



Project Information Document/ Integrated Safeguards Data Sheet (PID/ISDS)

Concept Stage | Date Prepared/Updated: 30-May-2018 | Report No: PIDISDSC24431



BASIC INFORMATION

A. Basic Project Data

Country Suriname	Project ID P165973	Parent Project ID (if any)	Project Name Saramacca Canal System Rehabilitation Project (P165973)
Region LATIN AMERICA AND CARIBBEAN	Estimated Appraisal Date Oct 19, 2018	Estimated Board Date Feb 14, 2019	Practice Area (Lead) Social, Urban, Rural and Resilience Global Practice
Financing Instrument Investment Project Financing	Borrower(s) Ministry of Finance (MoF)	Implementing Agency Ministry of Public Works, Transport and Communication (MoPWTC)	

Proposed Development Objective(s)

The Project Development Objective is to reduce flood risk for the people living in the Greater Paramaribo area and improve the operation of the Saramacca Canal System for flood risk management and navigation.

PROJECT FINANCING DATA (US\$, Millions)

SUMMARY

Total Project Cost	30.00
Total Financing	30.00
of which IBRD/IDA	30.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	30.00
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Environmental Assessment Category
B - Partial Assessment

Concept Review Decision
Track II-The review did authorize the preparation to



continue

B. Introduction and Context

Country Context

1. **Suriname was one of the Caribbean’s best performing economies over the last decade, but the economy contracted into a severe recession when global commodity prices fell, thereby maintaining high poverty levels, especially in the interior.** Suriname, an upper-middle-income country with abundant natural resources, recorded average growth of 4.4 percent for 2000–2012, the per capita income of its population rose to nearly US\$9,350 in 2014, and poverty rates declined. When global commodity prices fell through the end of 2015, GDP contracted severely and income per capita fell to US\$6,990 in 2016, raising poverty levels. There is no official measure of poverty, but estimates by independent researchers place poverty between 26 percent and 31 percent. The ethnically diverse population of about 558,000 occupies 164,000 km² land area; therefore, Suriname has one of the lowest population densities in the world, about 3.3 inhabitants per km², although density is higher in urban areas, thereby increasing exposure to urban floods. Suriname’s economy is highly concentrated in the extractive industries (gold and oil), which play a dominant role in driving growth, employment, and government revenues but also exposes economic performance to commodity price fluctuations. Agriculture is also important in the economy. The sustainability of Suriname’s development progress is also highly vulnerable to climatic disasters, especially pluvial and coastal flooding, which have had high human costs and created financial pressures for households, private businesses, and public finances.

2. **Suriname is one of the most vulnerable countries in the world to the impact of flooding.** Around 30 percent of Suriname is within a few meters above mean sea level, and therefore, it is particularly susceptible to coastal flooding and erosion. The country is also prone to periodic flooding due to heavy rainfall, especially when combined with spring tides. Flooding is exacerbated by poor drainage in the relatively highly populated urban areas on the coast such as the capital city of Paramaribo. Approximately 87 percent of Suriname’s population lives along the 386 km long coastal plain (around 67 percent in Paramaribo), and therefore, flooding affects most of the population and an estimated 90 percent of human activities. Reducing the country’s vulnerability to both coastal and pluvial flooding is paramount to improving the country’s economic sustainability and macro stability. A 2017 World Bank Technical Assistance¹ showed that reducing coastal and pluvial flood risk in the Greater Paramaribo area will require a mix of structural and non-structural interventions.

3. **Suriname’s main disaster risks have been intensified by climate change.** Observed climate trends show that average annual temperatures have increased by 0.2°C since 1960, an average rate of 0.05°C per decade, but that temperatures will increase by about 1.5°C by the 2090s. The tropical climate brings the potential for extreme rainfall, with 200 mm in 24 hours possible and intense downpours of up to 90 mm in 1 hour recorded. Flooding is therefore a frequent consequence of heavy rainfall. Long-term observed rainfall trends are unclear, with climate change projections for the 2090s varying between +40 percent and –65 percent.² However, although uncertainties exist due to the lack of data, climate change is likely to have a significant impact on Suriname, especially if the hydrological cycle intensifies, leading to more intense wetting and drying periods. Estimates indicate that the sea level has risen about 10 cm since 1993 with climate model projections simulating sea level rises of up to 1 m under the most extreme scenario by the 2090s.³ Sea and

¹ World Bank Paramaribo Strategic Flood Risk Assessment, November 2017, 154 pages; World Bank Paramaribo Coastal Resilience Assessment, December 2017, 115 pages.

² McSweeney, C., M. New, and G. Lizcano. 2010. *UNDP Climate Change Country Profiles: Suriname*. Available: <http://country-profiles.geog.ox.ac.uk/>.

³ Dasgupta, S., B. Laplante, C. Meisner, D. Wheeler, and J. Yan. 2009. “The Impact of Sea Level Rise on Developing Countries: A Comparative Analysis.” *Climate Change* 93: 379–388. doi: 10.1007/s10584-008-9499-5.



river level rise and changes in wind pattern and intensity result in intensified wave impact on the shoreline, land loss due to inundation and flooding, salination, and loss of biodiversity.

Sectoral and Institutional Context

4. **The socioeconomic impact of past floods in Suriname has been significant.** The major floods that afflicted Suriname in 2006 and 2008 highlighted the population's vulnerability to adverse natural shocks. In both instances, flooding severely affected the coastal regions, which includes Paramaribo, where the bulk of Suriname's population lives and where most of the country's physical assets are concentrated. An assessment of the socioeconomic impact of the May 2006 floods carried out by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC)⁴ shows that in a few days 2.3 percent of GDP was lost due to the floods, with the largest proportion of damage reported in the education and agricultural sectors (45 percent and 39 percent, respectively), affecting school attendance in the affected zones as well as food security throughout the country, including the poorer interior.

5. **Flood risk reduction interventions are needed to prevent future impacts of flooding.** Suriname's 2012–2016 National Development Plan includes an investment plan for each of the country's five national priorities (good governance, economic diversification, social development, education, and natural resource management). One of the specific objectives of the plan is to strengthen disaster risk management and catastrophe risk insurance to lessen the impact of floods and other climatic shocks. In addition, the 2001 Master Plan for the Drainage of Greater Paramaribo⁵ and the 2010 Integrated Coastal Zone Management (ICZM)⁶ plan recommended various physical interventions and institutional and regulatory actions to reduce flood risk. These identified coastal erosion and protection, destruction of mangroves, unplanned or inappropriate spatial development, and inadequate drainage of residential areas as the most urgent problems to tackle along the coast. Recommendations included developing a national disaster risk management policy to address climate change adaptation, developing an early warning system, carrying out a flood risk reduction assessment, and instituting an emergency response plan. However, neither plan has yet been systematically or fully implemented due in part to lack of funding. The main institution with a mandate to play a critical role in reducing flood risk is the Ministry of Public Works, since it has the responsibility for the operation and maintenance of the drainage system, the hydrological service, and the meteorological service. The emergency assistance service is coordinated by the National Coordination Center for Disaster Preparedness under the auspices of the Office of the President.

6. **The World Bank has supported the Government in its efforts to better understand the risk of flooding and to undertake informed risk reduction measures.** Between 2016 and 2017, a World Bank Technical Assistance, supported by the African, Caribbean, and Pacific (ACP) region - European Commission (ACP-EU) Natural Disaster Risk Reduction Program, in partnership with the Global Facility for Disaster Reduction and Recovery (GFDRR) and the Government of Suriname (GoS), conducted a Strategic Flood Risk Assessment (FRA) for the Greater Paramaribo area and a Coastal Resilience Assessment (CRA).⁷

7. **The FRA supported the GoS to prioritize targeted flood risk reduction interventions.** Flood hazard modelling was carried out to assess flood depth and extent for a range of rainfall and tidal scenarios, and a high-level-options appraisal was undertaken for evaluating mitigation proposals. Exposure and vulnerability were quantified using Annual Average Damages and a cost-benefit analysis was then used to determine viable flood mitigation options. The FRA led to the development of an evidence-based, prioritized list of targeted flood reduction investments comprising 14 structural and

⁴ ECLAC. 2007. *Suriname: The Impact of the Floods on Sustainable Livelihoods*.

⁵ Executive Summary, *Masterplan Ontwatering Groot Paramaribo, Ministrie van Openbare Werken*, Project UPO 08 - SR/002214 prepared by DHV-WLDelft-AMI-Sunecon, June 15, 2001.

⁶ ICZM Plan Suriname: Coastal Morphodynamics Report prepared by Lievense Deltares, October 2009.

⁷ Refer to footnote 1.



nonstructural flood risk interventions to reduce pluvial flooding in the Greater Paramaribo area. The preliminary cost-benefit analysis found that the most beneficial, strategic, and sustainable flood mitigation options included improvements to the Saramacca Canal, a key element of the drainage system for the central and western areas of Paramaribo.

8. **Paramaribo is located on a low-lying coastal plain next to the Suriname River and approximately 10 km from the Atlantic coast.** The city has an area of 70 km² and a population of over 300,000 people. The area is generally flat, ranging from less than 1 m to 2m above sea level. The majority of Greater Paramaribo relies on an extensive network of canals for storm water drainage. These canals drain the central and southern parts of the city toward the Saramacca Canal, while the northern part has a series of canals draining storm water directly to the ocean. As the city has grown over the last century, the role of the Saramacca Canal has become ever more important in the drainage of rain water from an area of approximately 190 km², with approximately 70 km² from the more heavily urbanized city areas and 120 km² from the less densely populated or rural areas. The majority of the network drains under gravity through the interconnected canal system that runs along the side of most roads; however, during a significant rainfall event, this network capacity can be overwhelmed, and flooding will occur with inundation of roads and roadside properties. The relatively poor condition of the general canal network, primary (the Saramacca Canal), secondary, and tertiary level, that drains the city and surrounding area is also considered a major factor in determining the occurrence and severity of flooding, and the system requires maintenance and investment before it becomes inoperative. Solid waste is collected regularly and rarely finds its way into the drainage system. However, wastewater is often discharged directly into the canals. Finally, permeability of the soil is variable, but with extensive clay in the lower elevation areas, infiltration is generally poor and surface water ponding following heavy rainfall is common, made worse due to the lack of any significant gradient.

9. **The results of the Flood Risk Assessment and various field visits and discussions with local experts and the population have shown that flood risk has been increased by several factors.** The most relevant issues are the following:

- (a) Deterioration of critical infrastructure, particularly the sluices and locks on both sides of the Saramacca Canal. These allow drainage of water into the Suriname and Saramacca Rivers twice a day (in low tide condition for about five hours only) but are functioning only at 50 percent of their capacity and in a few years will not be functioning at all.
- (b) Inadequate and poorly maintained drainage system, particularly the Saramacca Canal, which is the primary canal, and the secondary and tertiary canals. These canals are gradually silting up, becoming less efficient, and are therefore prevented from operating as a fully integrated system.
- (c) Expansion of the urban area from its original historic center on relatively elevated land, into low-lying formerly agricultural land throughout the last century (drainage of this land has always been poor but was generally considered acceptable for the intended agricultural purposes).
- (d) Increase of extreme and intense rainfall—the flood hazard mechanism associated with extreme rainfall is principally attributed to the intensity of the rainfall, the largely clay soils, and the lack of gradient.
- (e) Lack of a flood forecasting and warning system compounds the risk of severe flooding in the Greater Paramaribo area.



Relationship to CPF

10. **The proposed project is aligned with the World Bank’s Country Partnership Strategy (CPS) FY2015–2019⁸ with Suriname and will contribute to the twin goals of the World Bank Group.** After a hiatus of nearly 30 years, the GoS and World Bank have established a renewed relationship. Following an Interim Strategy Note in FY2015, the World Bank FY2015–2019 CPS with Suriname aims to promote a more sustainable, inclusive, and diversified growth model by (a) creating a conducive environment for private sector development and (b) supporting better flood risk management to minimize related human, economic, and financial losses and reduce the vulnerability to climate change. The proposed flood risk management project is fully consistent with the current CPS, which identifies the reduction of vulnerability to climate change-related floods as one of its two pillars and the improvement of flood risk management in Paramaribo as the main associated result. The proposed project will help reduce exposure to flood hazard and improve flood risk management interventions, in line with the Drainage Master Plan of the Ministry of Public Works, Transport, and Communication (MoPWTC) and the previous FRA. Flood risk is currently absorbed by the GoS at a great cost. Hence, increasing the country’s resilience to natural hazards is consistent with the World Bank’s twin goals of eradicating extreme poverty and boosting shared prosperity.

C. Proposed Development Objective

11. The Project Development Objective is to reduce flood risk for the people living in the Greater Paramaribo area and improve the operation of the Saramacca Canal System for flood risk management and navigation.

Key Results

12. The project area that will benefit from reduced flood risk or the ‘Greater Paramaribo area’ comprises the Saramacca Canal drainage area, including some areas of the Paramaribo, Wanica, and Saramacca Districts. The expected results of the project are as follows:

- (a) Improved capacity of the Saramacca Canal to discharge water efficiently into the Suriname and Saramacca Rivers; and
- (b) Establishment of a functioning monitoring, forecasting, and operational management system for the overall Saramacca drainage system.

13. The following preliminary indicators are envisaged:

- (a) Number of people benefiting from reduced flood risk for a specific return period;
- (b) Land area with increased drainage capacity for a specific return period;
- (c) Establishment of an operational management system for the overall Saramacca Canal System; and
- (d) Endorsement toward the establishment of a Saramacca Canal System Platform (or similar institution responsible for system sustainability).

⁸ April 27, 2015: World Bank’s Country Partnership Strategy (CPS) FY2015–2019 - Report No: 91238-SR.



D. Concept Description

14. The project aims to finance structural and nonstructural measures to improve the resilience against flooding in the Greater Paramaribo area. The structural measures will improve the discharging capacity of the Saramacca Canal to reduce pluvial flooding and improve navigation between the Suriname and Saramacca Rivers and the industrial zones around Saramacca Canal. The nonstructural measures will strengthen the GoS' capacity to manage and operate the Saramacca Canal System. The project cost is estimated at US\$30 million, divided into four components: Component 1 - Improving the Drainage Infrastructure, Component 2 - Strengthening the Saramacca Canal Water Management System, Component 3 - Providing a Contingent Emergency Response, and Component 4 - Supporting the Project Management and Implementation Support.

Component 1 - Improving the Drainage Infrastructure

15. **Component 1 deals with structural flood management measures.** Structural measures will improve the conveyance of water to the Suriname and Saramacca Rivers from excess rain falling on the city of Paramaribo, to significantly reduce the periods of flooding. In addition, this component will improve the navigation condition. This component will finance two main activities: (a) rehabilitation of the sluices and locks and (b) increase in conveyance through dredging, reprofiling, and clearing and possible selected interventions on the secondary and tertiary canals, as well as the utilization of green areas for flood management.

16. **Rehabilitation of sluices and locks.** The project will finance the rehabilitation of two ship locks, each at the outlets of the Saramacca and Suriname Rivers, as well as the five-door sluice gate at the outlet to the Suriname River and the four-door sluice gate at the outlet to Saramacca River. Currently, the locks and gates are only partially operational, limiting the capacity of managing the water level in the Saramacca Canal. This will be the first activity to be undertaken under Component 1 so that water levels in the canal can be adequately managed while the other work components are carried out. During project preparation, a technical inspection will be undertaken to understand whether there is a need for a complete reconstruction of the locks and gates or whether rehabilitation can be achieved with heavy repairing works. In addition, a detailed model simulation will quantify additional discharge capacity provided by pumps located at the two outlets (although the project will likely not have enough resources to finance the purchase and installation of all the pumps).

17. **Increase conveyance through dredging, reprofiling, and clearing.** The canal will be reprofiled and dredged to remove the earth fill and to eliminate hydraulic restrictions. This will not include widening of the canal beyond the space currently available. This activity will finance the establishment of one or more sediment disposal areas for the management of the dredged material. Non-polluted sediments will be processed for reuse, and polluted sediments will be disposed to a designated location in accordance with environmental safeguards procedures.

18. **Possible interventions on critical areas of the secondary and tertiary drainage systems and utilization of green areas for flood management.** Selected interventions on priority sections of the secondary and tertiary drainage channels feeding the Saramacca Canal will be identified. A pilot intervention at one hotspot in the secondary or tertiary systems is envisioned, which can serve as an example for other interventions in the system. These measures will benefit specific communities affected by more frequent floods. A communication strategy will be developed to ensure that local stakeholders who are users and beneficiaries of the project are informed of project activities and are able to engage fully with the process. In addition to this, opportunities will be investigated to enhance green areas with flood management interventions (for example, establishment of green corridor parks or sustainable urban drainage system measures). Opportunities for enhancing public spaces and parks along the banks of the Saramacca Canal will be investigated during the project preparation.



Component 2 - Strengthening the Saramacca Canal Water Management System

19. **Component 2 deals with nonstructural flood management measures.** This component will finance technical assistance activities to improve the capacity of the GoS to manage the Saramacca Canal's water levels and hydraulic structure operations with the objective of reducing flood risk in the city of Paramaribo, as well as facilitating navigation. This component will finance two main activities: (a) technical assistance and training to improve operation, maintenance, and surveillance of the drainage system and (b) institutional support toward a possible Saramacca Canal System Platform.

20. **Technical assistance and training to improve operation, maintenance, and surveillance of the drainage system.** The project will finance the establishment of a platform for operational management of the Saramacca Canal, including flood forecasting and early warning, and strengthening of the hydromet data management system. This subcomponent will also strengthen and expand the existing hydromet instrumentation within the Saramacca Canal System to provide real-time observations of weather variables and water levels for management purposes. The project will develop a flood forecasting and early warning system for Paramaribo and the surrounding areas, which will be driven by the existing weather radar, coupled with the existing and proposed automated rain gauge network, and new and existing tide and water level gauges (with the addition of an offshore tidal gauge). All available data will be assimilated in a suitable data management platform and used to drive a real-time operational model for the Saramacca Canal. Flood risk maps and other relevant data will also be shared with relevant ministries to inform land-use planning strategies in the Greater Paramaribo area. This platform will be used for managing flood risk and the overall operational management of the Saramacca Canal System.

21. **Institutional support toward a possible Saramacca Canal System Platform.** This subcomponent will finance a feasibility study, including operational management and financial sustainability for a possible Saramacca Canal System Platform. Optimization of the water management in the canal for flood control, irrigation, and vessel transport between the northern districts of Suriname requires cooperation and coordination between several entities—which will be identified during the project but will include the MoPWTC that has responsibility for maintaining the drainage infrastructure; the Ministry of Agriculture, Animal Husbandry, and Fisheries; the National Coordination Center for Disaster Preparedness; and others—and the Paramaribo, Wanica, and Saramacca Districts. The Platform (or similar institution) will be responsible for ensuring the sustainability of the drainage system and the day-to-day operational management of the Saramacca Canal once its legal standing is established.

Component 3 - Providing a Contingent Emergency Response

22. **The project will include a contingent emergency response component to respond rapidly at the Government's request in the event of a natural disaster.** This component would finance the implementation of emergency works, rehabilitation, and associated assessments if needed. In the project Operations Manual, a dedicated chapter would detail guidelines and instructions on how to trigger and use the funds of this component. In addition, a brief Environmental and Social Management Framework will be prepared for the potential types of activities likely to be financed under this component, providing a preliminary evaluation of potential risks and mitigation measures associated with them.

Component 4 - Supporting the Project Management and Implementation Support

23. **This component will support the costs related to the overall project management and implementation support.** This may include support to (a) hire specialized staff for project implementation, as needed by the Project Implementation Unit (PIU); (b) collect socioeconomic data for monitoring and evaluation; (c) finance project reporting and audits; (d) provide environmental and social safeguard supervision; (e) provide trainings in areas such as procurement, safeguards,



monitoring and evaluation, technical, and financial management; (f) develop a communications strategy for engaging with local communities and stakeholders; and (g) provide any additional operating costs for the PIU.

SAFEGUARDS

A. Project location and salient physical characteristics relevant to the safeguard analysis (if known)

The project will involve the 25 km long Saramacca Canal and drainage area in the Paramaribo, Wanica, and Saramacca Districts of Suriname, including urban and rural zones. The urban parcels along the canal are of medium to large size and the main constructions are located far from the canal. The project works include rehabilitation of the canal, including dredging and sediment removal, handling, transport, and deposition. Sediment quantity and quality, including possible pollutants, need to be established during the Environmental and Social Impact Assessment (ESIA). There are a couple of shrines built in land parcels along the canal, which will require an appropriate communication approach if the rehabilitation works are carried out nearby.

B. Borrower’s Institutional Capacity for Safeguard Policies

There is in-country capacity and experienced personnel for the implementation of the environmental assessments processes, in particular within the MoPWTC and the National Institute for Environment and Development (NIMOS). Nevertheless, there is no experience in the implementation of the World Bank environmental safeguards. Similarly, there is in-country capacity and experience in social safeguards, gained through the recent implementation of a major road project financed by the Inter-American Development Bank (IADB) that required population resettlement, but there is no experience in the implementation of World Bank social safeguards. The MoPWTC is dedicating its own staff for preparing the safeguards instruments and the World Bank has already provided initial training; additional capacity will be built through dedicated training on all the safeguards triggered.

C. Environmental and Social Safeguards Specialists on the Team

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Paula Dias Pini, Social Safeguards Specialist
Robert H. Montgomery, Environmental Safeguards Specialist
Francisco Xavier Geraldés Siragusa, Environmental Safeguards Specialist

D. Policies that might apply

Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/BP 4.01	Yes	The project is a Category B - Partial Assessment, assigned to projects that are likely to have localized, limited, and reversible environmental impacts. Overall the project will have largely positive social and environmental (health and safety) impacts through its role in reducing vulnerability to flooding and improved navigational capacities to enhance commercial trade.



Physical interventions resulting from the implementation of the project activities could have low to moderate negative environmental impacts. The most significant impacts will result from the construction and rehabilitation works (backfilling, excavation, earth-moving, dredging). Impacts to the biophysical and socioeconomic environments are expected to be limited in nature. Nevertheless, care will be taken to schedule civil works to avoid key breeding and nesting periods. All construction sites and embankments will be rehabilitated and replanted with native shrubs and trees after works are completed. Given that the project may affect roads and bridges, road safety measures and traffic diversion plans will be adopted, and any construction waste will be disposed of appropriately. The World Bank Group Environmental Health and Safety Guidelines on Ports, Harbors, and Terminals will be referenced in the Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP). The Dredging Management Plan will be prepared as an environmental managerial instrument during the preparation of the technical designs for the dredging component. This instrument will become part of the ESMP for the project upon its completion. As the specific nature and location of all project components are known and well defined, an ESIA and ESMP have been adopted as the instruments for this project.

Performance Standards for Private Sector Activities OP/BP 4.03

No

Natural Habitats OP/BP 4.04

Yes

Appropriate mitigation measures will be followed to limit the impact on flora and local terrestrial and aquatic faunal species (other than fish) reported to be present in the Saramacca Canal. Nevertheless, given the vast uninhabited areas in and around the canal, the localized and short-term works proposed for the project will not result in significant degradation or conversion of natural habitats since the works are limited to upgrading and rehabilitation of existing structures. Care will be taken to schedule civil works to avoid key breeding and nesting periods. All construction sites and embankments will be rehabilitated and re-vegetated with native shrubs and trees after works are completed.



Forests OP/BP 4.36	No	This policy is not triggered as forest exploitation activities are not considered for this project.
Pest Management OP 4.09	No	This project will not finance any pesticides nor will it attempt to control pests or agricultural pests.
Physical Cultural Resources OP/BP 4.11	Yes	There is one small religious shrine built in a land parcel along the Saramacca Canal (not in the canal), which will require an appropriate communication approach in case the rehabilitation works are carried out nearby.
Indigenous Peoples OP/BP 4.10	TBD	The social characterization included in the EIA will verify the presence of the indigenous groups in the vicinity of the canal to be rehabilitated by the project. If their presence is confirmed, the ESIA will include analysis of the legal framework and their social, socioeconomic, and cultural circumstance; assess potential opportunities to benefit from the project activities; and assess potential impacts and risks from project activities and inform whether an Indigenous Peoples Policy Framework (IPPF) should be prepared. If the policy is triggered, the IPPF will be prepared by appraisal.
Involuntary Resettlement OP/BP 4.12	Yes	<p>The canal rehabilitation works may affect some small structures located close to the canal borders, such as recreational and/or commercial boat docks, patios, and barbecues. Impacts to large buildings such as residences and industries are not anticipated given the large size of the land plots, low density, and reasonably well-planned land use patterns in place. Land acquisition is not anticipated nor is disruption of livelihoods or involuntary population resettlement. A Resettlement Policy Framework (RPF) will be prepared by appraisal since the zone of impact is known but precise siting alignments cannot be determined during project preparation. This is because the technical studies (feasibility, preliminary, detailed designs) will be prepared during project implementation. Based on the visual perception provided by field visits, it can be inferred that some existent structures close to the canal might be affected. However, no conclusive decision can be made in the absence of technical designs. The Saramacca canal rehabilitation works might affect small structures located close to the canal borders, such as fences, patios, boat docks, barbecues.</p> <p>The large size of the land plots and reasonably well-planned land use patterns indicate that no</p>



constructions — such as residences and industries — built on the borders of the canal, or encroaching on the canal, were flagged.

Safety of Dams OP/BP 4.37	No	There are no dams in the Saramacca Canal and the project will not finance the construction of any dam.
Projects on International Waterways OP/BP 7.50	No	The policy is not triggered as there are no international waterways under the project.
Projects in Disputed Areas OP/BP 7.60	No	The policy is not triggered as there are no disputed territories under the project.

E. Safeguard Preparation Plan

Tentative target date for preparing the Appraisal Stage PID/ISDS

Jul 02, 2018

Time frame for launching and completing the safeguard-related studies that may be needed. The specific studies and their timing should be specified in the Appraisal Stage PID/ISDS

Four safeguards instruments may be needed for the project preparation: (a) an ESIA, (b) an ESMP, (c) an RPF, and (d) a brief Environmental and Social Management Framework (ESMF) for the emergency component (Component 3). For the ESIA, the first activity will be sediment sampling and testing (mechanical and chemical characterization), as well as a bathymetrical update of the canal bottom profile. This characterization and profile will be used for the design and environmental assessment and will be completed in the first two months of launching the ESIA-ESMP (indicatively by May 2018). With this information, the ESIA-ESMP will be drafted, consulted upon, and completed by August 2018. In parallel, the RPF will also be prepared and completed by August 2018. Public consultation for both instruments will be undertaken, indicatively by the end of July 2018. In addition, a brief ESMF will be prepared for the potential types of activities likely to be financed under the emergency component (Component 3).

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