Project Information Document (PID)

Appraisal Stage | Date Prepared/Updated: 12-Apr-2021 | Report No: PIDA30935

BASIC INFORMATION

A. Basic Project Data

Country	Project ID	Project Name	Parent Project ID (if any)
Senegal	P175830	Stormwater Management and Climate Change Adaptation Project 2	
Region	**Estimated Appraisal Date**	**Estimated Board Date**	**Practice Area (Lead)**
AFRICA WEST	30-Mar-2021	04-Jun-2021	Urban, Resilience and Land
Financing Instrument	**Borrower(s)**	**Implementing Agency**	
Investment Project Financing	Republic of Senegal	Municipal Development Agency (Agence de Développement Municipal - ADM)	

Proposed Development Objective(s)

To reduce flood risks in peri-urban areas of Dakar and improve capacity for integrated urban flood risks planning and management for selected cities in Senegal.

Components

Component 1: Integrated urban planning and management accounting for climate risk and sustainability
Component 2: Drainage investment and management, community engagement, environmental and social management
Component 3: Contingent emergency response
Component 4: Project management

The processing of this project is applying the policy requirements exceptions for situations of urgent need of assistance or capacity constraints that are outlined in OP 10.00, paragraph 12.
Yes

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	174.80
Total Financing	174.80
of which IBRD/IDA	155.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Development Association (IDA)	155.00
IDA Credit	155.00

Non-World Bank Group Financing

Counterpart Funding	11.10
Borrower/Recipient	11.10
Other Sources	8.70
Nordic Development Fund (NDF)	8.70

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

Senegal is located at the westernmost point of Africa and the Sahel alongside the Atlantic Ocean, with a land area of 197,000 km^2 and an unevenly distributed population of about 15.7 million.[1] The climate is both arid and tropical with two seasons—the dry season (October to May) and the rainy season (June to September). Dakar, its capital city, is located at the westernmost tip of the country on the Cap-Vert Peninsula, being in a geographic transition zone and having a hot semi-arid climate[2] influenced by the ocean.[3] The wet season, in concordance with the ITCZ[4] migration and the West African Monsoon Jump, brings heavy rainfall that can translate into floods,

[1] Projections for 2018 by the National Agency of Statistics and Demography (*Agence Nationale de la Statistique et de la Démographie,* ANSD). https://www.ansd.sn/ressources/publications/1-SES-2017-2018_Etat-structure-population.pdf.
[2] Koppen-Geiger climate classification, http://koeppen-geiger.vu-wien.ac.at/present.htm.
[3] Climate knowledge country profiles, Senegal, https://climateknowledgeportal.worldbank.org/sites/default/files/2018-10/wb_gfdrr_climate_change_country_profile_for_SEN.pdf.
[4] ITCZ = Intertropical Convergence Zone.

especially in urban and peri-urban areas. Rainfall is highly variable at interannual and interdecadal time scales, being influenced by climate oscillations, for instance the ENSO [5] phenomenon.[6]

The country is increasingly urbanized with 46.7 percent of the population living in cities in 2018, notably in the Dakar Metropolitan Area. The Dakar region covers only 0.3 percent of the national territory (546 km^2) but accommodates about 3.6 million inhabitants or 23 percent of the total population and concentrates 80 percent of economic activities.[7] The annual urban population growth rate is estimated at 3 percent. The city's infrastructure, which is built to accommodate 300,000 people, is overstretched and over 90 percent of the population in the peri-urban areas of Dakar such as Pikine and Guediawaye lives in areas classified as slums or spontaneous settlements.[8]

Senegal is highly vulnerable to floods and droughts, as well as coastal erosion and land degradation, which can jeopardize development gains and livelihoods, affect productivity, and threaten social stability. Natural disasters are exposing both the urban and rural poor population to increasing stress and poverty. The vulnerability of Senegal to natural disasters hazards and climate change-related changes is largely linked to its 700 km coastline open to the Atlantic Ocean, its latitudinal position which is in a transition zone between the Sahelian climate and the Guinean climate which causes significant rainfall variations within the country, and the existence of two major river systems which results in potentially high groundwater levels during the rainy season. The country ranks 9th in the world related to the largest share of its urban population living in low elevation coastal zones (LECZs) (Dakar, Saint-Louis, Thies, Matam, Kaolack, Kolda, and Kaffrine).[9]

Climate shocks are also linked to poverty levels and are further exacerbating gender inequality. According to the 2014 World Bank Policy Paper on poverty dynamics in Senegal, households affected by a natural disaster were 25 percent more likely than others to fall into poverty during 2006–2011,[10] and surveys conducted in affected areas following the 2009 floods showed that households lost 14 percent of their average income.[11] Looking at gender, despite the considerable efforts that the Government has made to advance the national agenda for gender equality through the 1997 Constitution and the new National Gender Policy, gender inequalities persist in Senegal, which is ranked 125 out of 189 countries in the 2020 Gender Inequality Index.[12] Women lack access to basic services and infrastructure is not designed to respond to their needs—persistent inequalities are highlighted in the 2018 Systematic Country Diagnostic (SCD). The rate of access to sanitation in urban areas has not practically changed between 62.0 percent in 2005 and 62.4 percent in 2012.

The physical and climate vulnerability and poverty level are all exacerbated by a low economic development with gross domestic product (GDP) per capita of US$1,379 in 2020.[13] Senegal's economic growth has been among the highest in Africa between 2014 and 2018, remaining above 6 percent annually. GDP growth continuously

[5] ENSO = El Niño–Southern Oscillation.
[6] Fall, Soulemane, Dev Niyogi, and Fredrick H. M. Semazzi. 2006. "Analysis of Mean Climate Conditions in Senegal (1971–1998)." *Earth Interactions* 10 (5): 1–40. DOI: https://doi.org/10.1175/EI158.1.
[7] Ibid.
[8] National Urban Master Plan (PDU) Dakar: Horizon 2025; ANSD 2003: Dakar 950,331, Pikine 774,314 and Gu6diawaye 248,809.
[9] GRUMP database: McGranahan, Gordon, Deborah Balk, and Bridget Anderson. 2007. "The Rising Tide: Assessing the Risks of Climate Change and Human Settlements in Low-Elevation Coastal Zones." *Environment and Urbanization* 19 (1): 17–37.

[10] Dang, H.A, P.F. Lanjouw, and R. Swinkels. 2014. "Who Remained in Poverty, Who Moved Up, and Who Fell Down? An Investigation of Poverty Dynamics in Senegal in the late 2000s." Policy Research Working Paper 7141, World Bank Group.
[11] Senegal. Post Disaster Needs Assessment (PDNA). June 2010.
[12] United Nations Development Programme. 2020. United Nations data version of February 6, 2020.
[13] World Bank. 2020. *Macro Poverty Outlook 2020, Senegal Datasheet*.

decreased from 6.3 percent in 2017, down from 5.3 percent in 2019. Since early 2020, the COVID-19 pandemic has significantly changed Senegal's economic outlook. Growth has slowed significantly in 2020, with services (such as tourism and transport) and exports particularly hard hit. Senegal has responded to the pandemic with containment measures and a comprehensive economic stimulus plan of 1,000 CFAF billion to protect lives and livelihoods. However, economic recovery will likely be gradual, driven by a robust return of private consumption and investment. Reforms envisioned under the Senegal Emerging Plan (*Plan Senegal Emergent,* PSE) need to be deepened for growth to resume its pre-pandemic trajectory.

Sectoral and Institutional Context

Stormwater flooding was the most serious natural hazard that Senegal faced over the last three decades. From 1980 to 2008, stormwater floods have affected an estimated 400,000 to 600,000 people per year and caused significant damage to infrastructure, public equipment, and private property along with economic losses. In 2009, heavy rainfall caused serious flooding in Senegal, particularly in Dakar but also in the rest of the country. According to Government figures, about 360,000 people were directly affected. Further, a PDNA assessed its total cost at US$104 million with almost US$56 million for damages and US$48 million for losses.[8] The peri-urban areas of Dakar were the most affected with the cost of flooding estimated at US$82 million or 79 percent of the total cost. As later explained in greater detail, the country was also heavily affected by urban floods in 2010, 2012, and most recently in 2020 due to the rapid urbanization and city extension in peri-urban areas and insufficient stormwater management systems, causing water to inundate roads and properties.

The worsening effects of climate change contribute to increasing the impacts of stormwater flooding and both direct physical damages and long-term welfare are expected to be affected in an adverse manner, particularly in urban and peri-urban areas. Climate change contributed to the increased volatility of rainfall over the region and sea level rise that increases the population's exposure and endangers the development gains of Senegal. Focusing on the Dakar area, local station data show average monthly temperatures between 17°C and 30°C, being highest during the wet season in general, with an increase mostly since the mid-1990s, with yearly precipitations generally between 300 m and 600 mm per year and concentrated during the wet season,[14] with the number of rainy days around 40, most of them during the wet season. As in the rest of the country, annual rainfall and trade winds (Harmattan and marine trade winds) affected the local climate, especially during the dry season, with marine trade winds affecting the region all year long. Monsoon and squall winds[15] dominate during the wet

[14] Faye. 2019. "Changement climatiques observés sur le littoral sénégalais (*Région de Dakar*) depuis 1960: Etude de la variabilité des tendances sur les températures et la pluviométrie." *Nature and Technology Journal, Vol. C, Environmental Sciences* 20 : 65–78. http://www.univ-chlef.dz/revuenatec/issue-20/Article_C/Article_498.pdf; Sane and Ndiaye. 2006. *La variabilité climatique et ses conséquences environnementales à Dakar, Les risques liés au temps et au climat, XIX^eme colloque de l'Association Internationale de Climatologie.* https://www.researchgate.net/profile/Jerome-Fournier-4/publication/262172944_Impact_de_la_variabilite_climatique_sur_l%27evolution_spatio-temporelle_des_biocenoses_benthiques_le_cas_des_herbiers_mediolittoraux_de_phanerogames_marines/links/0a85e536cb13b7f18d000000/Impact-de-la-variabilite-climatique-sur-levolution-spatio-temporelle-des-biocenoses-benthiques-le-cas-des-herbiers-mediolittoraux-de-phanerogames-marines.pdf#page=508; Cabinet Merlin, SGI Consulting and EDE Consulting. 2011. *Etude du plan directeur de drainage (PDD) des eaux pluviales de la région périurbaine de Dakar, Rapport n°1 – Hypothèses et Données de base*.

[15] Moussa, et al. 2019. "Case Study of Squall Lines Passing Over Dakar Using NOAA Sounders." *International Journal of Science and Research* 8 (1): 272–276; Fall, Soulemane, Dev Niyogi, and Fredrick H. M. Semazzi. . 2006. "Analysis of Mean Climate Conditions in Senegal (1971–1998)." *Earth Interactions* 10 (5): 1–40. DOI: https://doi.org/10.1175/EI158.1.

season, bringing intense precipitation events. Studies estimate the 10-year return period of a 24-hour event close to 130 mm (about 108 mm for a 12-hour event).

The risks and impacts of flooding have been exacerbated by unplanned urbanization, the lack of drainage or its obstruction, and rising groundwater levels. The 2009 Flood PDNA also highlighted that in the aftermath of a series of droughts in the 1970s almost 40 percent of the new population in peri-urban Dakar settled in areas with significant hazard potential, especially inland flooding.[17] The exposure to flooding was not only due to the absence of the drainage system or the lack of maintenance and obstruction of natural drains, but on the critical need to develop a longer-term strategy for urban flood risk reduction that address the underlying causes of recurrent floods, namely uncontrolled urbanization. The latter has a critical role to play in controlling unplanned urbanization while creating the broader environment and coordinating framework to facilitate and coordinate investments from multiple donors.

In August 2012, heavy floods marked a turning point in shaping Senegal's flood risk management strategy, leading to the World Bank's support. More than 156 mm of rainfall poured in just two hours and caused major flooding in several areas of Saint-Louis, Bambey, and Dakar. The flood caused loss of lives and the severe deterioration of public and private infrastructure. Public services such as schools and health systems were also significantly affected, most of which were suspended for several days due to water damage and lack of supplies, as well as failure in the water distribution system and the energy grid. Following this event, the Government of Senegal (GoS) adopted a 10-year flood management program (*programme de gestion des inondations*, PDGI) (2012–2022) with a budget of approximately US$1.4 billion. The program aimed to (a) identify high-risk flood zones, (b) relocate disaster-affected populations, (c) improve urban planning, and (d) strengthen cities' flood resilience with drainage infrastructures. The World Bank provided technical and financial support to the PDGI through the Stormwater Management and Climate Change Adaptation Project (*Projet de Gestion des Eaux Pluviales et d'Adaptation au Changement Climatique*, PROGEP) in the amount of US$90.6 million (IDA credit) and including US$16.2 million in Government counterpart funds and US$9 million from the Nordic Development Fund (NDF) in parallel financing.

The design of PROGEP was adapted to the existing institutional framework already including a broad range of stakeholders—line ministries, municipalities, and civil society and community-based organizations. The main sectoral ministries involved in stormwater management are the ministries in charge of urban planning, interior, decentralization, housing, water, urban sanitation, and environment. In the PROGEP intervention areas (municipalities of Pikine and Guediawaye), nine local committees for flood control (COLIGEP) were created to ensure community participation in stormwater management, drainage operation and maintenance (O&M) and flood prevention. The COLIGEP capacities were strengthened during PROGEP implementation with training activities and equipment provision. The Municipal Development Agency (*Agence de Développement Municipal,* ADM) was appropriately chosen to implement the project for its adequate project management systems and track record with donor-funded projects including World Bank-financed projects engaging municipalities.

The stability of working with the ADM coordination team also contributed as an important factor positively affecting PROGEP implementation. The ADM is endowed with an autonomous budget and a stable executive capacity. Through several changes in the GoS' ministerial setup and secretaries, the PROGEP coordination team within the ADM remained largely the same. The coordination team continuously worked with key partner ministries (for example, local government, water and sanitation, urban planning, environment, and interior) despite several leadership and organizational changes that occurred in these ministries.

PROGEP achieved important infrastructural and non-infrastructural results during implementation from November 2012 to May 2020. It provided protection from flooding to 167,000 people directly and 1.3 million indirectly by draining and preserving more than 1,000 ha in Dakar's peri-urban areas. The project achievements in terms of infrastructural results included (a) 29.3 km of closed and open primary canals of large section; (b) 21 km of closed and open secondary canals; (c) 21 designed basin/storage ponds with a cumulative capacity of 700,000 m^3; (d) 150,000 m^2 (25,000 ml) of drained paving roads; (e) one high flow pumping station; (f) three secondary pumping stations; and (g) 68 community investment projects (for example, solar lighting, sports courses, playgrounds, reforestation in floodplains, and so on). The non-infrastructural results included (a) a drainage master plan (*Plan directeur de drainage*, PDD) for the municipalities of Pikine and Guédiawaye; (b) detailed urban plans (PUDs) for Pikine-Guédiawaye and the new city/urban pole of Diamniadio and its surroundings; (c) flood risk management plan for the urban pole of Diamniadio; (d) institutional and viability study for the stormwater management sector, recommending, among others, the adoption of a sanitation fund; (e) PDU for the agglomeration of Saint-Louis; (f) the modeling and environmental monitoring of the coastal zone of Saint-Louis, and (g) the diagnostic and strategic study of the national urban policy.

Despite notable achievements in reducing the risk of flooding in the project intervention areas in the peri-urban aeras of Dakar, critical issues to address urban flooding comprehensively and sustainably remained. This includes the (a) lack of a financial and institutional mechanism for sustainable O&M of drainage infrastructures; (b) rapid extension of the city in peri-urban areas and lack of urban development control in hazard-prone areas, and (c) slow implementation of reforms in urban policy promoting urban resilience.

In September 2020, a new extreme climatic event demonstrated the performance of the PROGEP investment while emphasizing critical, urgent needs in other urbanized zones. Exceptional precipitations brought 200 mm of rainfall in 24 hours (approximately half of the annual average rainfall of 400–500 mm). While areas covered by PROGEP drainage investments were not/less affected, other urbanized zones not covered by the project experienced much more damages, thus stressing the urgent need to expand drainage investments in those zones. In total, more than 15,035,000 people were affected in Dakar, Saint-Louis, Kaolack, Kaffrine, Thies, and Ziguinchor, including at least six deceased residents and more than 3,500 families losing their homes in the suburbs of Dakar.[16] The floods also damaged equipment and public infrastructure including roads, schools, health centers, a core electricity supply center in Hann/Dakar, and markets.

Following the 2020 floods, the GoS formally requested the urgent support of the World Bank for a follow-on operation to reduce flood risks and improve capacity to plan integrated urban flood risks management. The GoS requested the financing support of the World Bank in a letter dated October 28, 2020, to extend PROGEP's integrated flood management approach to new sites in Dakar peri-urban at-risk areas while planning in a phased approach, further interventions in the other regions such as Saint-Louis, Mbour, and Thies through a follow-up project (Stormwater Management and Climate Change Adaptation Project - Phase 2 [*Projet de Gestion des Eaux Pluviales et d'Adaptation au Changement Climatique* - Phase 2, PROGEP2]). The new project will solve remaining issues regarding O&M and urban planning. Regarding the O&M issues, it is stipulated in the sanitation code, that stormwater management falls under the purview of the central government, which can delegate the function to any public or private entity; the financing and operations of stormwater investments, however, fall under the responsibility of communes, and so does developing and adopting PDDs. Implementing the PROGEP, therefore, required experience of working with municipalities and managing the project's multisectoral aspects in a fluid institutional context. With regard to the issue of urban planning, there are many planning documents and

[16] Senegal Civil Protection Directorate.

technical and regulatory instruments (*Code de l'Urbanisme, Loi 2008-43*), strategic urban plans, PDUs, local PUDs, and construction plans) but none of them have succeeded in improving the planning and management of the rapidly increasing urban centers. These regulatory and policy urban documents need to be reviewed to better address hazard aspects, climate change, and urban resilience challenges.

C. Proposed Development Objective(s)

Development Objective(s) (From PAD)

To reduce flood risks in peri-urban areas of Dakar and improve capacity for integrated urban flood risks planning and management for selected cities in Senegal.

Key Results

The proposed key results are:

(a) Area in peri-urban Dakar protected against recurrent flooding (ha);
(b) Number of direct beneficiaries, of whom female (50%);
(c) Number of institutional actors in the project intervention areas who have taken ownership of the planning tools for integrated flood risk management (number); and
(d) The improved capacities in integrated flood risk planning and management have allowed to increase the rate of compliant authorized subdivisions to 80% in line with the validated urban plans in the targeted areas of the project (percentage)

D. Project Description

Component 1: Integrated urban planning and management accounting for climate risk and sustainability (US$4 million IDA; US$6.7 million NDF)

This component has the overall objective to integrate climate risk and sustainability in urban planning and management. It is co-financed with the NDF (see Subcomponents 1.1 and 1.3) and includes three subcomponents.

Subcomponent 1.1: Integrated urban planning and management (US$0.7 million IDA; US$4 million NDF)

This subcomponent aims to improve the management and planning of urban space. It includes investments in spatial planning tools integrating climate change adaptation, resilience, and sustainability in a broader way. Investments will be provided in PUDs, PDDs, and integrated risk management plans with links and synergies between the three types of plans helping determine where and how development occurs and coordinate with floodplain and stormwater managers, because land use decisions can affect flood hazards and the community's risk management approaches. For example, promoting higher-density developments and strategically integrating planned networks of nature-based solutions to lower the amount of runoff and reducing dependence on gray infrastructure for stormwater management. This subcomponent covers the five rapidly urbanizing peri-urban areas of Dakar, including the new airport area: (a) Tivaouane Peulh-Niague-Jaxaay-Parcelles-Niakoul-Rab, (b) Sangalkam-Mbambilor, (c) Ndayane-Toubab Dialao, area north of the highway toll (highway Thiès-AIBD), (d) Saly Portudal-Somone-Ngaparou-Nguérine-Malicounda, and (e) Kayar-Bayakh-Keur Matar Gaye. This subcomponent will also finance technical assistance to the General Directorate of Town Planning and Architecture (*Direction Générale de l'Urbanisme et de L'Archietcture,* DGUA).

The NDF will finance studies related to the four areas listed (b) to (e).

Subcomponent 1.2: Urban legislation and regulatory framework reform (US$0.4 million IDA)

This subcomponent will support national and local authorities in terms of institutional and legal reforms in the urban sector. It includes investments to support the elaboration of urban and sanitation codes that promote urban and peri-urban resilience and sustainability. For instance, the subcomponent will contribute to update the national urban code (*Code de l'Urbanisme, Loi 2008-43*[17]) which was written before the Paris Agreement, align it with the Third Decentralization Act,[18] and integrate green city concepts put forward by the SDG[19] 11, in particular green mobility, energy efficiency guidelines, as well as new guidelines on flood risk planification. This will lead to new procedures to elaborate urban planning documents, focused on sustainability and resilience to floods and climate change. For instance, nature-based solutions for climate risk management and pollution management will be documented and put in the context of the needs of Senegal's urban areas, a reflection on urban density and topology will be conducted and used, and pedestrian mobility and public transport will be pushed. The construction code will also be revamped to integrate guidelines making constructions resilient to climate change. Investments included in this subcomponent imply a close collaboration with the DGUA and require the financing of participatory planning workshops and trainings at the national and regional levels, as well as a national strategy for dissemination of the new codes. Further, support will be provided to the DGUA and the steering committee to develop the concepts of an urban policy at the national, regional, and local levels in line with SDG 11 and account for the worsening effects of climate change, particularly in relation to flooding.

Subcomponent 1.3: Promoting good practices for integrated urban management including resilience and sustainability (US$2.9 million IDA; US$2.7 million NDF)

This subcomponent aims to enhance the capacity of the central and local governments to design and implement urban projects informed by innovative and integrated approaches in terms of sustainability, climate adaptation, and resilience. Following the aforementioned reforms, good practices developed under this subcomponent will support the design and implementation of all the project components on integrated urban planning, urban legislation and segmentation reform, drainage infrastructures, community engagement, capacity building, and knowledge management. It includes specific studies and tools related to (a) flood risk assessments and evaluation of the performance of existing stormwater systems to be able to manage in real time models that allow to understand the current and future vulnerability to changing total water levels; (b) solid waste management and its relation with flooding and strategies to avoid clogging storm drains, pipes, and outfalls; (c) rainfall harvesting, wetland management, and other nature-based solutions to promote infiltration to protect groundwater recharge and reduce runoff; (d) the integration of infrastructure into the urban fabric and the strategic planning of non-constructible areas – for the latter, emphasis will be put on creating sustainable urban farming and protected forested area, and green spaces benefitting from locally treated water (integrated water cycle); (e) urban mobility; and (f) information systems and IEWSs in select peri-urban neighborhoods (for example, Pikine-Guédiawaye, Jaxaay-Parcelles-Niakourap, Keur Massar, and Mbao). The development of IEWS through a top-down/bottom-up and cross-sectoral approach will allow to better handle many DRM aspects related to disaster preparedness and response, community participation and resilience, and flood contingency planning, as well as strength the national

[17] https://www.sec.gouv.sn/code-de-l%E2%80%99urbanisme.
[18] http://www.decentralisation.gouv.sn/l%E2%80%99acte-iii-de-la-decentralisation.
[19] SDG = Sustainable Development Goal.

and local capacities of information providers (hydromet services) and users (first responders [civil protection, firefighters, ADM, ONAS,[20] DPGI,[21] and so on) and local authorities and communities).

As informed and framed by the plans developed in Subcomponent 1.1, this subcomponent will also include pilot studies in select areas including (a) open areas around the lake of Thiourour; (b) the protected forest of Mbao; (c) the peri-urban areas of Pikine, Guediawaye, Keur Massar, and Mbao for the densification of recreational areas, sport infrastructure, and fitness trails in flood plains; and (d) select peri-urban neighborhoods for IEWS.

This subcomponent also aims to capitalize on the lessons learned and the knowledge produced during project implementation and leverage it for capacity building for the stakeholders involved in urban resilience and flood risk management (for example, government officials, local governments, civil society organizations, private sector, academia, and communities). The subcomponent will finance wide dissemination and training across institutional actors and communities. In addition, key stakeholders will participate in study trips and attend international meetings such as the Global Environment Facility's Global Platform for Sustainable Cities and other events focusing on urban resilience, climate change adaptation, and flood risk management.

The NDF will finance studies related to the development of open areas around the lake of Thiourour and studies related to the development of tools for good practices and the capitalization of the project's lessons learned, as well as the development of a communication plan.

Component 2: Drainage investment and management, community engagement, environmental and social management (US$146.1 million IDA; US$1.3 million NDF; US$9.6 million GoS)

The overall objective of this component is to reduce the risk of flooding in selected peri-urban areas of Dakar. It includes four subcomponents as detailed in the following paragraphs.

Subcomponent 2.1: Temporary emergency pumping and drainage infrastructure construction and management (US$126.6 million IDA; US$1.3 million NDF)

This subcomponent will finance :

a) Temporary emergency pumping system (US$6 million IDA) that will be put in place for the 2021 rainy season and until necessary. It is anticipated that the pumping activities will include goods purchase (motor pumps, pipes and fuel) for the national fire brigade and the recruitment of a contractor to operate complementary pumping needs in the project intervention area. This investment will be retrofinanced.

b) A first phase emergency *drainage works* (US$53.3 million IDA) that will focus on the Mbao watershed and select peri-urban areas that were affected by the 2020 heavy rains. Investments will include (a) 25.2 km of primary and secondary collectors, (b) 12 rainwater harvesting basins, (c) additional road and drainage network infrastructure, (d) reshaping of the Mbao backwater along approximately 2 km, and (e) design and construction of the drainage network outlet to the sea. These works will be informed by detailed studies of the northern and southern parts of the Mbao watershed, including geospatial analysis and mapping, and technical support in relation to urban

[20] ONAS = National Office of Sanitation of Senegal (*Office National de l'Assainissement du Sénégal*).
[21] DPGI = Directorate of Flood Planning and Management (*Direction de la planification et de la gestion des inondations*).

resilience and flood management (for example, on coastal management and drainage networks). Investments under this subcomponent will require a close coordination with ongoing works financed by the GoS.

c) The second phase drainage works (US$67.3 million IDA) that will focus on the Mbeubeuss and Mbao watersheds and selected sites in the areas of PROGEP. Investments will include (a) new primary and secondary stormwater collectors (about 20km), nine (9) retention basins, and the road networks in select areas (for example, Mbao, North Yeumbeul, Thiourour, Dalifort, and Mbeubeuss); (b) landscape and infrastructure works in select areas of the Mbao forest and backwater dedicated to make drainage work possible in this protected area; and (c) the studies for the development of a wastewater network for Keur Massar and the southern part of the Mbao watershed (US$1.3 million) financed by the NDF. In addition, this phase will finance the update of the PDD for Pikine-Guediawaye and other technical studies prepared under PROGEP. Drainage infrastructure detailed studies will be conducted for the urban areas of Diamniadio and surroundings that are currently rapidly urbanized around Dakar and Saint-Louis.

Subcomponent 2.2: Drainage infrastructure operation and maintenance (US$8.2 million IDA)

This subcomponent aims to ensure the sustainability of drainage infrastructure at two levels: (a) in the short and medium terms, with investments in initial cleanup works undertaken in Subcomponent 2.1, and (b) in the long term, with investments in capacity building and knowledge transfer. The subcomponent will strongly focus on this second aspect because the ONAS, the entity that will incrementally become responsible for O&M, will require the adequate practical and material capacity as well as the right planning and methodological tools to ensure proper O&M of the infrastructure constructed to protect the area under increased stress from climate change. As drainage works are specifically aimed at reducing flood risks related to climate variability and change, these O&M activities will account for potential increased risk caused by climate change, for instance in capacity-building considerations. To this end, the component will include investments in (a) O&M equipment (for example, cleaning trucks); (b) a methodological guide for O&M; and (c) an improved Global Information System capacity and alert system including acquisition of computer equipment, software, and training. In addition, the subcomponent will finance a study to clarify the institutional responsibilities of municipalities and agencies, update collaboration arrangements across entities, and coordinate all institutional stakeholders involved in water and wastewater management. This analysis will serve as the basis for a new National Programme for Capacity Building of Sanitation Actors, then expected to guide the update of the 2009 Sanitation Code and including the SDG perspective. To address long-term sustainability for the maintenance of the drainage system, the Bank will provide support to the Government to prepare a roadmap to better involve private sector to operate at more efficient costs the drainage infrastructure. This support will also involve developing an international benchmark on how to finance in a sustainable manner drainage infrastructure through a mix of tariffs, taxes and subsidies.

Subcomponent 2.3: Community projects and engagement (US$10 million IDA)

The subcomponent will finance 80 community projects developed near drainage works and expected to ensure better preservation of the infrastructure and stronger acceptance and engagement from communities. Investments will include (a) urban infrastructure (for example, playgrounds, walking trails, and so on) to preserve the non-constructible zones and (b) local initiatives related to neighborhood sanitation and solid waste management. To complement these and ensure their longer-term sustainability, investments will also include (a) collaboration agreements with stakeholders involved in drainage, waste, and wastewater management, the Solid Waste Coordination Unit (*Unité de Coordination des Déchets Solides,* UCG) and the ONAS; (b) preparation of a guide on communities' roles in wastewater and solid waste management for active COLIGEP participation in their

exploitation and maintenance; and (c) preparation of a strategic program for the reduction of solid waste in drains including a solid waste collection sites study and an educational training program on environmental issues provided in select schools.

The subcomponent will also engage communities and increase support for adoption of new infrastructure work by municipalities, residents, and community groups while enhancing their awareness of flood prevention and climate adaptation measures. Guided by lessons learned from PROGEP, the subcomponent will finance consultative and participatory processes and a strategy for mobilizing and engaging local stakeholders to ensure their active involvement in stormwater management, drainage network O&M, and flood prevention. Communities will be organized in committees (COLIGEPs) and contribute to the elaboration and dissemination of good practices to maintain resilient urban infrastructures and landscape design works.

The experience of the standardized collecting areas of the UCG executed under the Municipal Solid Waste Management Project (PROMOGED) will be extended to the PROGEP2 intervention areas. It will involve carrying out under the supervision of the UCG standardized collecting areas to facilitate the collection of solid waste and avoid illegal deposits and the obstruction of stormwater drainage works, as well as an environmental management educational project in schools in PROGEP2 intervention areas. With these synergistic actions, the members of COLIGEP will be equipped to enable them to ensure sustainability of the investment.

Subcomponent 2.4: Environmental and social management (US$ 1.3 million IDA; US$9.6 million GoS)

This subcomponent will finance the elaboration of the safeguards instruments that constitute reference documents for environmental and social management throughout the project. This includes an Environmental and Social Management Framework (ESMF), a Resettlement Policy Framework (RPF), a Stakeholder Engagement Plan (SEP), a grievance and redress mechanism (GRM), and an Environmental and Social Commitment Plan (ESCP). In addition, all activities initiated within the project will undergo a series of Environmental and Social Impact Assessments (ESIAs) and will require the preparation of a Resettlement Action Plan (RAP) including all mitigation measures necessary before and during construction work.

Component 3: Contingent Emergency Response Component (CERC) (US$0 million)

The Contingent Emergency Response Component (CERC) will enable rapid reallocation of project funds in the event of a natural crisis during implementation of the project to address eligible emergency needs under the conditions established in the CERC operational manual. This subcomponent will have no initial funding allocation but will draw resources from other expenditure categories at the time of its activation.

Component 4: Project management (US$4.9 million IDA; US$0.7 million NDF; US$1.5 million GoS)

This component will finance incremental project management costs for the implementing and technical agency, financial and technical audits, monitoring and evaluation (M&E) of project activities (including gender-disaggregated data), implementation of the Environmental and Social Framework (ESF), operation of the grievance redress mechanism, citizen engagement, communication, technical assistance and consultant services, and training and knowledge exchange.

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

In general, project activities will lead to the following positive impacts on the population living in those areas as such : improvement of the living environment by solving the problem of flooding in urban areas; rehabilitation of natural lakes and ponds of the hydrographic network; improvement of rainwater management and the management of urban space; preventive and coherent management of floods and their mitigation through appropriate and integrated urban planning, sanitation and drainage plans; liberation of houses, infrastructure and other flooded areas (schools, health centers, markets, mosques, etc.); reduction of mortality and morbidity related to floods; increased resilience of communities to the risk of flooding. However, as part of the implementation of the Project, certain activities will have negative impacts on the environment and on the populations. Among these potential negative impacts, there are the impacts on the flora with deforestation activities, the risks of pollution of the natural environment due to waste from the works but also discharges at the level of retention basins if the structures are subject to damage clandestine connections. Project activities may also cause displacement of populations and loss of land or socioeconomic activities on certain work sites (classified forest of Mbao), risk of accidents for workers and neighboring populations, Disruption of the environment through works (waste, noise dust), disruption of surrounding ecosystems (watercourses, body of water, soil, etc.).

Note: To view the Environmental and Social Risks and Impacts, please refer to the Appraisal Stage ESRS Document.

E. Implementation

Institutional and Implementation Arrangements

Overall coordination and implementation responsibility will be vested with a Project Implementation Unit (PIU). The ADM will act as the Project Implementation Entity and manage the implementation of each component in close coordination with the relevant implementing partners. The ADM has the fiduciary responsibility of all activities and will carry out all procurement, financial management (FM), and internal auditing for the project. The ADM will have the overall coordination responsibilities for the project including FM and reporting activities. The ADM will benefit from various technical assistance and additional capacity strengthening and training activities financed by the project.

Implementing partners will be responsible for technical inputs to their respective components. Components 1 (Integrated urban planning and management accounting for climate risk and sustainability) will be implemented by the ADM under the leadership of the DGUA. Component 2 (drainage investment and management, community engagement, environmental and social management) will be implemented with the Senegal ONAS, particularly Subcomponent 2.2 (drainage infrastructure operation and maintenance) to ensure sustainability of the investment works. The role of the implementing partners will include, but not be limited to, (a) taking part in the Project Steering Committee (PSC) and Project Technical Committee (PTC) meetings; (B) providing technical inputs

for implementation of their respective project components; (c) providing regular activity reports to the ADM, and, as needed, on an ad hoc basis; and (d) actively participating in supervision missions and organized field visits. The ADM will provide regular technical assistance to the implementing partners, regularly share documents produced under PROGEP2, and involve them in any necessary trainings or capacity building. A memorandum of understanding will be signed between the ADM and its implementing partners to clearly define the collaboration framework.

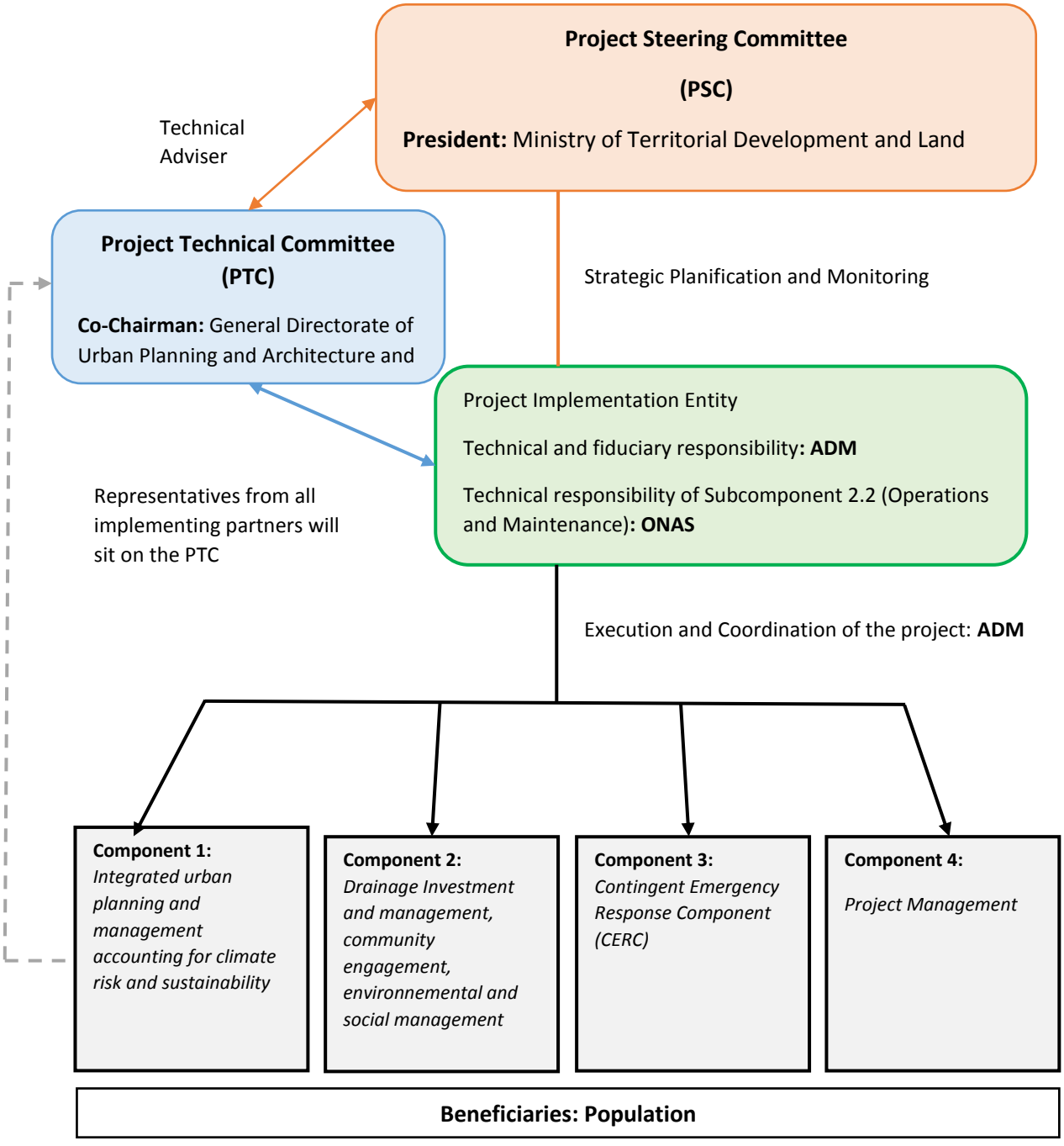
Two overseeing committees will be created at the strategic and operational levels. The PSC will provide overall strategic and policy oversight, and the PTC will provide technical guidance at both strategic and operational levels as detailed in the following paragraphs.

PSC. The PSC will provide overall strategic oversight and ensure policy coordination. It will facilitate project execution by providing in-time policy and strategic guidance and ensure elimination of blockages because of official bureaucracy that could negatively affect project implementation and integration with other urban development programs. The PSC will be chaired by the Ministry of Territorial Development and Land Management (*Ministère des Collectivités territoriales, du Développement et de l'Aménagement des Territoires*) to ensure the highest level of coordination and political support and will include representatives of the Ministries of Finance and Budget; Economy, Planning, and Cooperation; Infrastructures, Transport, and Land use; Environment, Interior, Urbanism, Water and Sanitation, the mayors of the beneficiary municipalities and the Prefects of Dakar, Pikine, Guediawaye, and Rufisque. The ADM will serve as secretariat of the PSC and will be in charge of (a) organizing the PSC meetings and (b) providing all necessary information on project performance and monitoring to the PSC. The PSC will meet twice a year and on an ad hoc basis when required.

PTC. The PTC will be responsible for ensuring efficient and effective technical decision-making and for helping resolve technical issues and implementation challenges. It will be co-chaired by the DGUA and the Directorate of Sanitation (*Direction de l'Assainissement*), while the ADM will function as the secretariat of the PTC. This committee will comprise representatives from implementing partners and key state actors with the requisite qualifications and experience to contribute to technical reviews. The representatives of the Urban Department and Directorate of Sanitation will serve as chairpersons of the PTC for the respective environment and urban aspects. The ADM will serve as the secretariat to the PTC and will be in charge of (a) organizing the PTC meetings and (b) providing all necessary information on project performance and monitoring to the PTC and the WBG when needed.

The following institutional arrangements have been agreed upon, taking account the priority nature and strategic importance of the project and the still limited capacity of the key stakeholders for fiduciary, technical, and monitoring aspects. These arrangements are expected to ensure that funds are disbursed quickly, multisector objectives are reached, and transparency is maintained. Figure 2 presents the proposed institutional setup, clearly distinguishing responsibilities for project oversight, coordination and monitoring, and implementation.

Figure 1. Proposed Institutional Setup



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