Project Information Document (PID)

Appraisal Stage | Date Prepared/Updated: 21-Oct-2022 | Report No: PIDA33119

BASIC INFORMATION

A. Basic Project Data

Country	Project ID	Project Name	Parent Project ID (if any)
Brazil	P176982	Brazil: Espirito Santo Water Security Management Project	
Region	**Estimated Appraisal Date**	**Estimated Board Date**	**Practice Area (Lead)**
LATIN AMERICA AND CARIBBEAN	24-Oct-2022	19-Dec-2022	Water
Financing Instrument	**Borrower(s)**	**Implementing Agency**	
Investment Project Financing	State of Espirito Santo	AGERH - State Water Resources Agency, CEPDEC - State Coordination for Protection and Civil Defense, DER-ES - Buildings and Roads Department of Espírito Santo, SEAMA - State Secretariat for the Environment and Water Resources	

Proposed Development Objective(s)

(i) to strengthen the Borrower's capacity to manage water security risks in a changing climate and (ii) to reduce those risks in selected areas of the Borrower's territory, and (iii) in case of an Eligible Crisis or Emergency, respond promptly and effectively to it.

Components

1) Building state capacity for water security in a changing climate
2) Demonstrating climate-smart integrated water security risk reduction approaches in selected basins
3) Flood risks reduction in targeted municipalities
4) Project Management
5) Contingent Emergency Response Component (CERC)

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	114.14
Total Financing	114.14
of which IBRD/IDA	86.10
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	86.10

Non-World Bank Group Financing

Counterpart Funding	28.04
Borrower/Recipient	28.04

Environmental and Social Risk Classification

Substantial

Decision

The review did authorize the team to appraise and negotiate

Other Decision (as needed)

B. Introduction and Context

Country Context

Brazil Context

1. **The COVID-19 pandemic had a profound impact on the Brazilian economy, jeopardizing the significant progress in poverty reduction achieved between 2000 and 2010.** More than 34 million COVID-19 cases (16 percent of the population) and 686,000 deaths (0.3 percent of the population) were reported by September 2022,[1,2] rendering Brazil one of the countries most severely impacted.[3] The pandemic led to an economic recession with a gross domestic product (GDP) decline of 3.9 percent in 2020. Early signs of economic recovery for 2021 were confirmed with a GDP growth of 4.6 percent,[4] however two-digit

[1] Ministério da Saúde, n.d. Painel Coronavírus. https://covid.saude.gov.br/.
[2] Data on daily confirmed new cases (7-day moving average), dated September 2022, shows that Brazil ranks amongst the 10 most affected countries. *https://coronavirus.jhu.edu/data/new-cases.*
[3] Although Brazil comprises 2.7 percent of the global population, as of September 2022 it accounted for 10.5 percent of all recorded COVID-19 related deaths worldwide.
[4] World Bank Group Global Economic Prospects, June 2022.

inflation (10.07 percent for the 12 months ending in July 2022),[5] increases in unemployment, high interest rates, and uncertainty about the country's fiscal policy indicate that macroeconomic instability is likely to remain.

2. **Water has both supported key drivers of economic growth and been pivotal to reducing poverty and promoting shared prosperity in Brazil; however, increasing water stress poses significant challenges to sustainable growth going forward**. Many important economic sectors in Brazil are highly dependent on water: 50 percent of withdrawals are for irrigated agriculture, 25 percent for human consumption, 9 percent for industry and 8 percent for livestock.[6] Furthermore, roughly 65 percent of Brazil's electricity is generated from hydropower.[7] Future demand for irrigated agriculture and hydroelectricity is likely to result in increasingly competing demands for water considering the climate-driven projected reduction in precipitation, prolonged dry periods, and increasing water evaporation rates.[8]

3. **Brazil has made progress in water resource management (WRM) since the adoption of the National Water Law in 1997 and the creation of the National Water and Sanitation Agency (*Agência Nacional de Águas e Saneamento* - ANA) in 2000.** The regulatory agency sets the foundations for multiple use, decentralized and participatory water governance in the country. However, adoption of a more integrated approach to WRM will be crucial for Brazil to meet its sustainable development goals and ensure the information on expected impacts of climate change are adequately captured. Bolstering water security will remain a top priority, including regulations to establish clear water rights and updated methodologies to ensure adequate water uses across all sectors.[9]

4. **Intensifying climate change impacts expose Brazil's vulnerability and threaten its economic recovery and social development.** With climate change, the water cycle is expected to undergo significant change, which has implications for water security and food production, whereas extreme hydrological events – floods, droughts and landslides – are projected to worsen in frequency and intensity, with disproportionate impacts on the poor and most vulnerable, in particular women.[10] The country's high susceptibility to climate hazards translates into significant economic impacts, with annual losses from natural disasters estimated at US$3.9 billion.[11] Addressing the challenges imposed by this context requires resilience from the water sector, as well as investments in better planning and institutional strengthening, increased water storage capacity, improved water reuse systems, and flood and drought infrastructure, including climate-resilient green infrastructure and hybrid green-gray solutions.[12]

State of Espírito Santo Context

[5] Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística*), *https://www.ibge.gov.br/explica/inflacao.php.*
[6] National Water and Sanitation Agency (ANA): Water Resources Situation in Brazil, 2021 (*Conjuntura dos Recursos Hídricos no Brasil 2021).*
[7] Empresa de Pesquisa Energética. *https://www.epe.gov.br/pt/abcdenergia/matriz-energetica-e-eletrica*
[8] World Bank Country Climate and Development Report for Brazil (forthcoming).
[9] Ibid
[10] The international literature shows that, during droughts, women and girls eat less, pay more for water, and spend more time to collect water. During floods, women have less access to emergency shelters than men; enjoy less mobility as they often tend to children and the elderly when disaster hits. Women are also more vulnerable to gender-based violence which often increases in disaster situations. Ordinarily, women are also underrepresented in disaster risk management (DRM) institutions and professions, and DRM policies and programs rarely consider women's and men's different concerns and needs.
[11] World Bank, 2021, Brazil: Climate Risk Country Profile
[12] World Bank, 2021, World Bank Group Climate Change Action Plan 2021-2025: Supporting Green, Resilient, and Inclusive Development.

5. **The State of Espírito Santo (SES) outpaces Brazil's performance in most socio-economic indicators**. SES spans 0.5 percent of Brazil's territory and is home to 2 percent of its population (4.1 million people in 2021, across 78 municipalities). Most of its population is urban (83 percent) and largely concentrated in the Metropolitan area of the capital Vitória (49 percent in 2021). Despite its small size, SES contributed 1.9 percent of national GDP in 2019 and 3.5 percent of national exports in 2021. Its GDP ranked 14th highest among Brazil's 27 states, while its GDP per capita (US$ 6,898) ranked 9th in 2019. Contributions to GDP are drawn mainly from services (70 percent), followed by industry (26 percent – more than 45 percent from oil and gas, and to a lesser extent, mining, steel and cellulose industries) and agriculture (4 percent). The extractives segment (oil and gas) has grown more than 200 percent in real terms since 2002, generating a massive increase in state revenues. SES' Human Development Index (HDI) of 0.772 was ranked 8th among Brazilian states.[13]

6. **Espírito Santo's poverty and inequality levels are high, albeit lower than the national average.** Per 2021 figures, roughly 26.3 percent of SES' population lives in poverty (*c.f.* 29.4 percent nationally) and 6.7 percent lives in extreme poverty (*c.f.* an 8.4 percent national average), while the Gini index was estimated at 0.52, slightly better than the country's 0.54 average, yet higher than most LAC countries. At the end of 2021, 1,219,569 state residents (roughly 30 percent of the state's population) were registered in Brazil's *Cadastro Único* social registry,[14] rendering them eligible to receive government assistance.

7. **Raising and sustaining real GDP growth and reducing poverty and inequality levels are overarching State development goals.** Throughout the past decade, both Brazil and SES have posted sluggish economic growth as well as increases in poverty and income inequality rates. Since 2012 the state's average annual real GDP growth rate has been slightly negative. Poverty has increased by 4.9 percentage points and extreme poverty by 5.1 points over the same period. This is in sharp contrast to the 2000-2010 period, when SES's economic growth, poverty levels and income inequalities had improved considerably, outpacing gains made by Brazil as a whole. The State 2030 Strategic Development Plan[15] lays out a comprehensive agenda to boost economic growth and reduce poverty and inequalities setting ambitious governance and socio-economic development targets. These would be achieved through a combination of public sector reforms, job creation programs and increased investment in many areas, including climate adaptation through increased water security, which the proposed Project will support. In December 2020, the state government launched an economic recovery plan (*Plano Espírito Santo – Convivência Consciente)* to mitigate the effects from the COVID-19 pandemic, focused on boosting public and private investments, promoting productive inclusion, and creating jobs. Achieving these goals will require particular attention to gender disparities: even before the pandemic, women's participation in the labor market in SES was significantly lower than men's (57.3 percent compared to 77.1 percent).[16]

Sectoral and Institutional Context

Sectoral Context

[13] According to UNDP's Human Development Atlas of 2017: http://www.atlasbrasil.org.br/ranking.
[14] The *Cadastro Único (CadUnico)* is the country's social registry used to identify individuals and households that are eligible to receive government support. The half a minimum wage per capita income threshold (R$550 monthly) used by the CadUnico has been found to be a close representation of the costs of basic needs in Brazil (Lara Ibarra et al. 2021) and helps thus accounting for a broader group of low income-households.
[15] The document was published in 2013. Access: https://planejamento.es.gov.br/Media/sep/Plano%20ES%202030/ES2030.pdf
[16] According to 2019 data from the Instituto Jones dos Santos Neves. Access: http://www.ijsn.es.gov.br/component/attachments/download/7507

8. **Espírito Santo's abundant water resources mask significant temporal and geographic disparities.** Located under the highly degraded Atlantic Forest biome of Brazil's Southeast Region, the state's territory is divided into eight hydrographic units which correspond to 14 River Basin Committees (RBCs). Precipitation levels range from 900 mm to 1,700 mm, with the lowest incidence in the northern portion of the state and the highest in the southeast, with significant seasonal variability. As a result, the state faces chronic water deficits during the dry season in 3 of the 8 hydrographic units (or the northern half of its territory) and competing demands for water allocation. Approximately 78 percent of withdrawals in SES are for irrigated agriculture, 14 percent for human consumption, 5 percent for industry and 1 percent for livestock. Information on groundwater is uneven and limited by insufficient hydrogeological data on the existing aquifers.

9. **In Espírito Santo, climate change impacts the well-being of its population, economy and environment principally through increased water security risks.** In SES, water security risks relate to water deficits as well as extreme events such as floods, droughts and landslides. Historical records and available climate projections for the state reveal that climate change is playing a pivotal role in the increased frequency and intensity of water-related disasters (floods, landslides and droughts), as well as in the intensity and geographic spread of water deficits. Projections from the climate change institute of the Federal University of Espírito Santo show that extreme water events are expected to increase further throughout SES. Moreover, average temperatures will continue to rise, while average precipitation is expected to decline.[17] The combination of higher temperatures and lower precipitation is expected to progressively increase the number of hydrographic units with water deficits towards the south of the State, as well as the intensity of water deficits in the north. The increases in extreme events and water deficits are expected to further adversely affect the state's overall economy, environment, and the well-being of its population.

10. **Water security risks are exerting a heavy and increasing toll in the State of Espírito Santo**. SES is prone to frequent and extreme hydrological events: floods and attendant landslides across the state, but mostly in the south and coastal areas, and droughts mostly in the north. Between 2013 and 2020, 794 disasters were registered throughout SES, more than double the previous decade, of which 27 percent were related to floods, 21 percent to droughts and 7 percent to landslides, leading to an estimated 120 deaths and the displacement of roughly 230,000 people. In 2020 alone, extreme rainfall led to severe flooding that impacted 39 municipalities, resulting in 10 fatalities, the displacement of 14,230 people, leaving another 2,340 homeless, with economic losses estimated at US$44 million. Floods and landslides have destroyed housing and infrastructure in densely populated areas, often leading to human casualties, while droughts have led to substantial reductions in river flows, conflicts between water users, and reduced agricultural production in rural areas. Floods and droughts have also adversely affected the provision of essential services, including electricity and water supply (with severe rationing in 2014).

11. **In addition to climate change, unregulated human activity continues to undermine water security**. The impacts of floods, landslides, water deficits, and droughts throughout the state are exacerbated by anthropogenic factors such as unplanned and unregulated urban spread into flood plains and along steep hillside slopes, with often inadequate or poorly maintained urban drainage systems and illegal dumping into drains. Another factor that has contributed to increased water-related risks is the degradation of watersheds resulting from the conversion of the native Atlantic Forest biome – that originally covered the entire State – to pasture and cropland, which now cover approximately 55 percent

[17] Projections of climate change for Espírito Santo using high-resolution regional modeling. Universidade Federal do Espírito Santo, 2019.

of SES' territory (compared to 22 percent remaining native forest coverage). This change in land use tends to increase the intensity of runoff, exacerbating floods, while reducing soil water retention and deep percolation to aquifers, thereby increasing water deficits in the dry season and vulnerability to dry spells and droughts. The change in land use also promotes erosion and sedimentation of riverbeds and reservoirs, further increasing the area's vulnerability to flooding, droughts and dry spells. It bears highlighting that the Atlantic Forest biome's exceptional biodiversity and vulnerability to continuous threats ranks it among the world's highest priority areas for conservation.

12. **To foster climate adaptation by addressing these water security risks, SES has implemented both green and gray infrastructure:**[18]

(a) **As regards *green (or nature-based)* interventions, Espírito Santo was among the first states to pioneer payments for environmental services (PES)**[19] as a means of restoring degraded watersheds and the hydrological services they provide. However, more remains to be done. Brazil's largest state-level restoration program – the Reflorestar Program – was launched in 2011 to promote the restoration of the hydrological cycle and reduce erosion, initially focusing on the river basins that supply water to the Great Vitoria Metropolitan Region. The program protects downstream water uses by offering upstream landholders payments for reforesting and adopting sustainable land use practices in watersheds that could generate substantial environment services. Since 2011, sustainable land use practices have been adopted throughout 9,000ha under Reflorestar (5,400ha reforested and 3,700ha under productive sustainable uses) and over 10,000ha of standing forest have been conserved. The implementation of such interventions together with the establishment of protected areas, and control of illegal logging has allowed SES to stabilize its forested area over the past 20 years, in stark contrast to Brazil as a whole. In addition to the PES, the state finances complementary structures for soil and water conservation, such as water infiltration ponds, contour ditches and terraces. These practices and structures improve soil retention and water infiltration, thus helping to: (i) reduce water treatment costs; (ii) reduce maintenance costs and increase the life of reservoirs and other water infrastructure by decreasing sediment flows; and (iii) reduce flood risks during the wet season and decrease vulnerability to dry spells and droughts by increasing water availability during the dry season by slowing runoff. In addition to these adaptation benefits, they enhance carbon sequestration in soils and aboveground biomass, generating climate mitigation co-benefits. Moreover, most of these land use practices and structures increase participating landholder incomes, rendering them "no regret" options.

(b) **Traditional *gray* infrastructure applied to WRM has gained more traction recently.** The SES still has a relatively small stock of gray infrastructure. The few existing water storage structures were constructed over the past 20 years for power generation. It was not until the 2014 drought that the need to build reservoirs to store water and regulate river flows or use hydroelectric reservoirs for emergency water supply was first raised. Recognizing the devastating impacts of drought on agriculture and animal husbandry, in 2017 the State Secretary for Agriculture, Livestock and Fisheries launched a State Dams Construction Program with the aim of building 60 reservoirs and refurbishing

[18] "Gray" infrastructure generally refers to conventional human-built structures (e.g., storm drains, pumps, dams, levees, reservoirs, treatment plants, pipes, etc.) while "green" interventions refer to solutions that harness natural systems (e.g., forests, wetlands, soil or mangroves) to provide water resources management options. Evidence suggests that integrating green and gray infrastructure provide lower-cost and more resilient services, helping fill the need for climate-resilient solutions.
[19] Espírito Santo has received continued World Bank support throughout this process, first under the *Espírito Santo Biodiversity and Watershed Conservation and Restoration Project* (P094233) and subsequently, under the *Espírito Santo Integrated Sustainable Water Management Project* (P130682).

large dams to mitigate the impacts of drought on the sector. The 22 small reservoirs that have been built to date under the program have improved both the reliability and availability of water to rural populations. Additional gray investments, in combination with green infrastructure, will likewise be needed to control or mitigate flooding (i.e. storage, dykes, river channeling, etc.), in line with the state's plans to continue investing in more integrated green-gray solutions to address water security risks and adapt to climate change.

13. **The State has identified priority river basins and municipalities requiring urgent interventions to increase climate adaptation through increased water security, by reducing hydrological risks and managing water deficits.** The priority *flood* risk areas encompass the Itapemirim basin, as well as the municipalities of Águia Branca, João Neiva, Ibiraçu, Iconha and Alfredo Chaves, which are mostly located in the southern half of the state. The priority *drought*-prone risk areas are the four river basins located in the State's Center-North region: Santa Maria do Rio Doce, Santa Joana, Pontões e Lagoas do Rio Doce, and Barra Seca e Foz do Rio Doce.

Institutional Context

14. **Although Espírito Santo boasts solid institutional and policy frameworks for Water Resources and Disaster Risk Management, their implementation needs strengthening to address water security risks and increase climate adaptation.**

(a) **Water Resources Management (WRM).** The 2014 State Water Law[20] establishes the State Water Resources Policy with the objective to ensure that water resources are managed in an integrated and sustainable manner to guarantee water security of adequate quantity and quality for current and future generations, as well as the prevention of adverse hydrological events. The Policy defines the seven instruments to achieve these objectives and establishes the State's Integrated Water Resources Management System (*Sistema Integrado de Gerenciamento de Recursos Hídricos do Estado do Espírito Santo* - SIGERH-ES*)* which serves as the organizational framework governing WRM in Espírito Santo and comprises five entities with key WRM roles. The implementation/modernization of the *seven instruments* and the strengthening of the key *entities* is considered pivotal to bolster SIGERH-ES' effectiveness in improving water security and implementing the Water Resources Policy.

(b) **Disaster Risk Management (DRM).** The Federal and State Civil Defense Laws[21] establish the State Civil Defense System (*Sistema Estadual de Proteção e Defesa Civil* - SIEPDEC-ES) which plays a critical role in managing hydrological risks since it is responsible for coordinating disaster prevention, mitigation, preparedness, response, and reconstruction. It is also responsible for carrying out state-level functions and instruments defined in the National Policy for Civil Protection and Defense (*Política Nacional de Proteção e Defesa Civil* - PNPDEC). The SIEPDEC-ES's leading organization is the State Civil Protection and Defense Coordination Office (*Coordenadoria Estadual de Proteção e Defesa Civil* - CEPDEC), housed within the Military Fire Brigade of Espírito Santo (*Corpo de Bombeiros Militar do Espírito Santo* – CBMES). Women account for only 1.9 percent of the CBMES contingent and they are a minority of the audience of the training courses annually offered by CEPEDC to municipal committees of civil defense and protection.

(c) In addition to the member entities of the WRM and DRM governance frameworks, the Department of Buildings and Roads of Espírito Santo (*Departamento de Edificações e de Rodovias do*

[20] Law No. 10,179/2014, of March 18, 2014.
[21] State Law No.694/2013, amended by the State Law No. 767/2014 and Federal Law No. 12,608 of April 10, 2012.

Espírito Santo – DER-ES) has recently taken a more central role in executing civil works and recovering infrastructure related to hydrological disasters.

15. **The state has a history of partnering with the World Bank on sustainable development initiatives dating back to the 1990s**, with operations on water supply and sanitation (WSS) efficiency and increased coverage, coastal pollution management, biodiversity and watershed conservation and restoration. More recently, the scope of operations has evolved to support a more integrated approach to address complex and multi-sector challenges. The ongoing Bank-financed *Espírito Santo Integrated Sustainable Water Management Project*[22] has maintained investments in sanitation[23] but also advanced technical assistance on water resources planning, improvement of water quality and watershed management, as well as in strengthening the capacity of the civil defense system to manage disaster risk and response.

16. **Building on the long-term engagement between the State of Espírito Santo and the World Bank (WB), the Government of Espírito Santo (GoES) has requested the WB's assistance** to respond to and address the above challenges, encompassing climate adaptation through water security in priority areas by financing drought and flood management plans, implementing a combination of green and gray infrastructure (notably expanding the Reflorestar program), as well as improving State-level WRM and DRM governance and management instruments. This broader initiative seeks to expand and consolidate prior results achieved in these areas and move the needle on reducing the state's water security risks and prepare and respond to extreme hydrological events.

C. Proposed Development Objective(s)

Development Objective(s) (From PAD)

(i) To strengthen the Borrower's capacity to manage water security risks[24] in a changing climate and (ii) to reduce those risks in selected areas of the Borrower's territory, and (iii) in case of an Eligible Crisis or Emergency, respond promptly and effectively to it.

Key Results

- Improved implementation of water resources management instruments[25];
- Command and control emergency response tool operational;
- Land area under restoration and/or sustainable landscape management practices;
- Itapemirim river basin forecast and early warning system operational and issuing bulletins; and
- Number of people benefitting from reduced water security risks, disaggregated by gender.

D. Project Description

17. **The proposed Project is a US$114.14 million Investment Project Financing (IPF) operation,**

[22] Espírito Santo Integrated Sustainable Water Management Project (P130682) approved in 2014.
[23] Bank operations have contributed to improved sewerage treatment and collection indicators in Espírito Santo. Between 2010 and 2019, access increased from 39.9 percent to 55.9 percent, with the highest improvement among the urban population, whose access rose from 46.7 percent to 62.8 percent.
[24] Water security risks refer to the probability of damages on people and assets from water deficits (when water demand exceeds availability) or from hydrological extreme events, namely floods, landslides or droughts.
[25] Special focus on the update of the State Water Resources Plan, the water rights including decision support system, and the State water resources information system.

financed by a US$86.1 million IBRD loan and US$28.04 million in state counterpart funds. The Project will be implemented over a six-year period. Proposed interventions are grouped around three components focused on the following geographic scales: *statewide* (Component 1), *river basin* (Component 2) and *municipal* (Component 3) levels as well as support to Project management (Component 4) and a zero-fund Contingent Emergency Response (Component 5 – CERC).

18. **Component 1 – Building state capacity for water security in a changing climate (US$15.52 million of which US$11.99 million IBRD).** This component will strengthen the state's capacity to manage water security risks by strengthening both SIGERH-ES and CEPDEC-ES water resources and disaster management capacities respectively, and fostering their better integration. This will contribute to climate adaptation in two ways: firstly, by improving the capacity to manage water security risks, as most climate change impacts people, the economy and the environment, through increases in those risks and, secondly, by designing and implementing policy instruments taking into account climate change uncertainty, improving climate change related information for decision making and providing specialized staff training on this topic. This will be done through two subcomponents:

(a) ***Subcomponent 1.1. Strengthening SIGERH-ES's water resources management capacity*** *(US$7.43 million of which US$5.94 million IBRD).* This subcomponent aims to strengthen SIGERH/ES' institutional capacity to manage water resources within the context ever increasing vulnerability to climate change. Activities under this subcomponent will be designed to specifically take into consideration climate change. Financed activities include, *inter alia*: (i) the completion of AGERH's institutional assessment, the preparation of a state water resources management financial sustainability assessment, and the implementation of their key recommendations; (ii) capacity building activities targeted to SIGERH/ES' institutions, including hydrological disasters and climate change training; (iii) the development, improvements to, and/or implementation of key WRM tools including: (a) *water rights* (by strengthening the criteria taking into consideration water related risks, processes, and decision-making system underlying the issuance of water rights; supporting water users to effectively prepare their water rights requests; and upgrading/updating user and water rights digital registries); (b) *financing instruments* (including the definition and submission for approval of water use charges at the river basin committees level); (c) the upgrade and implementation of the state's *water information system* (SEIRH/ES) and related hydrological and hydrogeological monitoring networks; and (d) updating of the *State Water Resources Plan* (PERH) consolidating with other sectoral planning and strengthen hydrological extreme events related aspects; (iv) the development of hydrogeological and hydrological studies of selected aquifers and river basins; and (v) strengthening of a State Water Quality Laboratory, including laboratory and IT equipment, licenses and software necessary for ongoing water quality monitoring and testing.

(b) ***Subcomponent 1.2. Strengthening CEPDEC-ES' disaster risk management capacity*** *(US$8.09* million *of which US$6.05 million IBRD).* This subcomponent seeks to strengthen the State Protection and Civil Defense Coordination Office's (CEPDEC) capacity to manage water security risks and respond to disasters by supporting, *inter alia*: (i) the construction of a building to house a specialized disaster response center (CERD); (ii) the provision of specialized equipment, notably fire trucks and emergency kits; (iii) staff training, with a particular focus on including gender aspects in DRM; and (iv) implementation of an electronic emergency command, control and coordination response system (Incident Command System software).

19. **Component 2 – Demonstrating climate-smart integrated water security risk reduction approaches**

in selected basins (US$30.86 million of which US$23.92 million IBRD). This component will contribute to reduce water security risks by reducing water contamination and sediment loads as well as flood and dry season water deficits, while promoting biodiversity conservation and enhancing existing carbon sinks in soil and aboveground biomass,[26] leading to significant climate adaptation and mitigation benefits**.** Activities are divided into two sub-components.

(a) ***Subcomponent 2.1. PES to increase forest cover and other climate smart nature-based solutions to reduce water security risks*** *(US$16.74 million of which US$13.57 million IBRD).* This sub-component aims to expand the support to the Reflorestar PES program in selected river basin's priority areas, including Itapemirim, Itabapoana and Benevente, in the South, and Pontões e Lagoas do Rio Doce and Santa Maria do Doce, in the Center-North. It will finance, *inter alia*: (i) payment to land owners via a PES approach to reduce water security risks through reforestation, improved land use and agricultural practices and implementation of physical water and soil conservation structures (i.e. small/mini water detention ponds or soil built dry boxes) and (ii) technical assistance to SEAMA aimed at improving Reflorestar Program's efficiency and effectiveness, including by (a) strengthening Program targeting; (b) developing additional financing sources, such as from the private sector; (c) strengthening its institutional capacity; (d) improving its communication strategy; (e) assessing its effectiveness (in *inter alia*, attracting participants - including vulnerable and marginalized groups, with a specific target to reach 10 percent of women among new Reflorestar participants; targeting payments to priority areas; providing the desired environmental services; and keeping administrative costs low); and using the lessons to improve it; and (f) improving the *Portal Reflorestar*, which participants use to enroll in the Reflorestar PES Program and SEAMA uses to administer it.

(b) ***Subcomponent 2.2. Flood and drought management in priority river basins*** *(US$14.12 million of which US$10.35 million IBRD).* This subcomponent aims to apply an integrated flood risk management approach, with an emphasis on nature-based solutions, to reduce flood risks in the Itapemirim basin; and to increase capacity to respond to drought in priority basins located in the State's Center-North region (tentatively the following four river basins: Santa Maria do Rio Doce, Santa Joana, Pontões e Lagoas do Rio Doce, Barra Seca e Foz do Rio Doce[27]), through, *inter alia*: (i) in the Itapemirim basin: the development of an integrated flood risk management plan; and the implementation of nature based solutions identified in the plan that would complement Reflorestar activities financed under Subcomponent 2.1; the strengthening of the flood monitoring, forecasting and alert system; and the implementation of flood risk preparedness communications campaigns for at-risk populations, with a focus on women through targeted awareness raising campaigns; and (ii) in the Center-North region: the development of drought preparedness plans; the preparation and implementation of rational water use plans; and the piloting of collective water rights grants in family farmed micro-basins to facilitate participatory reallocation of water in times of drought.[28]

20. **Component 3 – Flood risks reduction in targeted municipalities (US$60.91 million of which**

[26] By promoting conservation of forest cover, restoration of degraded ecosystems and adoption of sustainable land management in upstream watershed areas, Component 2 interventions seek to increase infiltration, reduce runoff, and limit access to rivers by livestock. This results in curbing erosion, and hence sediment loads that tend to affect water quality and damage reservoirs.

[27] Including focus on the municipality of São Roque do Canaã, in the Santa Maria do Rio Doce basin.

[28] These are water rights issued to a group of family farmers using water from a defined portion of the river. The water right is issued to the group and they reallocate among themselves as needed.

US$43.34 million IBRD). This component aims to reduce floods risks in targeted municipalities which have faced strong flood episodes over the past few years. It will finance, *inter alia*: (i) Design and Build contracts for the *implementation* of urgent flood risk reduction investments[29] in three municipalities (Águia Branca, João Neiva and Ibiraçu) for which technical solutions have been identified, but feasibility studies need revisions; (ii) studies to identify more innovative integrated structural and non-structural solutions to reduce flood risks in two additional municipalities (Iconha and Alfredo Chaves); and (iii) implementation of some of the innovative solutions resulting from these studies a to be prioritized, considering available time and resources.

21. **Component 4 – Project Management (US$6.85 million of which US$6.85 million IBRD).** This component aims to strengthen the State´s capacity to carry-out Project activities, including fiduciary, technical, environmental and social, and monitoring and evaluation aspects. To this end, it will finance the provision of technical assistance, consulting and non-consulting services, training and goods to key government agencies necessary to effectively carrying out activities associated with Project implementation.

22. **Component 5 – Contingent Emergency Response Component (CERC) (zero budget).** This component will support the State of Espírito Santo, following an Eligible Crisis or Emergency, to respond to emergency situations associated with hydrological events. This disaster recovery contingency zero-fund component could be triggered following the declaration of a disaster or emergency, defined as “an event that has caused, or is likely to imminently cause, a major adverse economic and/or social impact associated with natural or man-made crises or disasters.” When triggered, funds may be reallocated to facilitate the rapid financing of goods and services under streamlined procurement and disbursement procedures. Eligible activities may include emergency rehabilitation works, supply of critical equipment, or any other critical inputs to respond to the impacts of floods, landslides, droughts and other hydrological climate-related extreme events-. If activated, this component would therefore directly enhance the residents’ resilience to climate change.

Legal Operational Policies

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

Summary of Assessment of Environmental and Social Risks and Impacts

23. **The Environmental risk rating of the Project is Substantial.** The Project aims to increase water security and resilience to extreme events, thus significant positive environmental impacts are expected with the recovery of forest cover, the conversion to sustainable land use, the implementation of nature-based solutions, and improved water security. The adverse impacts are mainly related to the civil works

[29] These no-regret interventions consist of drainage works to increase runoff capacity, including dredging, widening of cross sections and river channeling.

to minimize floods and landslides, and increase water security to climate-related extreme events in selected basins and municipalities of the State. Even though to date, the typology of these works is well defined, and their location will majorly consist of urban anthropized areas, modified habitats, which are fragmented and with the presence of nonnative/exotic species, the scale and magnitude of their related impacts still encompass some level of uncertainty. Thus, as a precautionary approach, the environmental risk was considered substantial. Nevertheless, measures necessary to mitigate the impacts regarding these works are widely known and the agency in charge of such activities (DER-ES) has significant experience in implementing and supervising civil works. There are no significant contextual risks that imply an additional increase or exacerbation of the potential impacts foreseen in the project.

24. **Environmental and Social Management Framework (ESMF).** The Project consists of a series of subprojects for which environmental and social risks cannot be specifically determined until their details have been identified. In consequence, the Borrower has prepared an ESMF as the main instrument of E&S assessment of the Project. The ESMF was publicly disclosed on a dedicated website. It was consulted through this online channel from June 15 to July 15, 2022. In addition, a virtual meeting was held on June 29, 2022. The ESMF defines the principles, rules, guidelines and procedures to assess the E&S risks and impacts of the Program, considering its components, subcomponents and activities, whether the latter are already well defined in terms of scope and location of intervention or still lacking definitions that will be reached in the future. The ESMF presents measures and plans to reduce, mitigate, and/or neutralize risks and adverse impacts, information on the agencies or entities responsible for managing the program's risks and impacts, including their institutional capacity for such management. As per the ESMF, the borrower will be required to develop (as necessary) a set of management plans/programs to address the main E&S risks and impacts of the project implementation.

25. **The social risk rating is Moderate.** The main adverse social impacts are related to land acquisition, physical and economic displacement on a temporary or permanent basis for the construction of flood reduction infrastructures in urban areas as well as, at least potentially, for the green and gray interventions envisaged in the context of the flood risk management plan for the Itapemirim river basin. These impacts are expected to be of small magnitude and the Borrower has developed its capacity to carry out involuntary resettlement action plans following the similar requirements of OP 4.12 as part of the previous operation. A Resettlement Policy Framework has been prepared and consulted. It is being revised to incorporate relevant feedback received during consultations and its final version will be disclosed in the Project's dedicated website within 30 days of the Project's date of effectiveness as stated in the Project's Environmental and Social Commitment Plan.

26. The Borrower has also prepared a Stakeholder Engagement Plan (SEP), that has already been publicly consulted and revised to incorporate relevant feedback received during consultations. The SEP mapped key stakeholders and identified that Project activities have the potential of benefiting disadvantaged and vulnerable social groups (poor urban dwellers in at-risk areas, quilombola communities , artisanal fishery communities and small land holders who are more vulnerable to and less able to cope with the adverse impacts of extreme climate events and natural disasters, notably women, children, the elderly and the people with disabilities among them). The SEP establishes approaches and methodologies for disclosing Project information to all key stakeholders – including these vulnerable groups that need to have access to relevant information on the Project, easy access to its mechanism for raising and facilitating resolution of concerns and grievances, and fair access to Project benefits. The SEP also describes the Project specific Grievance Mechanism, which functionalities address all the requirements set in ESS 10 and will be operated by AGERH.

E. Implementation

Institutional and Implementation Arrangements

27. **The Espírito Santo State Water Resources Agency (AGERH) will be responsible for the overall Project leadership and coordination through the establishment of the Project Management Unit (PMU).** It will carry out the coordination, supervision and reporting on Project activities and results; perform technical, fiduciary and administrative functions; as well as advise and support the four implementing agencies in fulfilling their Project responsibilities, in compliance with Project regulations and World Bank policies. The PMU will comprise a core team including a project coordinator, a financial management (FM) lead, a procurement lead, a M&E specialist, environment and social specialists, legal specialists, operational and administrative staff, among others. AGERH will represent the Borrower in any Project-related engagement with the World Bank.

28. **AGERH, SEAMA, CEPDEC and DER-ES will be responsible for implementing Project activities under their purview via their specific Project Implementing Units (PIUs)**, as follows: i) AGERH for subcomponent 1.1 and component 4[30]; ii) CEPDEC for subcomponent 1.2; iii) SEAMA for subcomponent 2.1; and iv) DER-ES for component 3. AGERH, CEPDEC and SEAMA will share the implementation of subcomponent 2.2, which is expected to enhance their coordination and improve interinstitutional and cross-sectoral collaboration under the SIGERH-ES, resulting in a positive externality. Procurement of activities under components 1, 2 and 4 will be carried out by a Special Bidding Commission (SBC) established under AGERH. DER-ES will be responsible for the procurement of activities under component 3. The implementing agencies will sign interagency technical cooperation agreements with AGERH and will designate a focal point responsible for Project implementation and monitoring of progress.

29. **An external consulting firm will be contracted to provide support to the PMU and the PIUs in the implementation of the Project.** This firm is expected to provide technical and operational expertise and support in the following areas: (i) administrative and financial management support; (ii) implementation of the environmental and social framework (ESF); (iii) reviewing and updating designs and TORs for various Project activities and assisting in the preparation of documents related to the procurement cycle; and (iv) providing specialized individual consultants with specific technical expertise, as required.

30. **The Steering Committee (*Comitê Gestor do Projeto*) will be established and comprised of high-level representatives from the four Project implementing entities.** It will be chaired by the State Secretariat of Government (SEG). The Sub-secretariat of Fundraising under the State Secretariat of Economy and Planning (*Subsecretaria de Captação de Recursos, Secretaria de Economia e* Planejamento - SUBCAP/SEP) will serve as its Executive Secretariat. The Committee will provide strategic direction, guidance, and oversight for implementation; ensure inter-agency collaboration where needed; monitor progress; and recommend and take actions to resolve bottlenecks when necessary.

[30] AGERH will also implement the studies to identify more innovative integrated structural and non-structural solutions to reduce flood risks in the municipalities of Iconha and Alfredo Chaves, under Component 3.

CONTACT POINT

World Bank

Paula Pedreira de Freitas de Oliveir
Senior Water Resources Management Specialist

Marie-Laure Lajaunie
Lead Water Resources Management Specialist

Borrower/Client/Recipient

State of Espirito Santo

Implementing Agencies

AGERH - State Water Resources Agency
Fabio Ahnert
Diretor Presidente
gabinete@agerh.es.gov.br

CEPDEC - State Coordination for Protection and Civil Defense
Hekssandro Vassoler
Coordenador Estadual Adjunto de Proteção e Defesa Civil
hekssandro.vassoler@bombeiros.es.gov.br

DER-ES - Buildings and Roads Department of Espírito Santo
Neomar Pezzin
Management Director
neomar.pezzin@der.es.gov.br

SEAMA - State Secretariat for the Environment and Water Resources
Fabricio Machado
Secretary
gabinete@seama.es.gov.br

FOR MORE INFORMATION CONTACT

The World Bank
1818 H Street, NW
Washington, D.C. 20433
Telephone: (202) 473-1000
Web: http://www.worldbank.org/projects

APPROVAL

Task Team Leader(s):	Paula Pedreira de Freitas de Oliveir Marie-Laure Lajaunie

Approved By

Practice Manager/Manager:		
Country Director:	Johannes C.M. Zutt	21-Oct-2022