

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK



**SURINAME
SUSTAINABLE AGRICULTURAL PRODUCTIVITY PROGRAM
SU-L1052**

**ENVIRONMENTAL AND SOCIAL MANAGEMENT REPORT
(ESMR)
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ENVIRONMENTAL AND SOCIAL MANAGEMENT REPORT (ESMR)	
Operation Name:	Sustainable Agricultural Productivity Program
Operation Number:	SU-L1052
1. Operation Details	
IDB Sector	Agriculture and Rural Development (CSD/RND): Irrigation and Drainage
Type of Operation	Loan Operation (ESP)
Environmental and Social Impact Categorization	B
Disaster Risk Rating	Moderate
Borrower	Republic of Suriname
Executing Agency	Ministry of Agriculture Animal Husbandry & Fisheries (LVV)
IDB Loan US\$ (and total project cost)	US\$30 million
Applicable Policies/Directives	OP-102; OP-703 (B.1, B.2, B.3, B.4, B.5, B.6, B.7, B.9, B.10, B.11, B.17); OP-704; OP-761
2. Executive Summary	
<p>Given the nature of the activities and investments, it is anticipated that the environmental and social impacts and risks are likely to be mostly local and short term, for which effective mitigation measures are readily available. Therefore, a Category “B” classification has been assigned to the Program in accordance with the IDBs Environment and Safeguards Compliance Policy (OP-703).</p> <p>An Environmental and Social Analysis (ESA) was prepared and disclosed in full and summary format in English on the Banks website in March 2018, and in summary in Dutch on the Executing Agency’s social media page. An inclusive consultation event was held in April 2018, presenting the Programs environmental and social impacts, receiving community comments, and providing responses. The consultation report was disclosed on June 5, 2018, and an updated version was disclosed on August 16, 2018.</p> <p>According to the ESA and the Banks due diligence, the Program will be largely positive in terms of its contribution to improving the efficiency of water resource use, as well as improving the production of rice due to improved irrigation and drainage systems. In the case of the Nanni Swamp, which is a critical natural habitat, the proposed infrastructure will remove the flow of pumped water from the Corantijn canal into the Swamp during the dry season. Further, an additional objective of the interventions is to eliminate removal of water from the Swamp for irrigation needs during the dry season. The impacts of these interventions are conceptually anticipated to be positive for the Swamp as it will return it to its historical natural setting. However, the lack of data prevents a precise evaluation of this impact, or conversely whether there may be negative impacts associated with these hydrological changes on the ecological functioning of the Swamp (i.e. impacts on critical species or ecosystem services). Additionally there may be (i) indirect long term negative impacts related to water quality as a result of increased pesticide use, the scale of which is not well understood due to a lack of data; (ii) temporary construction impacts (waste, noise, occupational health and safety etc.), minimal to moderate in scale; (iii) gender exclusion risks, and (iii) social risk related to lack of skillful</p>	

communication about the management of water between the farmers, Water Boards and agencies involved in water management and rice farming. Although the Program is likely to have a positive impact for small and medium farmers, enabling them to increase yields through improved management of the water and irrigation systems, if strong and constant communication is not established about the schedules and decisions about the use and management of water, there could be misunderstandings and some level of social discontent. Additionally, the executing agency lacks overall capacity with respect to environmental, social, health and safety management and mitigation.

To mitigate against these impacts, and the lack of data, the following studies and mitigation measures will be implemented: (i) preparation of an Ecological assessment of the Nanni Swamp (prior to the tendering of Maratakka Spillway and Nanni Weir); (ii) project specific Environmental and Social Impact Assessment (ESIA) including Environmental and Social Management Plan (ESMP) for the Maratakka Spillway, and Nanni Weir, or other new construction subsequently identified for financing under Component 1; (iii) a pesticide survey and water/sediment quality study; (iv) a stakeholder engagement and communication plan for the Program, (v) a grievance redress mechanism for the Program; and (vi) a Gender Action Plan to avoid exclusion of women and to mainstream gender issues in the Program.

3. Operation Description

The operation's objective is to increase agricultural productivity (for rice production) in Suriname through investments in infrastructure and management of Irrigation and Drainage (I&D) systems, and by improving the quality of available agriculture statistics. The expected results are: (i) increased agricultural productivity in I&D areas; (ii) improved water management within I&D areas; (iii) operating water boards contributing to operation and maintenance; and (iv) improved statistics and information systems.

The project has two components (i) irrigation and drainage (US\$26.5 million), and (ii) agricultural statistics and information (US\$1.7 million). The majority of investment in component 1 will be focused on the rehabilitation and modernization of I&D infrastructure in the Nickerie District in North West Suriname (see Appendices 1 and 2 for a map identifying the region). The area is characterized as a low lying coastal plain, dominated by freshwater swamps (wetlands), which over the last several decades has seen increased coastal and river flooding due to changes in precipitation patterns, as well as saltwater intrusion in agricultural lands. At the same time the area is experiencing longer dry seasons. The Nanni Swamp, one of the largest in the country, is located in Nickerie District and is the source of irrigation and water supply for the area (together with pumped water from the Corantijn River). Rice production accounts for 80-85% of Suriname's harvested cropland, most of which is concentrated in the Nickerie District, particularly in the area of Nieuw Nickerie (the third largest city in Suriname) and characterized by small, medium and large farms with considerable mechanization. Rice production is heavily dependent on irrigation, the main source of which is the Nanni Swamp and rivers such as the Corantijn River (see Appendix 3).

Historically, rice production was governed through a local structure of Water Boards whereby responsibility for the management of water systems was delegated to stakeholders, however since the 1950s this structure has deteriorated, and operation and maintenance has been taken over by various government agencies. In 2005, the Water Board law was replaced and subsequently there has been a focus on re-establishing Water Boards for rice production in Nickerie District.

The 2009 Master Plan for Supply and Distribution of Irrigation Water for Agricultural Production identified issues related to (i) deteriorating infrastructure and increasing water wastage which have resulted in a gradual decrease in the rice production area in the Nickerie District, (ii) water shortages, and (iii) poor governance structures. It established a triple improvement strategy to alleviate water shortages and allow expansion of the cropping area (into previously converted agricultural lands currently not in use) focused on: improving efficiency, eliminating water shortages, and improving organization and management. Based on this master plan, a pre-feasibility assessment was undertaken on the infrastructural measures required, along with recommendations for on-farm or in-polder measures, as well as legal and institutional changes that will support the measures.

Based on the master planning process, and on the resulting rehabilitation plans for polders, a list of projects has been developed and a process of prioritization undertaken. It is expected that there will be approximately 15 rehabilitation projects to be financed by IDB. These will be small scale works to repair or replace inlet/sluice gates, roofing, retaining walls, installing lifting devices, and deepening outlets, of a number of key structures. Additionally, the IDB financing will include the construction of 3 main system new structures agreed during the analysis mission, are planned:

- (i) The Nanni Weir (including related earthworks), which will allow for the inflow of irrigation water from the Nanni Swamp as well as the outflow of excess water of the swamp into the Nanni Creek through the existing Nanni spillway, which requires rehabilitation;
- (ii) A new spillway from the Suriname canal into the Maratakka River which flows into the Nickerie River. This will serve the objective of evacuating excess flood waters from the Nanni swamp in the event of heavy rains and allow some additional inflow from the eastern part of the Nanni Swamp into the Nickerie in dry seasons;
- (iii) Diversion structure: Stondansi Canal to Lateral Canal 1 (regulator structure to connect Stondansi with Lateral);

Additional works include Stondansi Canal (widening and raising embankment and new intake of the Stondansi Canal) and widening and raising dam embankment level 7 km long of Lateral Canal 1.

A feasibility assessment for the Nanni Weir and Maratakka Spillway has been commissioned, but at the time of writing this had not been completed.

All projects to be financed by the Program are located exclusively in the Nickerie District of Suriname. See Appendix 4.

4. Key Impacts, Risks, and Mitigation Measures

Assessment Requirements

OP-703 (Environment and Safeguards Compliance Policy): B.3 (Screening and Classification), B.4 (Other Risk Factors), B.5 (Environmental Assessment and Plans Requirements), and Assessment requirements of OP-710 (Involuntary Resettlement Policy), OP-765 (Indigenous Peoples Policy), OP-761 (Gender Equality in Development Policy), and OP-704 (Disaster Risk Management Policy) as applicable

This Program has been assigned the classification of Category “B” in accordance with the IDBs Environment and Safeguards Compliance Policy (OP-703), Directive B.3. Given the nature and scale of the Program, an Environmental and Social Analysis (ESA) was undertaken at the level of the Program to meet with Directive B.5. It should be noted that Suriname has no comprehensive

and overarching law for environmental protection and management and the institutional framework for environmental management is not yet well defined. No environmental and social impact assessment was required by Suriname authorities, nor are there requirements for environmental permits for the Program.

The ESA for the Program was prepared to meet with IDB requirements on behalf of the Borrower. The ESA provides a summary of relevant institutional and legal framework for environmental and social management in Suriname, as well as discussion on the international standards for environmentally sustainable irrigated rice production. It establishes the socio-economic, environmental, and agricultural setting in the project area and identifies the positive and adverse environmental and social impacts, with an ESMP (including responsibility for implementation and estimated costs) at the Program level (see below for details of impacts and risks and mitigation measures). A climate change and disaster risk assessment was undertaken as part of the ESA (see below). The ESA met with the Banks requirements for Environmental Assessment (Directive B.5 of the Environment and Safeguards Compliance Policy).

The ESA reaffirms that the project is not in, nor does it impact indigenous territories or peoples, or other vulnerable groups. A detailed socio-cultural analysis was not deemed necessary. No resettlement is anticipated, nor are there any anticipated loss of livelihoods expected, and as such no resettlement or livelihoods plans were deemed necessary. Adverse gender related impacts are not anticipated, however during preparation of the project a gender consultant was hired to identify opportunities to mainstream women into the Program, and to avoid or decrease their exclusion. The assessment was ongoing at the time of writing. This assessment resulted in a Gender Action Plan with specific recommendations for promoting women's participation in the Water Boards as they are strengthened and developed through this Program, since the information available shows women do not participate in these decision-making spaces currently, and therefore decisions about water resources that greatly affect both women and men are being made without the involvement of women. The measures of the Gender Action Plan are financed under Component 1 of this Program.

Other project risks (Directive B4) identified by the ESA and during the Bank's due diligence include the Borrowers lack of capacity with respect to (i) environmental and occupational health and safety management, particularly during construction supervision, (ii) understanding and managing the impacts of pesticides on the receiving environment, and (iii) stakeholder engagement and communications.

A number of individual works under the Program (specifically the Maratakka Spillway, the Nanni Weir), will also require project-specific Environmental and Social Impact Assessments (EIAS), Environmental and Social Management Plans (ESMP) and project-specific consultation, which will be developed once final designs are available. Non-objection from the Bank to these studies will be a condition prior to the tendering of the respective works.

Consultation

OP-703 (Environment and Safeguards Compliance Policy): B.6 (Consultation); and Consultation requirements of OP-710 (Involuntary Resettlement Policy), OP-765 (Indigenous Peoples Policy), OP-761 (Gender Equality in Development Policy), and OP-704 (Disaster Risk Management Policy) as applicable.

The ESA included a chapter on Public Consultation and the Information Process which identified project beneficiaries, as well as other stakeholders possibly influencing or being influenced by the Project. It outlined a series of informal consultations that had taken place to date to discuss the project with various stakeholders and established a plan to distribute the ESA (in English in

full) and a Dutch version of the summary in Suriname. The Dutch summary was published on the Facebook page ahead of the physical public consultation event which took place on Thursday, April 5, 2018. Invitations were sent prior to the event, and an email reminder was sent the day before the event. The consultation included women and non-rice farmers, both of which hold relatively less power in Nickerie, and therefore is considered to be meaningful, assuming continued engagement with the participants through the Gender Action Plan and the Communications and Stakeholder Engagement Plan (included in Component 1).

The event was held in the offices of the Overliggend Waterschap MCP (Overlying Water Board of the Multi-Purpose Corantijn Project, or OW-MCP), the principal Water Board overseeing the functioning of the Water Boards in Nickerie, at Soekramsinghstraat 26, Nw Nickerie, on Thursday 5th April 2018 and was attended by around 40 participants including representatives from the main stakeholder groups, which included both rice farmers and non-rice farmers: Ministry of Agriculture, Ministry of Public Workers, OW-MCP, "Motherheart" (NGO that works with women horticulturalists), Longmay/Paradise Water Board, Van Drimmelpolder Water Board, Clarapolder Water Board, Corantijnpolder Water Board, Suriname Paddie Association, Federatie van Agrarische Industrie (banana grower), Vereniging Padie Producente (Paddy Producer Association), a student, Water Platform, Nickerie, and the Horticultural Cooperative. The most significant issues arising from the consultation, and the responses provided, include:

- The concern and need to understand whether the project would have a negative impact on the ecosystem of Nanni Swamp, beyond what was described in the Dutch summary of the ESA. The response provided was that it is important to understand the ecological impacts and that the full ESA contains more information about this. After the consultation event, the decision was made that Component 1 of the Operation will finance an ecological study of Nanni Swamp, and the results of this study will be shared with the stakeholders of the consultation as part of the Stakeholder Engagement and Communications Plan, also included in Component 1.
- Women horticulture growers (the wives of rice farmers) are concerned that the emphasis of the project on rice production could negatively impact their access to water to grow vegetables. The response was that the ESA identified this risk and from LVV that it is understood that water needs of fruits and vegetables are not the same as for rice, and that the Program ESMP states that these farmers' needs must be considered in developing the future water calendar and Stakeholder Engagement and Communications Plan and Gender Action Plan will be developed to ensure women's and vegetable grower's participation in Water Boards.
- Questions about the proposed fee for farmers to pay, including whether it would guarantee their access to water when they need it, what it would cover, and whether the fee would be for all farmers or just rice farmers. The responses provided were that the fee would be to cover maintenance and that one of the project's objectives is to improve water management, although it isn't a guarantee of access to water whenever it is needed, and that the participation in Water Boards and the fee should be for all farmers and not just rice farmers.
- Questions about contractors, in particular how the project will ensure that the contractors coordinate their construction work with farmers to avoid causing disruption in their crop growing and harvesting, and how to ensure the contractors are qualified. The responses provided were that the issue of coordinating timing of the construction works with farmers was an excellent suggestion and will be included in the contracts as a requirement. Furthermore, it was outlined that the IDB has policies governing the

selection of contractors to ensure they are qualified and competitive for the work they are being hired to do.

Detailed minutes were taken, and a consultation report was prepared. This was disclosed on June 5, 2018, and later an updated version was disclosed on the IDB's website August 16, 2018, both, prior to OPC.

The consultation included participation of 4 Water Boards, at least 1 student, the Horticulture Cooperative and a women's organization of horticulture women farmers, a banana grower, and government stakeholders. The presence and participation of the women's horticulture organization, called Mother's Heart, is an excellent indicator of gender inclusiveness, given that women horticulture farmers are not presently part of Water Boards that make decisions about the use of water in Nickerie, and which are the most important decision-making mechanism and form of government locally. The Gender Action Plan which resulted from the Gender Analysis includes specific actions that can be taken to make sure that women are included in Water Boards during the Programs execution and will be financed under Component 1 of the Program. The Gender Action Plan will be implemented throughout the Program execution and will begin implementation at the latest before the final designs of the projects are available. The presence and participation of this organization and of the Horticulture Cooperative are also indicative of the inclusion of non-rice farmers, who are relatively less powerful and less represented than rice farmers in government and decision-making in Nickerie according to the ESA. This demonstrates that less powerful actors were included and heard in the consultation.

The consultation was held in English, with translation to Dutch of the presentation, and the presence of Mr. van der Kooye from LVV, to respond on behalf of the authorities and also to translate from Dutch to English so that participants could speak in Dutch. The fact that there was a high level of participation during the meeting is an indicator that the consultation was socio-culturally appropriate, and the translation/interpretation to allow them to speak in Dutch certainly was a critical and valuable service to ensure inclusiveness to this socio-culturally unique population, even though they are not indigenous.

During the consultation event, participants were informed that Mr. Van der Kooye will be their contact for any further questions or concerns they have moving forward. Although there is low capacity on the part of the LVV to carry on strong communications with the stakeholders during the execution of the operation, this will be addressed through the inclusion of a Stakeholder Engagement and Communications Plan in Component 1 of the Operation, as well as through the hiring of a consultant to support institutional capacity of the LVV.

Information Disclosure

OP-703 (Environment and Safeguards Compliance Policy): B.5 (Environmental Assessment and Plan Requirements) and Information Disclosure requirements of OP-710 (Involuntary Resettlement Policy), OP-765 (Indigenous Peoples Policy), OP-761 (Gender Equality in Development Policy), and OP-704 (Disaster Risk Management Policy) as applicable; OP-102 (Access to Information Policy)

A fit for disclosure Program ESA, including the Program ESMP was disclosed in [full](#) and [summary](#) format, in English, on the Bank's website on March 19th, 2018 ahead of the Analysis Mission (April 9th, 2018). The summary was translated into Dutch and made available on the LVV's social media page (on March 30th, 2018) and distributed ahead of the Public Consultation event on April 5th, 2018.

Environmental and Social Impacts and Risks and Mitigation Measures

OP-703 (Environment and Safeguards Compliance Policy): B5 (Environmental Assessment Requirements), B8 (Transboundary Impacts), B9 (Natural Habitats and Cultural Sites), B10 (Hazardous Materials), B11 (Pollution Prevention and Abatement), and B12 (Projects Under Construction)

OP-710 (Involuntary Resettlement Policy)

OP-765 (Indigenous Peoples Policy)

OP-704 (Disaster Risk Management Policy)

OP-761 (Gender Equality in Development Policy)

According to the ESA and the Bank's due diligence, the environmental and social impacts of the Program will be largely positive in terms of its contribution to improving the efficiency of water resource use, as well as improving the production of rice due to improved irrigation and drainage systems. With respect to the negative impacts, it was found that the Program is likely to cause as follows:

Impacts or risks to fragile of protected ecosystems: While the overall impact of the Program is expected to result in significant reductions in water waste and water loss and ensure an improved and more efficient water distribution system, and there is an assumption that there should be no net increase in irrigation withdrawals, there is a lack of data to confirm the assumption. Individual works (specifically the Maratakka Spillway (new construction), the and Nanni Weir (new construction) will require project specific environmental assessments (EIAS) taking into consideration the final designs, including impacts on fragile and/or protected ecosystems in Nickerie. There is insufficient hydrological data and no ongoing hydrological monitoring to predict how the swamp hydrology or that of its tributaries will be affected, if at all by the Program.

During preparation, the Bank began a water resource analysis and preliminary water balance study. This study is assessing the water resources for the Nickerie Irrigation and Drainage System and its sustainability under existing proposals and plans for irrigation agriculture, taking into consideration the multiple uses for water and potential impacts of climate change. The stand-alone study is expected to be completed in August 2018. This exercise will also help to identify the critical data gaps for water resources management and hence provide specific recommendations for the location and technical characteristics of new equipment for hydro-met monitoring. This monitoring will include both water quantity and quality for the main sources of water used by the system (Nickerie River, Nanni Swamp and Main Channel), which will also improve the monitoring of the hydro-ecological equilibrium of the Nanni Swamp as a critical water source for the system, in order to feed an adaptive management of the irrigation activities supported by the project. The ESA also underscored the importance of implementing permanent water level monitoring.

The Nanni Swamp is one of four major fresh-water wetlands in Suriname. Its size has been reported as 107,000 ha. The Nanni Swamp and Nanni Creek have been significantly altered over decades to provide for irrigation. The creek was dammed at about 6 km from its mouth in 1926 to direct water through the Boonacker Canal. In the early 1940s the Nanni dam was built to direct irrigation water into the Van Wouw Canal. To meet expansion of the polders, the Nanni dam was improved in 1965 and the 11 km long Lekbeteugelingsdam was built to prevent drainage into the lower Nanni Creek. The Nanni swamp was then dammed between 1971 and 1972 with an earthen dike running from east to west that is some 33 kilometers long. The intent was to create a reservoir for dry season gravity flow into the irrigation systems and to prevent the swamp from discharging into the Nickerie River and instead to be directed to the Nanni water distribution station. Excavation of material to build the dam formed a depression on the

upstream side, known as the Suriname Canal. The construction of the dam reportedly caused the swamp to be 20 cm higher over 190 km² during high water seasons than its previous normal maximum water levels and reportedly damaged over 70 km² of swamp forest. Some of Nanni Creek, the Nickerie River and possibly part of Maratakka River have been deepened, channelized and constrained by levees over many years.

The Nanni Swamp has been proposed as a national protected area (Nanni Nature Reserve) and is an Important Bird Area (IBA). As such considered “critical natural habitat” according to Directive B.9 of the Bank’s Environment and Safeguards Compliance Policy (see Appendix 3).

The proposed rehabilitation projects for the six water boards as well as the proposed projects in the main irrigation and drainage system will result in significant reductions in water waste and water loss. These reductions, coupled with an improved and more efficient irrigation water distribution system is expected to supply the irrigation water necessary, without withdrawing any additional water from Nanni Swamp or its tributaries. Therefore, there should be no net increase in irrigation withdrawals either from the swamp or from the Corantijn River. Further, an additional objective of the interventions is to eliminate removal of water from the Swamp for irrigation needs during the dry season. The impacts of these interventions are expected to be positive for the Swamp as it will return it to a more natural setting. However, the lack of data prevents a more precise evaluation of this impact or conversely whether there may be negative impacts associated with these hydrological changes on the ecological functioning of the Swamp, particularly during the dry season (i.e. impacts on critical species or ecosystem services). The ESA in assessing these issues, concludes that there are no expected adverse impacts to Nanni Swamp ecosystems, as they are already highly disturbed by historical activities and water levels in the swamp are not likely to be significantly changed by implementing the Project. That said it also establishes that there is insufficient information to assess the potential impacts to fish, wildlife, or vegetation, or to confirm that no negative impacts would result from the Program, particularly if there is future expansion of polders beyond what is expected due to this Project. The ESA therefore recommends a more in-depth ecological assessment to inform of any negative impacts relative to the ongoing development of the area for irrigation, and to create a baseline that will inform monitoring measures. The generation of such data requires a larger time frame (to enable wet and dry season sampling, and analysis in coordination with the final design plans for the proposed works). However, given the historical and significant alteration of the swamp for irrigation, and taking into consideration the nature of the works to be undertaken (for the main part small rehabilitation works of existing irrigation infrastructure, as well as limited new construction (also small in scale), the conclusion of the Bank’s analysis is that significant impacts are not expected. The stand-alone water balance study, which will be completed in 2018 may also provide additional information and data.

To better inform the rehabilitation and new irrigation infrastructure as well as future developments or expansions to the polders, the Borrower will undertake an Ecological assessment of the Nanni Swamp prior to the tendering of the individual infrastructure works (specifically the Maratakka Spillway and Nanni Weir), the results of which will inform the mitigation measures for the works themselves. This condition enables the Executing Agency and the Bank to make adjustments to the works (as these will not commence until the study is complete) as needed based on the outcomes of the study. This study has been included into Component 1 of the Loan, reflecting the interests in ensuring ongoing analysis and monitoring of the ecological conditions of the Swamp, but also reflecting the timing requirements for such a study (which involves both wet and dry season sampling and analysis over a significant expanse of the Swamp). The study will require specialized consulting support, in particular a biologist or ecologist.

Additionally, prior to the tendering of each individual works, the Borrower will be expected to prepare and submit to IDB for non-objection a project specific EIAS and/or ESMP for the Maratakka Spillway, and Nanni Weir, or other new construction subsequently identified for financing under Component 1. The costs for these studies has been incorporated into the budget for design and supervision in Component 1. All other works will be expected to apply Best Management Practices outlines in the Environmental and Social Analysis for the Program.

Indirect impacts related to water quality as a result of pesticide use: The Program will finance training to farmers in sustainable use of pesticides and fertilizers, aiming at reducing their use. The activity is in component I. While the Program's irrigation and drainage improvements are not expected to increase pesticide usage directly, there may be a corresponding increase in the amount of land put into rice production (previously converted agricultural land currently not in use) in the medium to long term. It is probable that there will be a corresponding increase in the use of pesticides and chemical fertilizers by farmers in the long term, in keeping with their current practices. The impacts of pesticides and fertilizers (current usage) can include impacts on the receiving environment, to human health of workers, and local residents. However, there is no baseline data related to which pesticides are used, how these are used, or the nature and scale of impacts. **To mitigate the potential longer term indirect impacts, in Year 1 of the Program execution, the Borrower undertake a water and sediment quality study of the discharge canals and other locations in the polders to better evaluate the impacts of pesticide use throughout the rice growing area, and to determine the actions that must be taken during the lifetime of the Program.** This study has been included into Component 1. This will require additional consulting resources.

Temporary construction impacts: During construction it is expected that there will be other minimal to moderate, temporary environmental, social, health and safety risks and impacts associated with the individual construction and rehabilitation works including: (i) temporary traffic disruption; (ii) dust and minimal air emissions during construction and excavation activities; (iii) impacts to local water bodies and land, as a result of waste and hazardous materials if not adequately managed; (iv) temporary noise impacts as a result of construction and improvement activities; (v) temporary reduced air quality; (vi) occupational health and safety impacts; and (viii) community health and safety impacts. These risks can be managed by implementing standard environmental management construction practices. **Implementation of Construction ESMPs based on the Program ESMP and based on the specific ESIA undertaken, will be a condition of execution. The Project Executing Unit (PEU) will include an Environmental, Health and Safety Officer.**

Social impacts: The Program is expected to have an overall positive impact for small and medium farmers, enabling them to increase yields through a reduction of the problems faced due to a lack of water, or excess water. Historically, farmers have felt misinformed about the overall management of the irrigation systems. It will be important to strengthen communications between LVV, OW-MCP, Water Boards and farmers in order to make sure that everyone is informed of the water calendar and that there is coordination such that water isn't wasted and everyone has fair access to it to the greatest extent possible, avoiding certain actors controlling the water without regard to how it affects other farmers, including women horticulture farmers. **To mitigate these risks, the Borrower will be required to implement a Stakeholder Engagement and Communications Plan and Gender Action Plan. The ESMPs for construction of individual works will include grievance redress mechanisms.** In addition, a consultant will be hired to implement the Stakeholder Engagement and Communications Plan and the Gender Action Plan, both of which will have begun

implementation before the final designs of the projects financed by the Program are available and continue implementation throughout the execution of the Program. The consultant will be in contact with the farmers and in a position to detect additional negative social impacts. While the ESA did not find that the fee would be a hardship since the amount of the fee was shared openly with the farmers and participants of the public consultation, and no one raised a concern as to the amount, the Program will offer alternatives to farmers (including low income farmers) to pay to the Water Boards the fee to contribute to cover O&M through other in-kind contributions.

Noninvestment Lending and Flexible Lending Instruments

OP-703 (Environment and Safeguards Compliance Policy): B.13 (Noninvestment Lending and Flexible Lending Instruments)

N/A.

Livelihoods and Resettlement

OP-710 (Involuntary Resettlement Policy)

The ESA and the Bank's due diligence confirmed that no resettlement is anticipated, nor are there any anticipated loss of livelihoods expected. Notwithstanding this, it will be critical to monitor any changes in the irrigation system and the impact on users during implementation to ensure that the benefits continue to be felt among all farmers in the system. **Prior to the Bank's OPC, the Grievance Redress Mechanism in the ESA will be updated. Its implementation will be a condition of First Disbursement.**

Indigenous Peoples

OP-765 (Indigenous Peoples Policy)

The ESA and the Bank's due diligence confirmed that the Program will not be implemented in Indigenous Peoples Lands or Territories. According to the socio-economic analysis of the Nickerie District in the ESA, most of the population and the farmers are of Hindustani origin representing about 60% of the total population, and there are reportedly no members of vulnerable populations significantly participating in rice production, although the agricultural census of 2008 (the most recent) did not track ethnicity of farmers, aside from questions about nationality for contracted farmworkers (98% of whom were Surinamese and a small percentage were reported as Guyanese and Haitian). According to the ESA (based on information obtained in the field from local informants familiar with the culture and the region) the Hindustani rice farmers represent a more powerful bloc of the population whereas the non-rice farmers, and Javanese minority, are relatively less powerful and more vulnerable to be left out of decision-making processes. Nevertheless, there is no evidence that any of these populations are indigenous. The indigenous villages of Apoera, Section and Washabo are located on the Corantijn River, about 150 kilometers from the coast, and well outside the impact area of this Project.

Gender Equality

OP-761 (Gender Equality in Development Policy)

The Environmental and Social Analysis established in its gender analysis that the current situation without the Program is that women do not participate in Water Boards that the Program aims to strengthen. Therefore, the state of gender exclusion is the context in which the Program will take place and not due to the Program itself. Nevertheless, there is a risk that if the Program strengthens Water Boards but does nothing to promote women's participation, that gender inequality could increase as women are left out of important decisions about the management of water. Therefore, during preparation of the project a gender consultant was hired to prepare a Gender Analysis that was carried out and identified opportunities to

mainstream women into the Program and avoid inadvertently increasing gender inequality through strengthening Water Boards, as important and critical decision-making bodies locally about water management and therefore holding a great deal of power. Women horticulture farmers, who are for the most part the wives of the rice-farmers who are part of the Water Boards, have different needs for the water in order to produce their vegetables, and are vulnerable because they are not part of decision-making currently. To ensure that women are part of decision-making Water Boards that will be strengthened as part of the Program, the Gender Analysis presented a Gender Action Plan with specific actions to include women in Water Boards. The implementation of this Gender Action Plan will be included in the project activities being financed to strengthen Water Boards, will begin implementation before the final designs of the projects to be financed by the Program are available and will continue to be implemented throughout the execution of the Program. **To ensure that the Program ensures ongoing gender equity, the Borrower will be required to implement a Gender Action Plan as part of Component 1.**

Disaster Risk Management

OP-704 (Disaster Risk Management Policy)

The Program has been assigned a moderate (type 1) disaster risk rating, due to the risks posed by tropical storms, inland flooding and droughts, all of which are being exacerbated by climate change. The project, however, is not expected to increase these risks (type 2), rather it seeks to help adapt to the impacts that arise as a result of natural disasters and climate change. A climate change and disaster risk assessment was undertaken as part of the ESA (see below). It concludes that overall the project will improve climate resilience in the region, and for agricultural production.

To protect against natural disasters during construction and operation, prior to the start of construction for individual works, the Borrower will be required to ensure that an Emergency Management and Response Plan for all project phases and for each location is properly implemented.

Supervision

OP-703 (Environment and Safeguards Compliance Policy): B.5 (Environmental Assessment and Plans Requirements) and B.7 (Supervision and Compliance)

OP-710 (Involuntary Resettlement Policy)

OP-765 (Indigenous Peoples Policy)

OP-704 (Disaster Risk Management Policy)

OP-761 (Gender Equality in Development Policy)

Supervision missions specifically focused on verifying compliance with the issues and actions included in the ESA and PGAS, and in Annex B of this ESMR (which will later be documented in the loan contract) will be carried out by the Bank on an annual basis.

Within three months following First Disbursement, the Borrower will be required to appoint an Environmental, Health and Safety (EHS) Officer as part of the PEU to (i) develop/review project ESIA/ESMPs; (ii) review tender documents and contracts to ensure inclusion of environmental and social requirements; (iii) meet with contractors to discuss requirements; (iv) develop inspection schedules and reporting and corrective action mechanisms; (v) supervise compliance in the field; (vi) report to the PEU on environmental and social compliance; (vi) prepare a semi-annual environmental and social compliance report to be submitted to the IDB.

The Borrower will be required to submit a summary on the environmental and social performance of the Program (including of the individual works), in form and substance satisfactory to the IDB, in its semi-annual reports to the IDB.

5. Environmental and Social Requirements

In order to meet the requirements of the Bank's Environmental and Social Safeguard Policies, the LVV will comply to the satisfaction of the Bank with the ESHS contractual terms and conditions set forth in Annex B. These terms and conditions can only be modified with the prior written consent of the Bank, including clearance by ESG. These include (i) conditions prior (CPs) to Board and/or OPC; (ii) standard conditions for implementation of the ESHS Plans and measures as well as reporting and supervision requirements; (iii) conditions that address key risks and impacts; (iv) conditions to be included in the Operating Manual; (v) definitions. These conditions and definitions will be incorporated into the Loan Agreement and as such the Borrower is legally bound to comply with these conditions.

Conditions to be satisfied prior to OPC: Prior to distribution to the IDB Board of Executive Directors, the following conditions must be satisfied: disclose the final Environmental and Social Analysis, including the Consultation Summary, which identifies how questions and concerns raised during the consultation event in April 2018, have been addressed by LVV and in the Project.

6. Summary of Compliance with IDB Safeguard Policies

See Annex A.

Annex A. Summary of Compliance with IDB Safeguard Policies¹

Policies / Directives	Applicable Policy / Directive Aspect	Compliance Status and Rationale with Policy / Directive Requirements	Requirements / Actions / Plans
OP-703 Environment and Safeguards Compliance Policy			
B.2 Country Laws and Regulations	Local Regulations	Suriname has no comprehensive and overarching law for environmental protection and management and the institutional framework for environmental management is not yet well defined.	<u>Prior to the tendering of each individual works:</u> Prepare and submit to IDB for non-objection: project specific ESIA/ESMP for the Maratakka Spillway and Nanni Weir and/or other new construction works to be financed under Component 1. Each ESIA/ESMP will review the country laws and regulations at the time of writing.
B.3 Screening and Classification	Screening and Classification	Full compliance achieved. The Program has been classified as Category "B".	No action required.
B.4 Other Risk Factors	Borrower Capacity	Compliance achievable through specific conditions established in legal documentation for actions over a defined period of time. Currently there is no dedicated environmental and social capacity in the LVV or Water Boards.	Within three months of First Disbursement, the PEU will include an Environmental, Social and Health and Safety (EHS) Officer for supervision of environmental, health and safety mitigation measures during the construction phase of projects in Component 1. Additionally, as part of Component 1, specialized consultants will be hired (i) to undertake the pesticide survey and water and sediment quality sampling and analysis plan and providing support for its execution; (ii) to develop and implement the Stakeholder Engagement and Communication, and Gender Action Plans, and (iii) to carry out the ecological assessment of the Nanni Swamp.
B.5 Environmental Assessment and Plans Requirements	Program ESA and ESMP; Project Specific ESA and ESMP	Compliance achieved (an ESA, including an ESMP, was prepared in February 2018) and compliance to be achieved through specific conditions established in legal documentation for actions over a defined period of time (Project specific environmental and social assessment will be required as sub-projects are developed).	<u>Condition of Execution:</u> Implementation of the Program ESMP, and the Stakeholder Engagement and Communications Plan (to be included in Component 1).
B.5 Social Assessment and Plans Requirements			<u>Prior to the tendering of each individual works:</u> Prepare and submit to IDB for non-objection: project specific ESIA/ESMP for the Maratakka

¹ Please note that ESG is working on preparing a compliance checklist.

			Spillway, and Nanni Weir and/or other new construction works to be financed under Component 1.
B.6 Consultation (including consultation with affected women, indigenous persons, and/or minority groups)	Consultation with affected parties	Compliance achieved (meaningful consultation was undertaken in April 2018) and compliance achievable through specific conditions established in legal documentation for actions over a defined period of time (ongoing consultation will be required as individual projects are developed and implemented).	<u>Prior to the tendering of each individual works:</u> Prepare and submit to IDB for non-objection: project specific Consultation Plan and Summary for the Maratakka Spillway and Nanni Weir and/or other new construction works to be financed under Component 1.
B.7 Supervision and Compliance	Monitoring and supervision	Compliance achievable through specific conditions established in legal documentation for actions over a defined period of time. The Borrower will provide reports every 6 months to the IDB. The IDB will conduct supervision missions based on EHS risk.	The Borrower will be required to submit a summary on the environmental and social performance of the Program (including of the individual works), in form and substance satisfactory to the IDB, in its semi-annual reports to the IDB.
B.8 Transboundary Impacts	N/A	N/A	N/A
B.9 Natural Habitats	Critical Natural Habitats	Compliance achievable through specific conditions established in legal documentation for actions over a defined period of time.	<u>Prior to the tendering of the individual works:</u> To better inform the future expansion of polder and resulting development of additional water supply for irrigation, the Borrower will undertake an Ecological assessment of the Nanni Swamp, the results of which will inform the mitigation measures for the infrastructure works (specifically the Maratakka Spillway and Nanni Weir) under the Program.
B.9 Invasive Species	N/A	N/A	N/A
B.9 Cultural Sites	N/A	N/A	N/A
B.10 Hazardous Materials	Hazardous Materials (pesticides and herbicides)	Compliance achievable through specific conditions established in legal documentation for actions over a defined period of time.	<u>In the first year of the Program's implementation:</u> The Borrower will undertake a water and sediment quality study of the discharge canals and other locations in the polders to better evaluate the impacts of pesticide use throughout the rice growing area, and to determine the actions that must be taken during the lifetime of the Program.
B.11 Pollution Prevention & Abatement	Pollution Prevention & Abatement/GHG Emissions	Minor GHG emissions and other construction waste/effluent. Compliance achievable through specific conditions established in	<u>Execution Condition:</u> The Borrower will ensure that each Contractor implement a project specific ESMP.

		legal documentation for actions over a defined period of time.	
B.12 Projects under Construction	N/A	N/A	N/A
B.13 Noninvestment Lending and Flexible Lending Instruments	N/A	N/A	N/A
B.14 Multiple Phase and Repeat Loans	N/A	N/A	N/A
B.15 Co-financing Operations	N/A	N/A	N/A
B.16 In-Country Systems	N/A	N/A	N/A
B.17 Procurement	Contractors Management	Compliance achievable through specific conditions established in legal documentation for actions over a defined period of time.	<u>Execution Condition:</u> The Borrower will ensure that each Contractor implement a project specific ESMP.
OP-704 Natural Disaster Risk Management Policy			
A.2 Analysis and management of Type 2 ² risk scenario	N/A	N/A	N/A
A.2 Contingency planning (Emergency response plan, Community health and safety plan, Occupational health and safety plan)	Emergency Response	Compliance achievable through specific conditions established in legal documentation for actions over a defined period of time.	To protect against natural disasters during construction and operation, prior to the start of construction for individual works, the Borrower will be required to ensure that an Emergency Management and Response Plan for all project phases and for each location is properly implemented.
OP-710 Operational Policy on Involuntary Resettlement			
Resettlement Minimization	N/A	N/A	N/A
Resettlement Plan Consultations	N/A	N/A	N/A
Impoverishment Risk Analysis	N/A	N/A	N/A
Resettlement Plan and/or Resettlement Framework Requirement	N/A	N/A	N/A
Livelihood Restoration Program Requirement	N/A	N/A	N/A

² Type 2 risk scenario occurs when the operation has a potential to exacerbate hazard risk to human life, property, the environment and the project itself.

Consent (Indigenous Peoples and other Rural Ethnic Minorities)	N/A	N/A	N/A
OP-765 Operational Policy on Indigenous Peoples			
Sociocultural Evaluation Requirement	N/A	N/A	N/A
Good-faith Negotiations and proper documentation	N/A	N/A	N/A
Agreement with Affected Indigenous Peoples	N/A	N/A	N/A
Indigenous Peoples Compensation, and Development Plan or Framework requirement	N/A	N/A	N/A
Discrimination Issues	N/A	N/A	N/A
Transborder Impacts	N/A	N/A	N/A
Impacts on Isolated Indigenous Peoples	N/A	N/A	N/A
OP-761 Operational Policy on Gender Equality in Development			
Consultation and effective participation of women and men	Participation of women	Compliance achieved (for the ESA and programmatic ESMP). A consultation was held about the Program that included the participation of a key women stakeholder group. Compliance achievable over time for future projects not defined yet by holding gender-inclusive consultations before the execution of each.	Future projects not defined yet will hold gender-inclusive consultations before the execution of each, as part of the process of preparation of Project specific ESIA/ESMP for each, using the Gender Action Plan as an instrument to ensure inclusiveness (the Plan will include guidance for the Borrower on how to ensure the participation of women in subsequent consultation events).
Application of safeguard and risk analysis	Application of safeguard and risk analysis	Compliance achievable through implementation of the Gender Action Plan that resulted from the Gender Analysis, as part of Component 1, with specific actions to include women in Water Boards.	The Gender Action Plan will be implemented as part of Component 1 of the Program strengthening Water Boards.

OP-102 Access to Information Policy			
Disclosure of relevant Environmental and Social Assessments Prior to Analysis Mission, QRR, OPC and submission of the operation for Board consideration	Program ESA/ESMP/ Consultation Summary disclosure.	Full compliance achieved prior to analysis mission (Fit for disclosure ESA/ESMP was disclosed on the IDB website on March 19th, 2018). Also, the final ESA/ESMP was disclosed prior to OPC.	The Final Program ESA/ESMP and Consultation Report was disclosed on the Bank's website.
Provisions for Disclosure of Environmental and Social Documents during Project Implementation	Project Specific ESA/ESMP and Consultation Summaries	Compliance achievable through specific conditions established in legal documentation for actions over a defined period of time.	<u>Condition of execution:</u> Project specific ESIA's and Consultation Summaries will be disclosed via the LVV's website/social media pages and other appropriate channels.

Annex B – ESHS (Environmental, Social, Health and Safety) Contractual Conditions

<p>ESHS Conditions of the Loan Agreement</p> <p>The following ESHS conditions are required to be fulfilled to the satisfaction of the Bank and will be included in the Loan Agreement in order to comply with the Bank's ESHS Safeguard Policies:</p>
<p>A. Clause to be incorporated in the Special Conditions for all Category A, B and FI-1 operations</p> <p>The Borrower agrees to design, build, operate, maintain, and monitor the Project directly or through the Executing Agency or through every other contractor, operator or any other person performing Project related activities in accordance with the Environmental and Social Analysis and Environmental and Social Management Plan, and subsequent Project specific Environmental and Impact Assessments and Plans, and other environmental, social and occupational health plans and requirements included in the Corrective Action Plan.</p> <p>Justification: This clause is required for all Cat A, B and FI operations.</p>
<p>B. Clauses to be incorporated in the Special Conditions, on a case by case basis where justified</p> <p>Special Conditions of Execution</p> <p>The borrower, directly or through the Executing Agency, shall comply with the following ESHS conditions: (i) Within three months of First Disbursement: appoint an, an Environmental, Health and Safety Officer, and a Stakeholder Engagement and Communications Consultant, as part of the execution structure, to address the environmental issues of the Program; (ii) Prior to the tendering of the Maratakka Spillway and Nanni Weir, or other new construction subsequently identified for financing under Component 1: (a) undertake an Ecological assessment of the Nanni Swamp based on TORs to be agreed upon with the Bank; (b) deliver, to the satisfaction of the Bank, the Stakeholder Engagement and Communication Plan (c) begin implementation of the Gender Action Plan (including a budget and implementation schedule); (d) submit to IDB for non-objection, a project specific Environmental and Social Impact Assessment and Environmental and Social Management Plan (including an Emergency Management and Response Plan, consultation summary and grievance redress mechanism), based on TORs to be agreed upon with the Bank; (iii) Prior to the commencement of construction for each individual works, require the Construction Contractor to have in place a construction ESMP based on BMPs; (iv) Prior to the conclusion of the first year of execution, the Borrower will be required to undertake a Water and Sediment Quality Study of the discharge canals and other locations in the polders</p> <p>Justification: (i) The Executing Agency has no environmental, social, health and safety capacity at present; (2.a) While the impacts of the project interventions on the Nanni Swamp are expected to be positive for the Swamp as it will return it to a more natural setting, the ESA undertaken during preparation of the Loan was unable to determine the scope of such impacts, nor whether negative impacts could arise. The ecological assessment will help better determine these impacts and provide information for improved water management in the Swamp and irrigation areas; (ii.b) historically farmers have felt misinformed about the overall management of the irrigation systems, as such this plan is important to strengthen communications between LVV, OW-MCP, Water Boards and farmers in order to make sure that everyone is informed and consulted about the Program and expected changes; (ii.c) the Gender Action Plan establishes opportunities to mainstream women into the Program and to avoid increasing gender inequality through strengthening Water Boards, (ii.d) During</p>

preparation a Program ESA and ESMP was prepared to comply with B.5 (and consultation undertaken to comply with B.6) however decisions on some specific works (Maratakka Spillway and Nanni Weir) were taken during the Analysis Mission. At such time as the designs are available, a project specific ESIA and ESMP must be prepared to ensure that B.5 is complied with during execution of the Loan; (iii) It will be necessary for the Construction Contractors to have in place appropriate mitigation and management during construction; (iv) Insufficient data was available during the preparation of the ESA to determine the scope of impacts of potential long term expansion of agricultural activities in Nickerie on water quality, and as such, and to mitigate the potential longer term indirect impacts this study is required.

The Borrower shall not engage in any of the following activities with respect to the Project: previously unidentified works without due environmental and social assessment and public consultation, and projects categorized “A” for environmental and social impact.

Justification: The Program has a list of works (repairs to existing structures, and new construction) that was finalized during the analysis mission in 2018 however, this clause seeks to avoid major changes, particularly new infrastructure with significant environmental and social risks not previously identified, or in other areas, not assessed in the ESA.

C. Provisions to be included in the Operational Manual (“ROP”)

(a) Any substantive changes to the ESHS Plans shall be in writing and approved by the Bank in a manner consistent with the Bank's environmental and social safeguards policies.

(b) With respect to the Project, the Executing Agency shall notify the Bank in writing within ten (10) days of any (1) potential or actual material noncompliance with the environmental and social requirements; (2) accidents, incidents or other significant events [e.g. spills, fires, discharges of hazardous substances]; (3) significant actual or imminent social conflicts; (4) ESHS regulatory action; or (5) any changes in the geographical scope of the project; (6) any newly identified environmental and social risks and impacts, that may affect the environmental and social aspects of the Project; in each case such notice shall include actions taken or proposed with respect to such events.

(c) The Executing Agency shall prepare and present to the Bank's satisfaction, an ESHS Compliance Report (ESCR), in the form and content agreed upon with the Bank, as part of the semi-annual progress report and until two years after construction is completed.

(d) Definitions. In relation to the Project and its environmental and social management, the following definitions shall apply:

- **EHS Officer.** The Environmental, Health and Safety Officer's role will be to (i) develop/review project ESIA/ESMPs; (ii) review tender documents and contracts to ensure inclusion of environmental and social requirements; (iii) meet with contractors to discuss requirements; (iv) develop inspection schedules and reporting and corrective action mechanisms; (v) supervise compliance in the field; (vi) report to the PEU on environmental and social compliance; (vi) prepare a semi-annual environmental and social compliance report to be submitted to the IDB.
- **Stakeholder Engagement and Communications Consultant.** The consultant's role will be to implement the Gender Action Plan, and develop and implement Stakeholder Engagement and Communications Plan, which will include, but not be limited to, the following elements related to diversity and inclusion and preventing negative social impacts as a result of the Program:

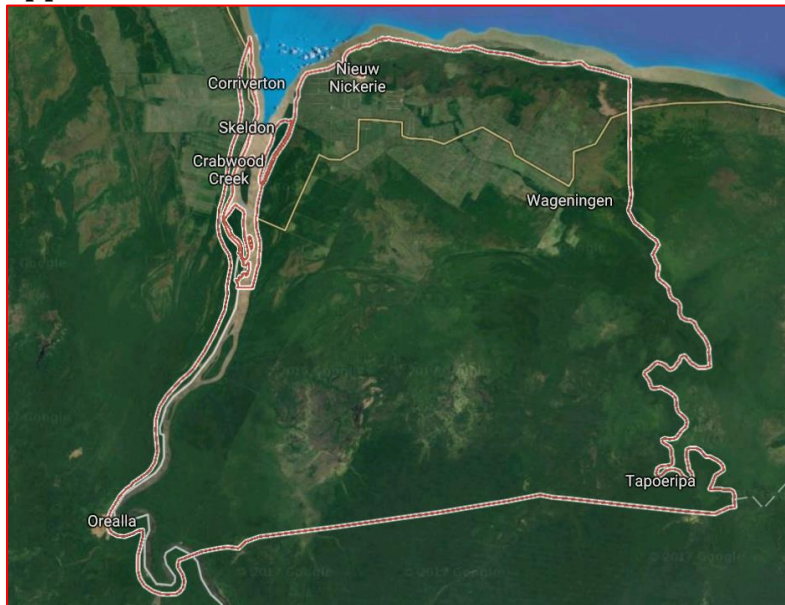
(i) monitoring the impact of the fee to be charged on small or low-income farmers and operationalizing the in-kind contribution option those farmers have in lieu of the fee; (iii) ensuring non-rice and vulnerable or low-income farmers as well as rice farmers have access to the Program and its benefits, including strengthening and support for water boards or for the creation of new water boards and the possibility to propose new projects for financing; and (iv) outreach activities to both rice farmers and non-rice farmers and vulnerable or low-income farmers to ensure their inclusion in the Program.

- **The Environmental and Social Analysis (ESA).** Refers to the ESA published on the Bank's website dated 19th February, subsequently updated on May 22, 2018 (and published June 2018), and which includes the Environmental and social Management Plan (ESMP) for the Program.
- **Grievance Redress Mechanism (GRM).** The GRM is a mechanism to receive and act on complaints and grievances reported by customers of a private organization or public citizens accessing a government service. Grievance Redressal may be handled directly by organizations through their own websites or through call centers.

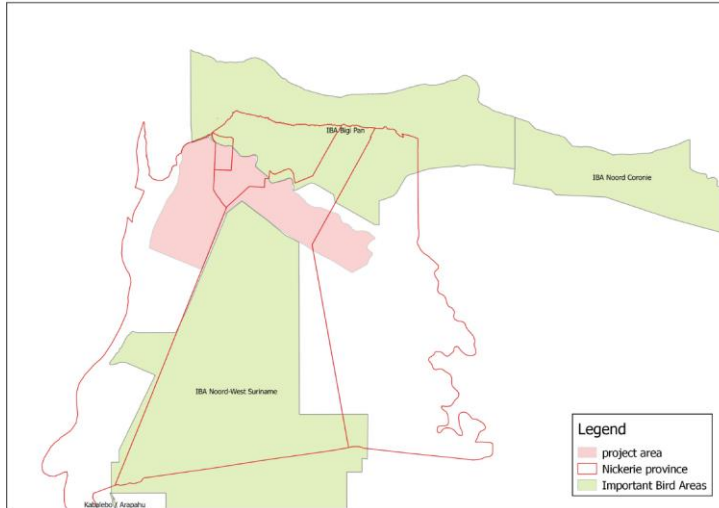
Appendix 1. Map identifying Nickerie Province, Suriname



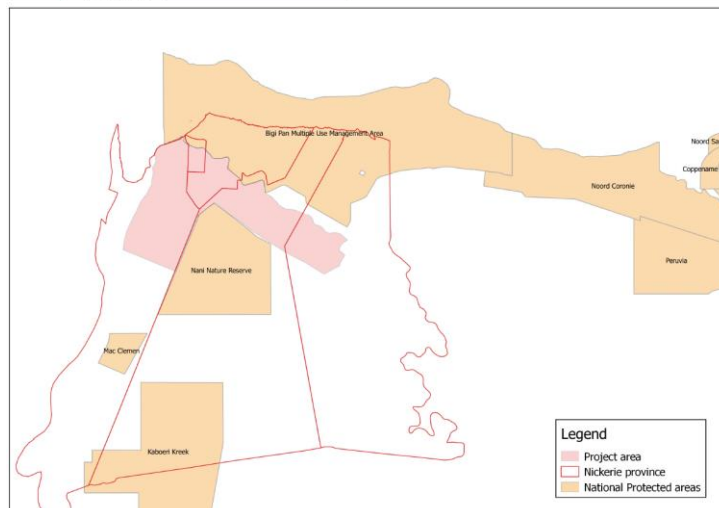
Appendix 2. Nickerie Province, Suriname



Appendix 3. Maps showing project area (pink) and natural and critical natural habitats



Important Bird Areas (Bigi Pan and Noord-West Suriname)



National Protected Areas (Bigi Pan Multiple Use Management Area and Nani Nature Reserve)



Mangroves and Intact Forest

Appendix 4. Location of infrastructure projects (all within the Project area identified in Appendix 3).

