastructure and sanitation planning platform | 1.2 | GIS database with all State hydraulic operational and non - operational hydraulic infrastructure and their characteristics; communities water supply and sanitation access gaps; allowing superposition with drought and flood risk maps; water source maps etc. to improve climate-resilient hydraulic infrastructure investment planning and programming. | |
| **3. Support Project Management (IBRD: US$5.98 million)** | | | |

## ANNEX 3: Gender Aspects

1. Gender gaps in Brazil remain significant, with women often responsible for non-remunerated household and care-taking tasks, and more frequently employed in part-time jobs than men. This leads to significant gaps in earnings from jobs, with the gender gap in average earnings reaching 23 percent. According to data from the World Bank gender portal, women in Brazil spend 2.3 times as much time on unpaid domestic and care work than men, with women spending 11.6 percent of their day and men spending 5.1 percent of their day on unpaid work[70]. The labor force participation rate among females is 53.6 percent, while among males is 73.3 percent for 2022.[71]

2. These gaps are even more pronounced in rural areas, particularly in families without access to water supply. In 2021, 84 percent of Brazilians had access to adequate water supply, with the Northeast region lagging behind with 75 percent access to water and 30 percent to sanitation. Rural areas home to 30 million people nationwide are also lagging behind with 76 percent access to water and 40 percent to sanitation (as opposed to 94 percent and 75 percent, respectively, in urban areas).[72]

3. Inequalities in the accessibility, availability, and quality of drinking water services, sanitation, and hygiene services (WASH) impact women and men in different ways. Inadequate service levels disproportionately affect women and girls who remain primarily responsible for domestic chores in many parts of the world. Women and girls are more likely to be responsible for ensuring the household has sufficient water for drinking, cooking, cleaning, and caring for children, older people, and those with disabilities. This limits their time to engage in educational, income-earning, and community activities. Domestic work is an important part of the unpaid and unrecognized work carried out by women. Thus, the gap in domestic work time between men and women is even more exacerbated in rural areas, especially when it includes the time spent collecting water outside the home.

4. The most recent national data (IBGE 2022) indicate that Pernambuco has the third-highest working hours in Brazil consumed in carrying out domestic work and/or caring for people. In the state, women dedicate an average of 24 hours a week to domestic work and/or caring for people, while men spend an average of 12.7 hours. Black women spend even more hours per week than white women.[73] This data incorporates urban and rural areas but does not include additional time for collecting water outside the home. It is estimated that in communities where there is a need to collect water, women and girls have an additional burden of at least 4 hours per week (30 minutes or more per day) dedicated especially to collecting water.

5. When there is no need to collect water over long distances, many rural communities in the Northeast and Pernambuco have access to water from the community cistern, or from deep wells or cisterns and other rainwater harvesting reservoirs. Nevertheless, these water resources tend to become scarce therefore not all families have access to reservoirs to store rainwater. Furthermore, not all families have the same level of access to water sources relying on water trucks services by transporting water from the public sources to homes and charge a relatively high price for the service. Even in situations where it is not necessary to collect water outside the home, the irregularity and quality of the water accessed further burden women's daily workload, especially by causing illnesses and accumulation of domestic work

[70] https://genderdata.worldbank.org/countries/brazil.
[71] BRK Ambiental, O Saneamento e a Vida da Mulher Brasileira. Available at *http://www.tratabrasil.org.br/images/estudos/itb/pesquisa-mulher/relatorio.pdf*.
[72] Trata Brazil. SNIS 2021. Principais estatísticas. https://tratabrasil.org.br/principais-estatisticas/.
[73] https://biblioteca.ibge.gov.br/index.php/biblioteca-catalogo?view=detalhes&id=2102020.

since they are primary caregivers to family members affected by waterborne diseases and other illnesses such as COVID-19.

6. Lack of WASH facilities in or in proximity to homes exposes women to preventable diseases as well as related risks of gender-based violence (GBV) while walking long distances to secure water or using remote and unsafe sanitation facilities. Female-headed households face barriers in accessing WASH because of their limited financial capital to invest in household WASH facilities and/or to pay for connection for WASH services. The lack of home bathrooms and WASH services is still a reality in Pernambuco, so the Project envisages the implementation of bathrooms with adequate sanitary solutions, and treatment.

7. Moreover, women and girls are often affected more adversely than men and boys by the lack of WASH facilities in schools, health centers, and other communal or public spaces. For example, the lack of separate and safe public toilets with amenities for menstrual hygiene, coupled with limited access to menstrual hygiene products and stigma surrounding menstruation, has significant effects on women's and girls' school attendance, work, and health outcomes. According to data from the 2021 School Census, at least 269 (7 percent) rural schools in Pernambuco presented no access to sources of water supply, 1537 (36 percent) did not have access to potable water, 1,242 (29 percent) did not have toilets, and 3,663 (85 percent) did not have accessible toilets for people with disabilities.[74]

8. Furthermore, women often have less access to WASH services employment opportunity at the community level (for example, sanitation, pipe repair, metering, and so on). Women have extensive knowledge and experience in managing water resources both inside and outside the household. However, their decision-making power on the utilization and management of resources is often limited by traditional values and customs. This lack of participation by women in deciding on the locations and types of water facilities leads to missed opportunities to sustainably provide safe drinking water. By involving both men and women in water supply activities, these activities can be made more sustainable and effective. Furthermore, women's voices in communities are strengthened through participation in water resources management.

9. 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. Currently, in the recently created SISARs, the participation of women in management is around 30 percent in the leadership of community associations and around 25 percent in system operation and maintenance activities, such as pump caretakers. The proposed Project will promote the participation of women in management, decisions on the implementation of works, and operation of the system. Therefore, women's groups will be a priority for training at a community level, as well as young people, and in job vacancies created by the Project, especially during the construction and maintenance periods.

10. In summary, the main gaps identified in the Project area are:

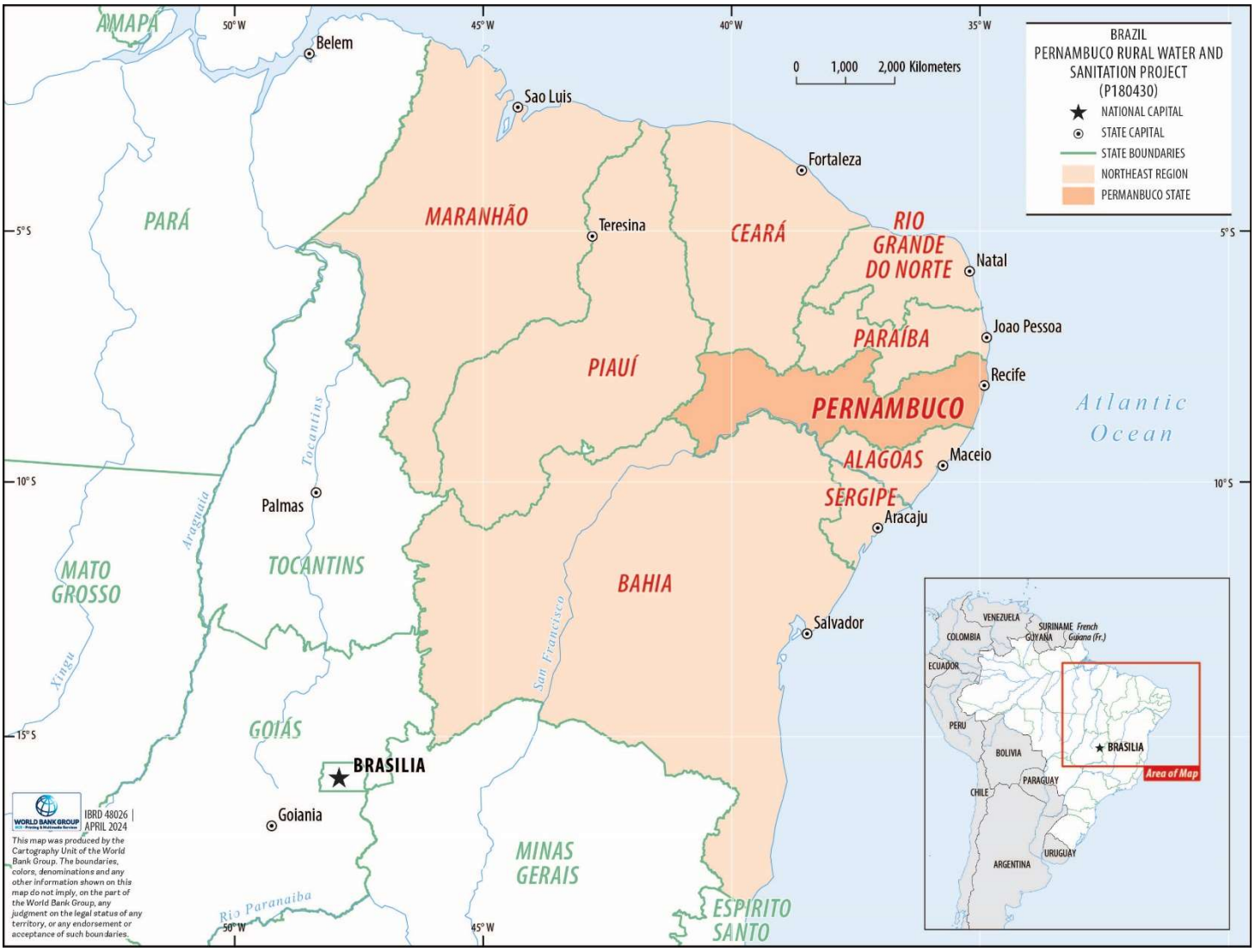
| Gender Gap | Project Gender Actions | Gender Indicators |
|---|---|---|
| Inadequate WASH disproportionately affects women's and girls' time<br>Brazil: women spend 2.3 times as much time on unpaid domestic and care work than men. | • Investments in the construction/ upgrading of WASH facilities at household level<br>• Invest to improve water quality O&M service provision<br>• Establish awareness-raising/ behavior change programs to | • Decrease in number of hours spent by women on caregiving tasks per day/week - 10 percent reduction |

[74] https://www.gov.br/inep/pt-br/acesso-a-informacao/dados-abertos/microdados/censo-escolar.

| | | |
|---|---|---|
| *Baseline of communities benefiting from the project will be confirmed in the first year of Project implementation* | promote WSS connections and/or payment of tariffs to avoid WSS disconnection (led by women/women's groups)<br>• Create awareness on the burden associated with water collection, water purification, caregiving because of diseases caused by poor WASH, and maintenance of sanitation facilities as well as promoting shared responsibility for those household tasks<br>• Establish awareness-raising/ behavior change programs to promote water conservation/sustainable water use (led by women/women's groups)<br>• Raise awareness of the safe use of water and the health risks associated with contaminated water<br>• Engage women as community health and hygiene educators (for example, in promoting handwashing, sanitation, menstrual hygiene management) | |
| Lack of WASH facilities at household level exposes females to higher risk of GBV while walking long distances to secure water and/or using remote and unsafe sanitation facilities.<br><br>*Baseline of communities benefiting from the project will be confirmed in the first year of implementation* | • Invest in the construction of WASH facilities in/in proximity to homes<br>• Involve women in decision-making on location/design of WASH facilities | • Increase in WASH facilities constructed in/in proximity at household level |
| Public, school, and health care sanitation facilities are not always equipped for Menstrual Health and Hygiene (MHH), thereby constraining women's and girls' participation in public spaces (for example, in educational institutions/health centers) | • Provide public sanitation facilities that fulfill basic MHH requirements (for schools that have this demand identified in the communities served)<br>• Provide training for management, staff, teachers, and students on effective use and maintenance of | |

| | | |
|---|---|---|
| *Baseline of communities benefiting from the project will be confirmed in the first year of implementation* | WASH facilities that fulfill basic MHH requirements<br>• Raise awareness or create educational programs on MHH for communities served | |
| Women often have less access than men to community-level WASH services–related employment opportunities | • Support engagement of women/ women's groups in water management, O&M of public water facilities,<br>• Support creation of paid employment opportunities for women in the construction of WASH infrastructure<br>• Provision of targeted WSS skills training for women | • Share of WASH jobs created by the project occupied by women (30 percent of total) |

## ANNEX 4: Maps


BRAZIL
PERNAMBUCO RURAL WATER AND SANITATION PROJECT (P180430)
NATIONAL CAPITAL
STATE CAPITAL
STATE BOUNDARIES
NORTHEAST REGION
PERMANBUCO STATE
0 1,000 2,000 Kilometers
AMAPA
PARÁ
MARANHÃO
PIAUÍ
CEARÁ
RIO GRANDE DO NORTE
PARAÍBA
PERNAMBUCO
ALAGOAS
SERGIPE
BAHIA
TOCANTINS
MATO GROSSO
GOIÁS
MINAS GERAIS
ESPIRITO SANTO
Belem
Sao Luis
Fortaleza
Teresina
Natal
Joao Pessoa
Recife
Maceio
Aracaju
Salvador
Palmas
BRASILIA
Goiania
Atlantic Ocean
Tocantins
Araguaia
Xingu
San Francisco
Rio Paranaiba
50° W
45° W
40° W
35° W
5° S
10° S
15° S
IBRD 48026 | APRIL 2024
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VENEZUELA
COLOMBIA
SURINAME
GUYANA
French Guiana (Fr.)
ECUADOR
PERU
BOLIVIA
PARAGUAY
CHILE
URUGUAY
ARGENTINA
Area of Map