



GEF CReW+ Water and Sanitation Public Investment Projects in Suriname

Baseline study and knowledge transfer activities

Unified Report

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The GEF CREW+ is a partnership project funded by the Global Environment Facility (GEF) that is being co-implemented by the Inter-American Development Bank (IDB) and the United Nations Environment Programme (UNEP) in 18 countries of the Wider Caribbean Region (WCR).

This project builds upon its previous successful phase “The Caribbean Regional Fund for Wastewater Management (CREW)” project (2011-2017). CREW+ is being executed by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, the Organisation of the American States (OAS) and the Secretariat of the Cartagena Convention (CAR/RCU) on behalf of the IDB and UNEP respectively.

The 18 participating CREW+ countries (Barbados, Belize, Colombia, Costa Rica, Cuba, Dominican Republic, Grenada, Guatemala, Guyana, Honduras, Jamaica, Mexico, Panama, Saint Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines, Suriname and Trinidad and Tobago) vary geographically from large, continental countries to small island states, with significantly different political, linguistic and cultural contexts.

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List of Acronyms

AECID: Spanish International Cooperation for Development Agency (Meaning of Acronym in Spanish: Agencia Española de Cooperación Internacional para el Desarrollo).

CABEI: Central American Bank for Economic Integration.

CAF: Andean Development Corporation.

CRew: Caribbean Regional Fund for Wastewater Management.

EU: European Union.

GEF: Global Environmental Fund.

GIZ: German Cooperation Agency (Deutsche Gesellschaft für Internationale Zusammenarbeit).

ICAP: Central American Public Administration Institute (Instituto Centroamericano de Administración Pública).

IDB: Inter-American Development Bank.

IRWM: Integrated Water Resources Management.

IWWM: Integrated Water and Wastewater Management.

JAICA: Japan International Cooperation Agency.

KOICA: Korea International Cooperation Agency.

OAS: Organization of American States.

SIDA: Swedish International Development Cooperation Agency.

UN: United Nations.

UNEP: United Nations Environment Program.

USAID: United States Agency for International Development.

WB: World Bank.

1. Project Identification

In detail, context about the ICAP GEF CReW+ Suriname project.

1.1 Presentation

GEF CReW+ is a partnership project financed by the Global Environmental Facility (GEF) and co-implemented by the Inter-American Development Bank (IDB) and the United Nations Environment Programme (UNEP) in 18 countries of the Wider Caribbean Region (WCR). This innovative project builds on the successful previous phase called "The Caribbean Regional Fund for Wastewater Management (CReW)" (2011-2017).

GEF CReW+ is being executed by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, the Organization of American States (OAS) and the Cartagena Convention Secretariat (UCR/CAR) on behalf of the IDB and UNEP respectively. In the case of Suriname and in response to the objective of outline opportunities and challenges, and enhance project management abilities within the water and sanitation sector: The project consists of 3 main activities:

1. Baseline study on water and sanitation public investment scenarios.
2. Course on formulation and evaluation of water and sanitation projects.
3. Training workshop on water and sanitation projects negotiation and financing.

The baseline study meant to deliver insights of Surinamese public investment status, identifying, characterizing, and analyzing the prevailing situation, providing useful information for planning processes, and future monitoring and evaluation.

The knowledge transfer activities (course and workshop) were designed and executed to strengthen institutional capacities in public investment projects in the water and sanitation sector in the Republic of Suriname, incorporating the climate change and risk management approach within the project life cycle.

In a post-pandemic context, with geopolitical tensions and climate emergency happening simultaneously, improve public spending quality through efficient investments is vital for economy's recovery, since both public spending and public investment must promote the resilience and sustainability of human and financial public resources. In this way, those responsible for resource allocation, planning and/or execution need to expand their access to technical knowledge that allows them to incorporate analysis and elements that are typical of risk management, adaptation, and mitigation to climate change in public investment projects.

The training of public officials from Central America and the Caribbean, subscribed to the GEF CReW+ program, is part of a proactive response to advance towards the Sustainable Development Goals (SDG), Disaster Risk Reduction, and Climate Change adaptation and mitigation. This allows professionals in public institutions formulating and evaluating water and sanitation projects to acquire the necessary

knowledge to perform their functions efficiently, for the benefit of their communities by generating local solutions.

1.2 Execution Agency: GIZ

The project in Suriname is part of the Global Environmental Fund (GEF) CReW+ program, which is a partnership financed by the GEF, and co-implemented by the Inter-American Development Bank (IDB) and the United Nations Environment Programme (UNEP) in 18 countries of the Wider Caribbean Region: Barbados, Belize, Colombia, Costa Rica, Cuba, Dominican Republic, Grenada, Guatemala, Guyana, Honduras, Jamaica, Mexico, Panama, Saint Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines, Suriname, and Trinidad and Tobago.

The GEF CReW+ program is being executed on behalf of the IDB by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and the Organization of American States (OAS) and on behalf of UNEP by the Secretariat of the Cartagena Convention. ICAP partners with GIZ as a specialized academic and advisory organism on public administration to deliver knowledge transfer and research deliverables.

The knowledge transfer activities were oriented to prepare civil servants specialized in Public Investments National Systems, Public Planning, Environmental, Agricultural and Finance Ministries, as Water and Sanitation agencies to upskill project formulation and evaluation, following ICAP's methodology, meanwhile the baseline study was designed to provide a broader perspective on how governance, public investment, strategies and challenges converge within the water and sanitation sector.

1.3 Grant Recipient: Central American Public Administration Institute ICAP

The Central American Public Administration Institute, or ICAP by its acronym in Spanish, it's a regional organization within the Central American Integration System, or SICA, was created in 1954 by the name of Central American Public Administration School or ESAPAC by the Guatemalan, Salvadorian, Honduran, Nicaraguan and Costa Rican governments, Panama enters as a member in 1961, meanwhile, in 1967, after an Operation Plan with United Nations ESAPAC transforms to ICAP.

ICAP's mission is to train SICA's civil servants and advise their governments on the analysis and execution of its public administration's improvement reforms. During more than six decades, ICAP has consolidated an expertise and an academic offer which makes a referent on research, knowledge transfer, consultancy, and technical assistance not just in the region, but globally.

Nowadays, ICAP offers different academic programs, on PhD, MSc, technical and upskilling levels in topics such as Public Administration, Public Acquisitions Management, Local Environmental Management, Quality Management, Project Management, Health Management, Social Management, Public Management and Corporate Sciences, contributing to the intellectual and productive profile of professionals and organizations, public and private, in an ever-changing and challenging context.

In response to the crisis caused by Covid-19, ICAP has strengthened its multi-risk approach, helping governments to generate conditions to face the economic and social crisis, mitigating their impacts, making risks assessment a vital part of public planning in services, infrastructure, and health policies.

1.4 Project execution schedule

During September and the first half of October, the project was logistically and academically prepared. Two missions were done in Suriname in October and other two in November of 2022, a detail of each component.

1.4.1 Baseline study

The surveys, interviews and documents consulting for the baseline study were developed during September and October, executing the first meetings and field visits in Paramaribo during October 10th - 14th, processing during the following weeks and socialize the main findings and insights with key stakeholders during a session held on November 9th.

1.4.2 Formulation and Evaluation Course

The first visit to Suriname provided the basis of the contents and techniques to carry out a project document at the profile level, between October 17th - 21st; the following two weeks were dedicated to the virtual follow-up, where participants were convened to weekly individual and group sessions. The course closure took place on November 10th and 11th, where the groups presented their final works, the appropriate feedback were made, and the achievement certificates were delivered.

1.4.3 Negotiation and Financing Workshop

Since the two previously mentioned components were prepared during September and October. The negotiation and financing workshop was held in the closing week in Paramaribo on November 8th.

2. Project Objectives

The course and the workshop had as main objective to develop and execute a training program in project formulation and evaluation, negotiation, and financing of public investment projects in water and sanitation, under a learning-by-doing approach, which allows officials to generate skills and capacities to prepare a project proposal document, within the needs in the water and sanitation sector.

The baseline study had the main purpose of providing a deeper context of the current situation around on how governance, public investment, strategies, and challenges converge within the water and sanitation sector in the Republic of Suriname.

Both objectives contribute with GEF CReW+ Components I & II in Suriname, Component I focuses on the development of standards, strategies and policies related to the Integrated Water and Wastewater Management; and Component II refers to the sustainable financing options for the institutional, normative, legislative, and regulatory reforms for the Integrated Water and Wastewater Management (IWWM).

3. Beneficiary Profile

The knowledge transfer programs were designed for civil servants specialized in public investment project management in the water and sanitation sector. After completing the program, they have a broader skillset on project's formulation and evaluation, and/or negotiation and financing these projects, allowing them to add more value to their organizations through a project management mindset that incorporates disaster risk management and an adequate resource allocation improvement through formulation, evaluation, negotiation, and funding.

During these training programs, 15 civil servants from the Ministry of Public Works, the Ministry of Spatial Planning and Environment, the Ministry of Natural Resources, the Public Health Bureau, the Ministry of Agriculture, Livestock and Fisheries and the National Institute for the Environment and Development of Suriname attended the courses, most of them young women with policy officer roles.

Regarding formulation and evaluation working groups, group 1 was made up by Ministry of Public Works officials; while group 2 had the participation of officials from the Ministry of Natural Resources, Spatial Planning and Environment, as well as the Ministry of Agriculture, Livestock and Fisheries; the group 3 included professionals from the Public Health Bureau and the National Institute of Environment and Development of Suriname NIMOS, their final works are attached in annexes.

4. Methodology

The methodology was a combination of learning by doing, project-based learning, interactive learning, case studies, and the use of virtual tools, all with the emphasis

on developing project management skills regarding water and sanitation. This approach allowed students to effectively develop and apply the acquired knowledge.

Learning by Doing: The main teaching-learning strategy within the framework of this course will be the methodology known as “learning by doing”. This methodology is aimed at encouraging creativity, both critical thinking and critical attitude in participants, while promoting experimentation and practice.

Defining, analyzing abstract concepts, and linking them to “real-life” situations through experimentation, generates constant knowledge and deep learning throughout the teaching-learning process. In line with "learning by doing", other techniques that will be included during the different modules include:

Project-based learning: Project-based learning (PBL) is a participant-centered pedagogy that involves a dynamic setting approach in which it is believed that participants acquire a deeper knowledge through active exploration of real-world challenges and problems. This approach is used to engage the participants and to motivate learning in a new way. One of the benefits of the project-based learning technique is that these are easily adaptable to any classroom or learning environment, regardless of its location.

Interactive learning technique is a pedagogical method that emphasizes involving participants in their own teaching-learning process and to commit to the lessons and academic material involved. This approach reduces one-way communication or individual learning. In addition, it allows participants to understand the topics analyzed on a deeper and more integrated level, which can make the classroom experience more successful and rewarding.

A variant of this technique is called Interactive Class Discussions, whose process consists of setting participants to commit to both an answer and formulating questions, then move to the reasoning behind them. From there, through the discussion with their peers, the students often become emotionally invested in learning.

Case studies: This technique emphasizes concrete country experiences, in negotiation processes with international and regional financing organizations, to facilitate the external resources necessary for the execution of specific public investment programs or projects.

Use of visual and online-based tools: Visual tools are an integral part of communication and learning processes, extending the effectiveness of reception,

processing, action, and expression. Online tools are available through the internet, which allow the convergence of unlimited information that we can order, handle, manipulate and learn.

According to ICAP's methodology, working groups were formed in the formulation and evaluation course, and they formulate a project idea relevant to the water and sanitation sector in Suriname. This project idea was formulated and evaluated by the students during the training, having the guidance and advice of the trainers. Before each training session, methodological guidelines for the project development were delivered.

Two types of trainings modalities have been executed, in-person and virtual sessions. To carry out the virtual sessions, ICAP offers its technological platform for teaching called ICAP's Virtual Campus, which is suitably versatile and functional.

5. Performed activities

The activities carried out within the framework of the courses and the baseline study are described below.

5.1 Preparation work

During September and the first half of October, logistical and academic preparation was executed. Various tasks as the search and closing deals for services such as venue, interpretation, catering, and transportation, as well as the communications that allowed the experts design a customized academic program and stablish the first meetings for the baseline study, all with the close collaboration of local counterparts.

5.2 Formulation and Evaluation course

The formulation and evaluation course execution had three phases, the first on-site lessons, the virtual follow-up, and the closure.

5.2.1 On-site work mission 1: October 2022

On Tuesday, October 18th, the first day of the course, it began with inaugural messages from the authorities of the Ministry of Spatial Planning and Environment, as well as from the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), a review of the course objectives and contents, to start with the fundamental concepts in public investment project management, such as the project life cycle,

the evaluation phases, the levels of pre-investment studies and their respective decision-making scenarios, in addition of the link that public investment projects should have with the institutional, sectoral and national strategy.

In the afternoon, the first workshop took place, where the participants had to form groups and outline a topic of interest that would give rise to the project proposal, defining the responsible and/or executing institution, listing interest groups, describing the area of influence, among others.

On the second day, Wednesday, October 19th, the project identification contents were reviewed, including the background, the problem to be solved, objectives and project scope, justification, link to national development strategies, project location and beneficiaries.

In the practical phase, the project identification document draft began, with the stakeholder analysis matrix, their perceived problems, as well as a problem and objective trees.

For the third day, Thursday, October 20th, the project document at the identification level is continued, establishing the relationship between the project objective, the main and fundamental means, and the activities that feed these means, to generate and evaluate project alternatives, corresponding to the practical phase of the program.

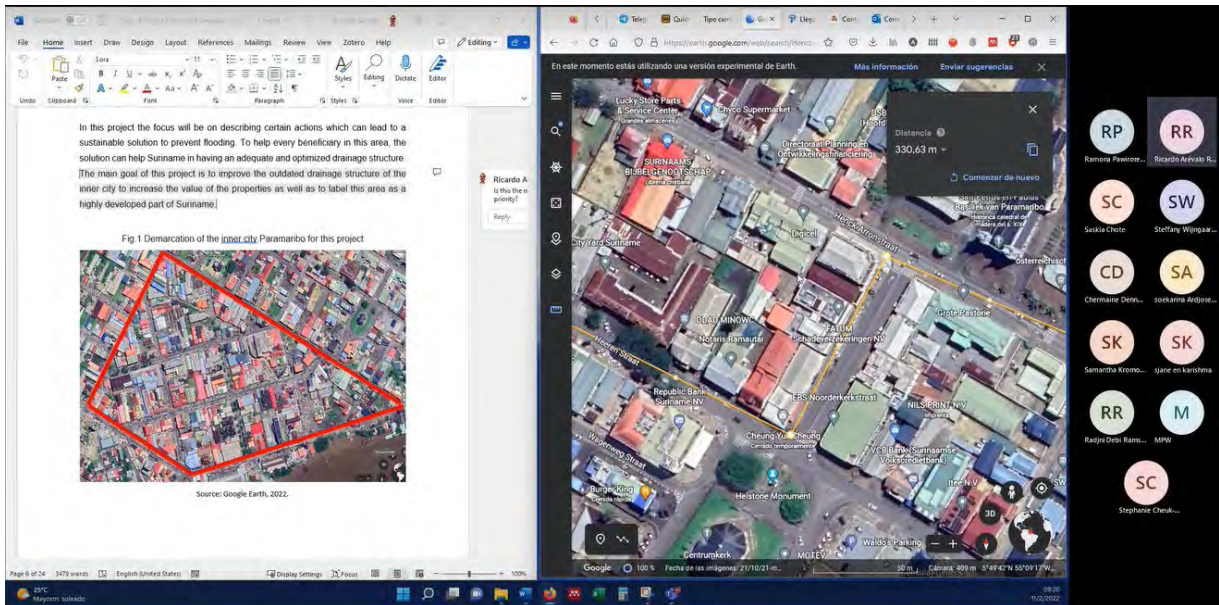
On the fourth day, Friday, October 21st, the logical framework matrix was reviewed. Emphasis was placed on the coherence and consecutive flow of each exercise, which feeds the subsequent one and how to integrate the obtained information in subsequent exercises. It was agreed that for the following weeks, group and general monitoring of the progress would be carried out.

5.2.2 Virtual follow-up: Global and groups

During the virtual follow-up sessions, the global sessions were scheduled on Wednesday, October 26th and November 2nd, while the groups on Friday, October 28th and November 4th.

The global session's goal was to share good practices and improvement areas between the groups, encouraging dialogue and criteria exchanges, while the group sessions had the purpose of going into more detail with the observations and feedback.

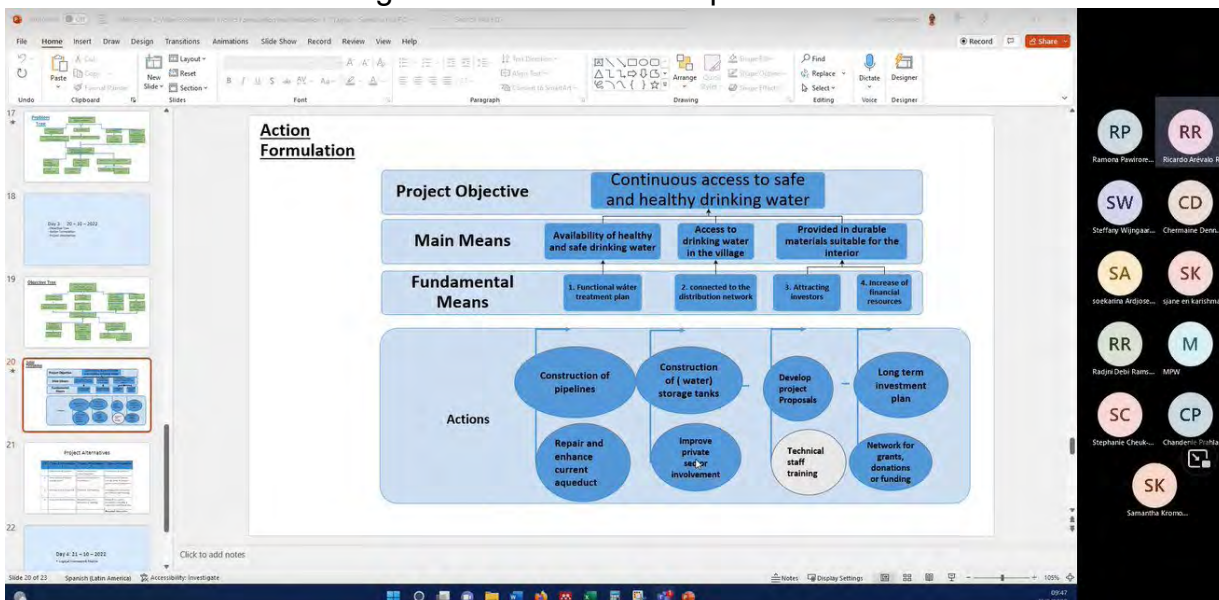
Image 1. Virtual follow-up session.



The virtual sessions allowed the groups to make content adjustments, reinforcing groups' proposals, which ranged from the project scope to actions design and choice of a project alternative, to mention a few examples.

During the virtual sessions, a series of case studies about Circular Economy applications in water and sanitation were also provided, in addition to reviewing Nature-Based Solutions applications, especially to address the problem of flooding in Paramaribo.

Image 2. Virtual follow-up session.



5.2.3 On-site work – Mission 2: November 2022

During the second mission, which took place on November 10th and 11th, 2022, time was granted for the groups to make the final adjustments to their documents and to be able to attend to the queries that had arisen after the last virtual sessions. Then the group presentations took place, where a great capacity for synthesis and presentation skills was demonstrated by the participants.

In the closing session, there was a review of some fundamental concepts seen during the course, as well as future steps in the pre-investment phase, the importance of incorporating disaster risk management and Climate Change into project design, and their contribution as technical officials to the adequate performance of National Public Investment Systems, always with special emphasis on the water and sanitation sector, to then give way to the delivery of certificates of approval.

5.2.4. Project proposals developed during the course

Aligned with the "learning by doing" pedagogy that distinguishes ICAP, three working groups were established to design a project proposal, with initiatives such as:

- The rehabilitation and modernization of the drainage system in downtown Paramaribo, capital of Suriname
- The development of a treatment plant in the town of Pusungrunu
- The construction of a climate change resilient and culturally accepted for water and sanitation system in the Brokopondo community

All projects showed an adequate application of the concepts and techniques provided during the course, reflecting the commitment and involvement of the participants, these project proposals are attached in annexes.

At the end of the activities, carried out in the Ondernemershuis Paramaribo, or Entrepreneurial House, located in downtown Paramaribo, impressions of some participants were collected, among the following:

"It is something new for our team, as well as necessary and interesting for the Ministry of Public Works, colleagues have found it quite useful, we believe that there should be continuity, for the development of the country" declared Mr. Soeratmin Moestadja, coordinator of water and environment management of the Ministry of Public Works.

"It has been a great opportunity to learn about the design of project proposals, especially since my role as policy officer in the Ministry of Spatial Planning and Environment deals with relevant issues" said Ms. Samantha Kromoredjo, public policy officer of the Ministry of Spatial Planning and Environment, while his colleague and local counterpart, Mr. Viresh Bharosa stated *"I am pleased to have been part of this process, I learned a lot and I consider that the work carried out will be very useful, not only for us, but for the country, to develop projects according to these*

methodologies, so I thank ICAP and GEF CReW+ for making this possible" statements that confirm the relevance of the work carried out.

5.3 Training workshop in project's negotiation and financing

The workshop started with a group exercise that allows the participants to carry out a self-reflection, from the concept of "Public Added Value", on the role of civil servants, as active actors in the management of organizational change processes in institutions to which they belong; and at the same time figure out the role of these civil servants as generators of public added value towards society.

At the beginning of the exercise, a guide is distributed, where the participants receive a brief explanation of it, and then, the facilitators perform a role play where they give brief answers to the questions submitted. Subsequently, the participants have 5 minutes to read the guide document, do their self-reflections, and prepare and present their responses to the entire team.

Image 3. Negotiation and financing session.



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An overview of principles and standards for an Effective Public Investment Management System (according to OECD, IMF, IBRF, IDB, and Other International Organizations), the project lifecycle with a disaster risk management and climate change resilience perspective, also the main characteristics and products of bilateral and multilateral agencies like IDB, WB, CAF, CABI, EU, GIZ, SIDA, USAID, AECID, JAICA, KOICA and the UN system.

Then, an explanation of a typical negotiation process in those organizations, according to governmental-agency priorities and strategies and inclusion in the

operative pipeline at the project presentation phase, the pre-investment cycle with the identification, orientation, and analysis-negotiation missions, to the credit approval phase, with the governmental and multilateral approvals.

In a prospective exercise, the “Caribbean Economy in 2040 Vibrant Economies where people are safe, productive and happy” video forum took place, with the opening question: What does the country require in terms of creating institutional capacities and to obtain the economic and financial resources needed to achieve the desired ends? Which led to a lively debate among the participants.

5.3 Baseline study

The baseline study started with the analysis of official reports, news, and official documents regarding public investment and/or water and sanitation in Suriname, digital surveys were submitted, prior to the missions, with the goal of obtain a general context around project management and public investment policies, which allows to go deeper in the following interviews, both held with managers and technical officers within the two missions, held during October 10th – 14th, and Nov. 7th – 10th, where the main topics were:

- Water and sanitation.
- The state of national governing network, coordination, shared and complementary institutional arrangements, which enables public investment, and channels international technical cooperation and funding.
- Development planning priorities and project management framework.

These interviews were held with officers from the Public Health Bureau, Ministry of Environment (Department of Environment), the Ministry of Regional Development and Sports, the Ministry of Natural Resources, Ministry of Agriculture, Husbandry & Fisheries, Ministry of Finance, Ministry of Public Works, and the Anton De Kom University. A dynamic telephone conference was held with the Director of the National Planning Bureau.

Baseline study issues were also discussed in a more indirect manner with participants during the Project Management Workshop training, and the Negotiation and Financing Module, lectured and facilitated by Baseline Study team.

Water and sanitation entail a technical dimension related to water sources (superficial or underground water basins), availability and flow, infrastructure, processing and demands, etc. Due to the significant rainfall in Suriname, the focus is on drainage, drinking water, dewatering and sewerage.

A comprehensive approach focusses on stakeholders needs and interests, government’s political, legal, and administrative framework, recent history and prospective patterns regarding availability, services, demands and future status.

This approach refers to development planning, different sectors economic uses, value added efforts, and current or future implications regarding degrading environments, contamination, and today, climate change perspectives.

Also, a field trip visit to several locations was facilitated by Ministry of Spatial Planning and Environment counterparts. Explicit scenarios were visible concerning drainage challenges, community health risks and rising sea level potential consequences.

Images 4 & 5. Stagnant wastewater at Paramaribo.



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6. Baseline study main findings

This chapter describes the background and main findings in water and sanitation dynamics with the public sector, household, and industrial consumption.

6.1 Background

From a hypothetical perspective regarding governance, it can be stated that modern societies experience the need to update their legislation and public sector institutionalization every 60-75 years. As a recently established State, having gained independence in 1975 (just 47 years ago), Suriname seems to be in the process of building, strengthening, and consolidating its governance status, addressing its legal, and administrative framework, institutional output, and policies, overcoming colonial heritage.

Growing pains of building the State includes overcoming inherited legislation from the 1950s. In this context, a plural number of policies, laws and frameworks are being drafted, discussed and in the process of being approved for implementation, the 51 laws discussed in the Health Sector alone serve as an example.

The government is also dealing with the current financial and fiscal crisis which began due in part to the withdrawal of ALCOA in 2015. Commodities (gold, bauxite, and petroleum) have been historically exploited by foreign companies. The country is also in the process of negotiating its international debt condition confronted by international agencies, along with options of increased oil production with international companies. Both exercising pressure on the Government with regards to conditions under which to establish agreements.

The timeframe during which the baseline study took place (September, October, November 2022), the research team encountered the absence of a Minister of Finance, with obvious implications regarding public financing and political decisions referred to government's role in implementing water and sanitation strategies, programs, and projects. The new Minister of Finance was installed in December 2022 (Stanley Kermechend Raghoebarsing).

6.2 Reactions to ICAP's presence in Suriname

Besides generalized positive response to ICAP's approach, and the possibility of sharing expertise and capacity building, the experts in the baseline study received the following very precise comments:

- 1) With regards to Project Management Workshop, who defined outlines and contents? Ministry Manager who expressed concern, mentioned not being consulted beforehand.
- 2) Who was the GEF CReW+ project discussed with and who was to be taken as responsible for follow up issues in Suriname? Although the Ministry of Environment and Spatial Planning is the national counterpart, representatives from the different sectors interviewed, ignored this.
- 3) Can Surinam become a member of ICAP?
- 4) Besides Baseline Study (centered on water and sanitation) and project management training workshop, was there a possibility of further cooperation with Suriname, understood as a 2nd and/or 3rd stage activities during 2023 and possibly further, responding to addressed Surinamese needs and demands?
- 5) What concrete information is available through ICAP regarding training opportunities and facilities for Surinamese nationals? What are the requisites and pre-established timeframes?
- 6) Authorities interviewed, claimed the need to get feedback from others within their respective institutions, with whom they would share issues discussed during interviews.
- 7) It was suggested we speak first with policy advisors in each ministry instead of requesting an interview directly with each Minister.
- 8) Baseline study report would require three final versions for:
 - a) Operational level public officers (a technical report)
 - b) Intermediate level managers (a management focus report)

- c) Authorities (a brief, explicit, understandable version of the report), on behalf of increased political awareness and decision making).

6.3 Findings from document analysis

It was found that in 2016 the Government of Suriname had already identified the need to develop a roadmap towards Integrated Water Resources Management (IWRM) for Suriname and established the Ministry of Natural Resources (NH) as national lead agency. This was followed by the founding of the Interdepartmental Water Workgroup (IWW).

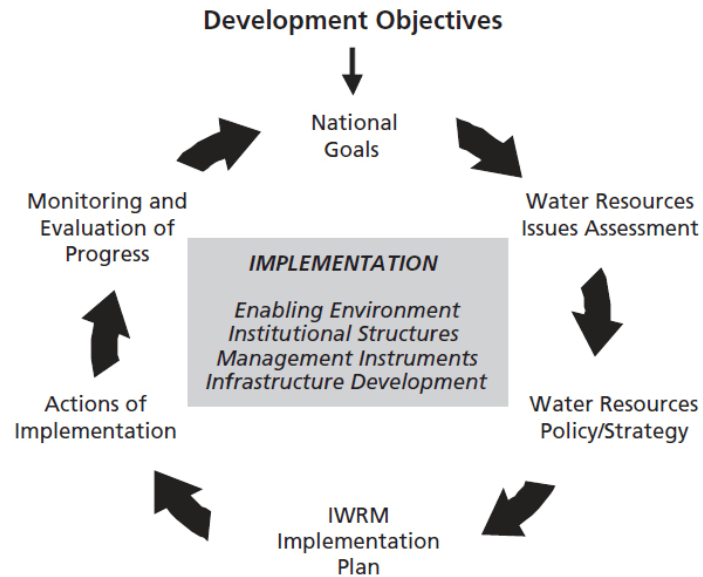
The Ministry of Natural Resources and Water Forum Suriname (WFS) organized in 2016 and 2017 a series of seminars on water governance, potable water and wastewater management, with the purpose of raising awareness and consulting with main stakeholders. During 2018 the WFS with support from the UNDP proposed, a project to develop IWRM capacity building.

As a result, in July 2019, Suriname Water Forum presented a comprehensive report for implementing water resource management and capacity building proposal for integrated water resource management in Surinam.

This report builds on three underlying project reports that contain more details: the Situation Analysis report (dated May 3rd, 2019), the Action Plan (dated June 24th, 2019) and the Monitoring Plan (dated July 5th, 2019).

The following graph presented at the very beginning of the comprehensive analysis report, illustrates the proposed development objectives and methodological approach to Integrated Water Resources Management (IWRM).

Figure 1. Proposed Development Objectives for Integrated Water Resources Management IWRM.



Source: Water Forum Suriname (2019).

The situation analysis report revealed weaknesses in the water management system in Suriname and pointed out aspects that should be addressed to improve the situation.

The water related problems mentioned in the comprehensive report were:

- Lack of access to safe and available drinking water in many regions in the country.
- In rural areas, flooding of agricultural land due to excessive rainfall and/or high sea water levels cause losses of harvest and damage to public space, houses, transportation means; flooding occurs every year, severe, depending on the location
- Droughts in agricultural areas lead to loss of harvest, especially since irrigation is not present.
- Flooding of urban areas due to excessive rainfall and/or high sea water levels causes damage to public space, houses, transportation means. Some streets are flooded after every big rainfall event. Urban flooding increases the risk of waterborne diseases. The main reason for flooding is the lack of maintenance of the drainage systems.
- In the interior high river levels cause flooding of villages.
- Droughts in the interior lead to limited availability of good quality water for domestic/drinking water use.
- Inadequate waste disposal compromises surface and groundwater.
- Inadequate wastewater management: there are no wastewater treatment plants, and most of the septic tanks are not working properly, resulting in pollution of water resources.

- In the interior of Suriname most wastewater is discharged directly into rivers and creeks.
- Very few industries have wastewater treatment, most of the industrial wastewater is discharged directly in surface water.
- Small scale (illegal) gold mining in the interior causes several water quality problems, especially use of mercury is a big problem, polluting the rivers and fish and making the surface water unsuitable for drinking water and eating fish.
- Increasing use of pesticides for agricultural use (but also within household and government) has serious health effects on people and other organisms. (2020 United Nations Water Report on Suriname, which complements the above information, included on annexes).

Water resources management within the national government was identified as strongly fragmented, with outdated legal framework, and responsibilities scattered, and lacking alignment, which leads to duplication of efforts.

Also mentioned was that "... there is a significant need for more knowledge to support water management actions, however structural data and information sharing arrangements are very limited and the existing data exchange water platform is rarely used by the stakeholders." Details regarding said platform were not shared.

"Cooperation between ministries and knowledge institutes such as the Anton de Kom Universiteit van Suriname (ADEK), occurs mostly project based, and cooperation usually does not go further than exchange of data and/or knowledge" (Amatali A., 2019), (Naipal, 2019) and (Warner, 2019).

The conclusion of the Director of the Ministry of Natural Resources is: "We need more expertise and bundle our resources. We would like to start doing so now and start successfully integrating our water resource management" (Abeleven, NH, 2019).

The report states that measures which can and should be taken to improve the situation "... require a concerted and coordinated effort and commitment from various parties, as well as the appropriate legal and institutional structures." As a result, the interdepartmental water working group (IWW) was formed with the purpose of fostering structural and closer cooperation on water management.

To this respect, the report also states that, new laws on water were still in the concept phase and comprehensive policies and acts for water management were equally lacking, calling for action in this direction.

Nevertheless, through interviews during October and November 2022 the situation seems to remain the same. Besides the creation of the Interdepartmental Water Workgroup (IWW), what other actions can be mentioned? Which recommendations mentioned during 2016-2019, and to what extent, have taken place, and what are

the results? It must be noted that, also mentioned by the report, the IWW ceased to continue working from 2018.

Subsequently, if there has been limited advance and improvements, where are the specific and most relevant bottlenecks and challenges, to be addressed during 2023, and by whom?

6.4 Interviews main results

Results from a policy/governance perspective, public investment features, human resources within the water and wastewater management institutions, and the IWW itself.

6.4.1 Policy matters, institutional processes and governance.

- 1) The country is in the process of developing legal and administrative frameworks in multiple areas, such as Finance and Planning, Public Investment, Agriculture, Husbandry and Fisheries, Spatial and Environmental Management, Oil & Gas, Mining, etc.
- 2) Several institutions have been recently created or reorganized, such as Spatial Planning Department within the Ministry of Environment (2020), which was part of the Ministry of ROGB (Spatial Planning, Land Management and Forestry). Same situation as the Ministry of Transports, Communication and Tourism, recently separated from the Ministry of Public Works. It was also said that some departments already existed but have been moved around under different governments.
- 3) Standards are being discussed, including the introduction of Geographic Information System (GIS) with the purpose of establishing algorithms as guiding instrument for decision making regarding new projects and their physical sites.
- 4) Complementary to the above, one of Public Health Bureau's priority is updating data collection for planning preventive measures. At the Ministry of Health, curative 3rd level prevention prevails. Policy level is slow, which includes reviewing and updating old, dispersed, and limited legislation. Some of existing sanctions are based on 1950's legislation. It was stated that what needs to be done is confronted by what is feasible.
- 5) Institutions need to improve monitoring and cooperation among authorities. This includes strengthening networking, improving dialogue mechanisms for discussing ideas, programs, and possible joint outcomes. Interinstitutional relations are considered weak but improving, a number of meetings were planned to take in the following days:
 - a) IWWM standards were to be shared, discussed and adjusted by counterparts invited by ROM.

- b) Public Works challenges were to be discussed with private sector, one of the highlighted challenges refer to the availability of potable water on the East side of Suriname River for the next 20 years.
 - c) Green energy project has been discussed between Ministry of Public Works and the Ministry of Natural Resources.
 - d) Workshop on Master Plan for Paramaribo Drainage was expected to take place during the following week.
- 6) Quite evident was the fact that several sector specific ministries lack interinstitutional coordination, networking, and bonding with other ministries with regards to overlapping efforts addressing water and sanitation issues, or interconnected areas of work.
- 7) One of the major challenges mentioned, is to overcome the lack of willingness to work together, considered as a major bottleneck. In this regard, an emphasis was placed on the need to develop advocacy abilities in overcoming what was labeled as prevailing “old school” governability standards among higher authorities.
- 8) Updating of legislation and policy frameworks faces a difficult game:
- a) There is a need to penetrate and convince political networks for decision making, which includes overcoming old school concepts and practices.
 - b) Clear and identifiable needs and priorities need to be adequately sold, which demands the ability to convince, and includes developing political will at ministries and Parliament.
 - c) Communication specialists are required within ministries, with the purpose of translating messages in an understandable manner to authorities.
 - d) This includes how to get the proper message aboard, not only the problems, but also the solutions, responding to a results-based framework and approach.

6.4.2 Public National Investment Features

1. Since 2021 national development multiyear planning process has established a 2050 timeframe, beyond current government’s administrative time frame standards. This includes five-year (5) breakdowns and yearly action plans, with a relevant commitment to generating value, more than generating cash.
2. Legal and administrative frameworks with regards to development priorities and public investment, needs to be redefined. This includes addressing Climate Change scenarios, coastline relevance, and investment in infrastructure and more research. In this context the potential and implications for electricity and the power sector is considered undervalued.
3. A relevant challenge summons performing according to priorities such as energy, modern infrastructure, water, agriculture, and stakeholders which includes, the private sector, independent experts, the Water Forum, and ministries such as ROM, Public Works, and Natural Resources. Also mentioned is Suriname’s potential for Panamax Ships accommodation.

Another challenge refers to developing institutional mechanisms for checking on compliance, along with periodical six-month evaluation reports. One area where this is required is with reference to existing dykes and dams, and their operational resourcefulness.

4. In the above context, the Ministry of Finance is facing very difficult times. Although normal regulations and legal framework regulate budgets, the national budget is more centered on conventional operational expenses.
5. The national budget process is first viewed by National State Council and afterwards, approved by Parliament. This is considered well known by all stakeholders.
6. Monthly national allocations rely on ex-ante evaluations and budget preparation. Nevertheless, due to incipient financial information system, it is expected that each sector ministry develops the required research in support of feasibility studies. Regardless, budget sometimes does not cover financing of programs and projects drafted by planning units, which reinforces the need for a National Public Investment System.
7. Implementation units sometimes are not aware of pre-established policies and mandates, and if these units ignore policies and mandates, allocation is not secured, a sign of the need for a legal reform on this regard, with the required training and protocols for officials.
8. Every Ministry submits projects for approval by National Assembly, based on current or future targets, bilateral relations with international technical cooperation agencies, or other countries, with the support of Foreign Affairs Ministry.
9. International financial resources are commonly channeled directly to ministries through international technical cooperation agencies, overlapping national procedures.
10. Planning and training respond to sectors more than following national guidelines, which are still in the process of review and approval.
11. No evidence was collected regarding a middle term public investment plan. Nevertheless, Water Forum Report includes public investment references. (Annex 04 offers a view of Government financing of water and sanitation plans and projects in 2017)
12. An Accountability Act is being reviewed and updated, which can help to close the gap on protocols compliance.
13. Different ministry officers interviewed, mentioned priority areas being addressed, but were unable to refer explicitly to projects.

6.4.3 Human resources

1. An acknowledged critical feature is the lack of sufficient human resources for:
 - a. Taking responsibilities as public officers, implementing strategic national planning priorities.

- b. Developing the studies required for approval and project management.
 - c. Project implementation.
 - d. All the above is yet more relevant at the regional and local government level.
2. With regards to human resources capacity building, there is:
- a. Insufficient yearly work plans based on needs emphasis.
 - b. Limited budget allocation from government, relying more on external support.
 - c. A limited -or lack of- capacity for quality proofing, accountability and both national and international compliance mechanisms.
 - d. Also, present is weak interconnectedness and comprehensive approach.
3. Unattractive salaries were quoted as an issue which limits attracting and maintaining public officers. This, added to current fiscal crisis, establishes a relatively “gloomy” immediate future, regarding government’s ability to enforce national development priorities, draft and implement required modern state programs and projects.
4. The above, seems to be a necessary and feasible area, to be negotiated with international agencies in support of strengthening technical and financial needs and requirements.

6.4.4 Integrated Water and Wastewater Management

With the purpose of broadening the perception and scope with regards to water issues, we find very useful, and recommend, reviewing uses and users of water resources in Suriname, to clearly identify the list of situations, areas of current practices, interest, and stakeholders, with whom dialogue, drafting of projects and support is to be negotiated.

Use of water resources in Suriname

Uses	Users
Conservation of ecosystems	Flora and fauna of Suriname, Ecotourism
Potable / domestic lega use	SWM, bottling companies, citizens of Suriname, users of bottled water (also exported)
Agriculture	Farmers, waterboards
Industry	Private companies
Energy supply	Staatsolie /EBS
Wastewater discharge	Citizens of Suriname
Transport	Transport companies, citizens of Suriname
Fisheries	Fishermen, commercial and for own use
Recreation	Tourists (local and from abroad), people working in the tourist sector
Mining	Mining companies, legal miners

Table 3.2 Situational Analysis Report. May 2019.

It was suggested that water and sanitation interconnectedness with agriculture, mining, housing settlements, economic and social infrastructure, etc., as part of development planning, need to divide the land in two parts: The coastal plane and the interior. Circumstances in the coastal plane (northern part) are very different from the southern part.

In the North: An inventory of the condition of land and water infrastructure is required. This inventory must be focused on agriculture, sanitation, housing, and roads linked to canals; they exist together. The result of this inventory will be a list of urgent infrastructural projects which need to be executed to improve infrastructure.

In the South: The South is almost not populated. The most important could include mapping, aerial survey, and remote sensing, enabling government and the people, knowledge concerning deforestation, pollution, water spills, water supplies, agriculture, mining, illegal and legal settlements etc.

Although current water availability and “water per capita” standards in Suriname are very favorable, the potential for increasing contamination and scarcity soon is relevant. The current loss of water and its implications for investment, needs to be addressed. This includes poor institutional setup, with regards to future demands.

The area has enough potable water for 20+ year’s needs, but on the other side (eastern side) of the Suriname river, salinity intrusion in soil and water is taking place.

Efficient water management requires addressing climate affected impacts and consequences of saltwater intrusion in Nickerie and maintenance of infrastructure for agricultural production (rice). In this, and several other contexts, disaster risk management framework and climate change adaptation measures, addressing risk identification, analysis, control, reduction, and resilience promotion, needs to develop advocacy and awareness mechanisms.

On improving water and sanitation infrastructure and services, several actions are to be considered, such as integrating national priorities and sector specific priorities, along with strengthening interinstitutional networking. This also relates to relevant public, private and social society stakeholders’ participation schemes.

Different water and sanitation updated documents drafted with broad international inter agency support and in line with international mandates and guidelines are to be made more public and openly discussed with different audiences, particularly public officers at the different ministries, who admit to not knowing these documents. Seminars, trainings, and interinstitutional forums can be dissemination platforms.

Nevertheless, although mentioned briefly during different interviews, the referred documents along with climate change and climate change adaptation issues and actions do not prevail in discussions. Neither IWRM nor “River Basin Management” frameworks. Stated by several interviewed, climate change adaptation as national

policy, in national planning, and in agricultural policy and planning, needs to be addressed, which means that existing documents need to be purposefully disseminated and analyzed, along with implementation and monitoring frameworks.

Water and sanitation need training and strengthening, including areas and topics such as:

- Capacity building for monitoring; developing baseline studies on hygiene, and laboratory monitoring in both urban and rural settings.
- Material, and technical equipment.
- Improved dialogue and follow up with the private sector.
- Lack of government networking between institutions and sectors, is also a weakness that needs to be overcome.

With focus on sanitation needs, Suriname requires:

- Establishing where to place wastewater treatment systems and infrastructure.
- Include fecal treatment from fisheries as a relevant economic activity.
- Update legal framework and interconnectedness, which includes managing agricultural, industrial and community settlements waste, including technical parameters of disposed effluents.
- Current wastewater is being channeled to rivers, which represents current and future health and economic challenges.

A five-year fisheries management plan is being implemented.

A proper waste management law is also required including an integrated waste management plan. Actual 20-year process still needs a concrete draft to be submitted to Parliament for approval.

Relevant needs and/or proposals with water and sanitation connectedness include:

Ban mercury use immediately, requiring a) draft legislation; b) support for monitoring, auditing, and investing in large scale deployment of sustainable mining practices, including modern technical support for artisan small-scale gold mining.

Intensive program to reduce insecticides and pesticides in agriculture, referred to: a) draft legislation; b) support for monitoring; c) strong support for deployment of alternative techniques and methods to maintain and/or improve crop yield.

Climate proofing wastewater processing, including a) a master study based on scenarios; b) draft legislation on guidelines for design, rules, auditing etc.; c) investment in climate proofing and sustainable wastewater run-off.

Regarding project management capacities, the national planning bureau stressed the need to avoid and overcome dispersion when addressing priorities in water and

sanitation. To this respect, the national water act is being revised. Second (2nd) master plan for water risk management in the Greater Paramaribo is expected for the end of 1st semester 2023. Public Works and Spatial Planning are responsible of finalizing this process.

Suriname is in the process of discussing and establishing a formal water authority. Such an agency would be responsible of addressing:

- Water demands to be expected within future settings.
- Water issues as relevant part of future planning processes.
- Corresponding technical, administrative, and financial issues.
- A proposed master plan for drainage.

Laws governing water quality and specifications are also in the process of being drafted, discussed, and approved. This is expected to be submitted during 2023.

During interviews, when considering which ministry (or ministries) would (or could) take the lead in water and sanitation, the following was mentioned: *“ROM (Ministry of Spatial Planning and Environment) should take the lead, but at this time, ROM is very weak. ROM is not able to do this now.” “... more important is the good understanding and cooperation between the different ministries”*. These refer to overcoming duplications of tasks and roles among ministries. Nevertheless, ROM is in a growing and reform process, with a specific place and responsibility within the government and should be considered during the policy-making process.

Water and sanitation and Urban Development

Since the early 1950's it has been known that the city of Paramaribo should not expand north, towards the coastal lowlands. Even though many laws and recommendations prohibit or advice not to build in the North of Paramaribo it still happens, the advice is to move more to the south area of the capital.

Interviewed consider that existing allotment projects were not developed with proper engineering design regarding drainage system and infrastructure, and northern wetlands represent current and future vulnerable and high-risk areas for housing settlements, infrastructure, and services.

The government (Ministry of Land Policy and Ministry of Public Works) is supposedly not giving land anymore or permits for allotment projects to people, to build in the north of Paramaribo. Nevertheless, there is no spatial planning in the North.

It is necessary to develop spatial zoning and inventory of available land for agriculture and urban settlements, along with eligibility requirements for access to lands. In this sense, government is in the process of reviewing allotment projects and continued building (settlements, services, and infrastructure) to the North.

In the above context, what are the consequences of eliminating natural mangrove buffers, in the context of sea rise levels due to climate change, and already detected sea water intrusion.

Baseline study reports the urgent need to address wastewater drainage system and its linkage with public health, through public awareness creation activities, updated infrastructure and a permanent monitoring plan, considered this a very high-risk scenario.

Government is currently in the process of designing criteria for infrastructure before licensing and contracts. Accepted is the fact that this requires more interinstitutional discussion.

For this problem to be solved, political willingness to act is required, with consequent policy making. No exceptions, no double standards, no changes in approach. The Government still has some good experts in the ministries and needs to pay more attention to the advice and recommendations these experts give, reducing political influence in purely technical matters.

Water and sanitation in Agriculture

Agricultural priorities require including in policy makers views:

- Moving towards organic production.
- Maintaining a balance between land, agriculture, and water management.
- Rainwater harvesting mechanisms and practices, due to potential water scarcity during extreme weather events.
- Improve the maintenance of existing structures in rural areas such as dams, irrigation and drainage canals, roads, pumping stations, sluices, among others.

Among different development opportunities, the possibility of Suriname becoming a world global food source was mentioned. This generated a double focus response.

First, an initial response considering the possibility.

The potential for this opportunity to become a reality includes lots of fertile land, in particular fertile land per capita, and high fresh water per capita, well exceeding current needs.

For this, several requirements and relevant issues would need to be enforced:

- Introduce capital funding for mechanization.
- Improve incentive schemes.
- Develop business clusters and a professional investment promotion agency.
- Seed capital for starting business clusters.

- Develop logistic infrastructure and connectivity.
- Overcome poor logistics.

A major constraint falls on poor logistics. Current air lift and sea freight volume is too small because of the small economy, resulting in high tariffs. Another example is the Wakay pumping station (4 pumps), critical for rice cultivation in the west. Currently there are no reliable pumps. Two pumps can be put into operation, but one of these has a high likelihood of immediate catastrophic failure.

China, Belgium, and Malaysia have expressed interest in financing large-scale agricultural production.

Quite the opposite, other arguments create doubts on this option, forcing four initial questions:

- What are the foreseen or expected consequences of predominantly internationally funded large scale, outwardly oriented agriculture?
- What are the foreseen water requirements?
- How to increase agricultural production, including processing and derivatives?
- Which other issues need to be discussed more?

The organizational capacity is blocked by lack of trust and by betrayal of trust. Mental constraints created by colonialism needs to be overcome first to enable successful business ventures. The slogan '*bondru na makti*', 'cooperation is power' is very popular now in some parts of the Surinamese society: one main mental constraint is not being able to give trust, receive trust and maintain trust. Invest in trust, could enable more interconnected ventures, including product chains, processing, cooperation, and value-added gains.

Low income is one of the reasons for part time farming, other activities that deliver more income have priority over farming, so better incomes from farming is one step in the right direction. Also, mechanization of complex tasks will improve the image of agriculture, light machinery that doesn't lead to soil compaction has priority. Soil compaction decreases the oxygen in the soil and hinders the organic decomposition process resulting in deterioration of soil fertility.

7. Final thoughts

As a summary, some main highlights of the baseline study and the knowledge transfer activities.

7.1 Baseline study

Identified through present baseline study, the following issues summarize the basis for further discussion with Suriname counterparts, as most critical actions.

Establish a formal technical framework for data collecting and information, in support of general awareness creation, IWRM advocacy and updated spatial planning, risk management, health measures and government decision regarding legislation, policies, projects, and financing. This is also part of generating **political support**, defining lead institutions for different purposes, promoting interinstitutional joint efforts, and useful for establishing the grounds for negotiating with international technical cooperation and funding agencies.

Governance issues:

- 1) Establish clear government priorities and institutional leadership.
- 2) Improve water and sanitation governance abilities among managers and political authorities, including mechanisms on behalf of achieving feasible legal, administrative, and financial updated frameworks.
- 3) Implement and enact a minimum of required legislation.
- 4) Secure political commitment and government support stimulating clear leadership.
- 5) Promote institutional capacity building and coordinated interinstitutional work
- 6) Facilitate Managers ongoing training and capacity building.
- 7) Help to train new professionals in environmental awareness, technical abilities, and developmental concerns, addressing the need for an improved “critical mass”.
- 8) Implement urgent risk management issues: storm water flood risk regarding evident and relevant health risk with regards to improving drainage system, sewage, and sludge/fecal management. This includes:
 - a) Public infrastructure in water and sanitation including the possibility of establishing a treatment plant.
 - b) Storm water flood risks in the context of updated urban planning, depending mostly on two scenarios:
 - i) Concerns regarding improper urban growth and building risk in northern Paramaribo’s recurrent floods, progressive elimination of mangrove as natural buffers, and expected future sea level rise.
 - ii) Potential move of the city southwards, relying on examples such as was the case in Belize during the 1980’s, where Belmopan inland City, was created as consequence to Belize City’s hurricane and storm surge vulnerability.

As a most relevant feature, these efforts should be promoted and implemented based on clearly perceived proactive attitude of institutional managers and overall public officers with whom interviews, and training processes took place, including continued email communication weeks after last ICAP’s on site mission had been finalized.

Needs and expectations go beyond workshop dynamics and expectations. Ideas or draft guidelines for managers training would include:

- How to improve national resources management, particularly in land and water.
- Projects development and conflict resolution with regards to agricultural grounds turned into urban settings (settlements and development).
- Communication, advocacy, and awareness creation on water and sanitation issues.
- Interinstitutional coordination.
- Good bonding.

Two primary topics suggested by Surinamese counterparts for further analysis:

Agricultural grounds land management:

- Legal framework.
- Government decisions on grounds.
- Changes and reorganization.
- Challenges, economic interests, negotiation skills and potential agreements.
- Proactive views and development planning.

Water management: for human consumption and as an economic resource.

- Water sources and availability, associated with Integrated Water Resource Management.
- Potable water planning, research, and project management, relying on 2012 master plan and yearly plans.
- Water drainage prevails more than irrigation needs.
- Sea level rise and initiated salinization processes.
- Update of basic data (GIS sources and mechanism) for plans, projects, investment and implementation of settlements, dams, roads, and other facilities to be constructed.
- How to control water pollution due to mining, agriculture, and settlements.
- Water security, legislation, current and potential risks regarding surface water and ground water.
 - Share other countries experience: how to approach these issues? What can be or is being done?
 - Identifying what can be developed for cooperation.
- Capacity building in human resources.

The 2019 Comprehensive IWRM Capacity Building for Integrated Water Resource Management report's relevant recommendations were:

- For sustainable use of the water resources present in Suriname it is strongly recommended to develop an Integrated Water Resources Management Plan.

This IWRM Plan should be incorporated in the National Policy of the government of Suriname.

- It is highly recommended to increase awareness on the importance of IWRM on all levels of the society. An increased awareness on IWRM will stimulate the enabling environment for IWRM, which will lead to increased political commitment to develop and implement IWRM in Suriname.
- Existing water legislation should be updated, and new water legislation should be formulated. Approval of the new legislation and its socializing phase is important in the development of IWRM.
- It is also recommended to increase the number of skilled persons through capacity building programs around water resource management and improve the conditions to remain in their positions.
- It is important to increase stakeholder's engagement through the entire process of the development and implementation of IWRM in Suriname. Having a sufficient budget for the implementation of IWRM is also a requirement.
- These abovementioned recommendations will be the basis of the formulation of an Action Plan on IWRM in Suriname.

GEF CReW+ baseline study 2022 report includes recommendation addressed by several Surinamese counterparts, as potentially appealing to Government Authorities, the possibility of a one- or two-day High-Level Conference during 1st trimester of 2023, to be jointly organized by Surinamese authorities with ICAP support.

Participants:

- Suriname Government Ministers (Environment and Spatial Planning; Finance; Public Works; Health; Housing; Agriculture) and Planning Bureau.
- Authorities representing IDB, GIZ, ICAP, and any other international entity considered pertinent, such as World Bank (Saramacca Project), UNDP, etc.

Potential main issues to be discussed, prepared in advance by Surinamese political, technical, and administrative (management) authorities:

1. Water and sanitation scenarios today.
2. Water and sanitation scenarios by 2030 and beyond, considering climate change adaptation.
3. Water and sanitation public sector interconnectedness (infrastructure; electricity and energy; housing settlements; agriculture, husbandry, and fisheries; transportation, and tourism; etc.), and public-private-partnership options.
4. National water and sanitation development planning priorities, value added approach and strategic national resources (both financial and non-financial).

5. Time frames: immediate (2023-2025); midterm (2026-2030); long term (2031-2050).
6. Surinamese government's specific request and commitment.

The summary of interviews also suggests exploring the possibility of establishing a future Cooperation Agreement between the Government of Suriname, GIZ and eventually ICAP, focusing primarily on institutional strengthening in areas of:

1. GEF CReW+ project on water and sanitation requirements, as an initial platform in the context of development planning, future climate change impacts and climate change adaptation focus.
2. Capacity building in public investment and results-based project management, conditioned by financial and fiscal crisis. International Technical Cooperation Agencies eligibility requirements would be considered as a required input.
3. Improved institutional networking, coordination, joint planning, and results-based implementation of agreements.
4. Technical assistance in promoting updated legal and administrative conditions (frameworks) for implementing development plans goals.

7.2 Knowledge transfer activities

The knowledge transfer activities have contributed to the process of public management modernization in Suriname, especially the management of water and sanitation projects, in accordance with the GEF CReW+ program objectives. The participants obtained conceptual and practical elements for the formulation and evaluation of projects at the identification level, and the negotiation and financing of those projects, where the relevance of an adequate identification was also highlighted as a fundamental element in the aim of public investment efficiency, since from an investment execution perspective in the operational phase it can be perfect, that if the identification and design of the project do not correspond to the needs of the target group and beneficiaries, it is not efficient.

Relevant issues for the management of public investment projects such as disaster risk management and resilience to climate change, nature-based solutions and circular economy, applied to water and sanitation management, were also incorporated into the discussion, expressed in their proposals.

The learning-by-doing approach, and that their main task was generating a project document at the identification level, opportunities, the most important added values, since the participants found themselves in reflexive and analytical situations of their contexts, missions, challenges, opportunities and available tools to contribute to the water and sanitation management from their roles, reflected in 3 identification

documents within the GEF CReW+ program objectives, and needs of the population itself, suitable for further studies, cooperation and even funding.

Suriname is in an institutional transformation process. There is willingness to change, and a desire to acquire new tools for said transformation, demonstrated in the high level of understanding and application of the transferred knowledge.

Thus, it is a successful course and mission, which provides the participants with inputs so that they continue contributing to the creation of added value for the population, optimizing the water and sanitation management, through resilient public investment projects and with a disaster risk management perspective.

8. Annexes

The formulation and evaluation course project proposals are annexed in separate documents, with the following names:

- Group 1 Project Document – CReW+ Suriname Nov 2022
- Group 2 Project Document – CReW+ Suriname Nov 2022
- Group 3 Project Document – CReW+ Suriname Nov 2022
- Annex 04: An example of official budget allocation

Annex 1

Group 1 Project Document – CReW+ Suriname Nov 2022

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Project Document

*A Flood Resilient Inner City of Paramaribo**

Paramaribo, Suriname

November 2022

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1 INTRODUCTION

The Skills Development Academic Program on Formulation and Evaluation of Water and Sanitation Public Investment Projects in Suriname is part of the Global Environmental Fund (GEF) CReW+ program, which is a partnership financed by the GEF, and co-implemented by the Inter-American Development Bank (IDB) and the United Nations Environment Programme (UNEP) in 18 countries of the Wider Caribbean Region: Barbados, Belize, Colombia, Costa Rica, Cuba, Dominican Republic, Grenada, Guatemala, Guyana, Honduras, Jamaica, Mexico, Panama, Saint Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines, Suriname, and Trinidad and Tobago.

The GEF CReW+ program is being executed on behalf of the IDB by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and the Organization of American States (OAS) and on behalf of UNEP by the Secretariat of the Cartagena Convention, the GIZ partners with ICAP as a specialized academy and advisory organism on public administration to deliver knowledge transfer and research deliverables.

The Skill Development Academic Program is oriented to prepare public servants specialized in Public Investments National Systems, Public Planning, Environmental, Agricultural and Finance Ministries, as Water and Sanitation agencies to upskilling on project formulation and evaluation, following the ICAP's methodology.

This document is a result of this academic program, confirming that the participants acquire new skills and enhance existing ones for a resultant better project management skill set put into practice.

2 BACKGROUND

In the heart of Suriname's Capital, the Paramaribo historic center is a storyteller joining UNESCO's World Heritage list in 2002, this urban gem boasts a unique business area. Suriname is a former Dutch colonial town from the 17th and 18th centuries planted on the northern coast of tropical South America. The original and highly characteristic street plan of the historic center remains intact. Its buildings illustrate the gradual fusion of Dutch architectural influence with traditional local techniques and materials.

Suriname is comparatively low at an average elevation of 246 meters above sea level. The highest mountain top, the Juliana top, is 1,230 meters. With regards to the sea level there are currently worldwide a lot of issues according to climate change. The systematic warming of the planet is directly causing global mean sea level to rise in two primary ways:

1. Mountain glaciers and polar ice sheets are increasingly melting and adding water to the ocean.
2. The warming of the water in the oceans leads to an expansion and thus increased volume.

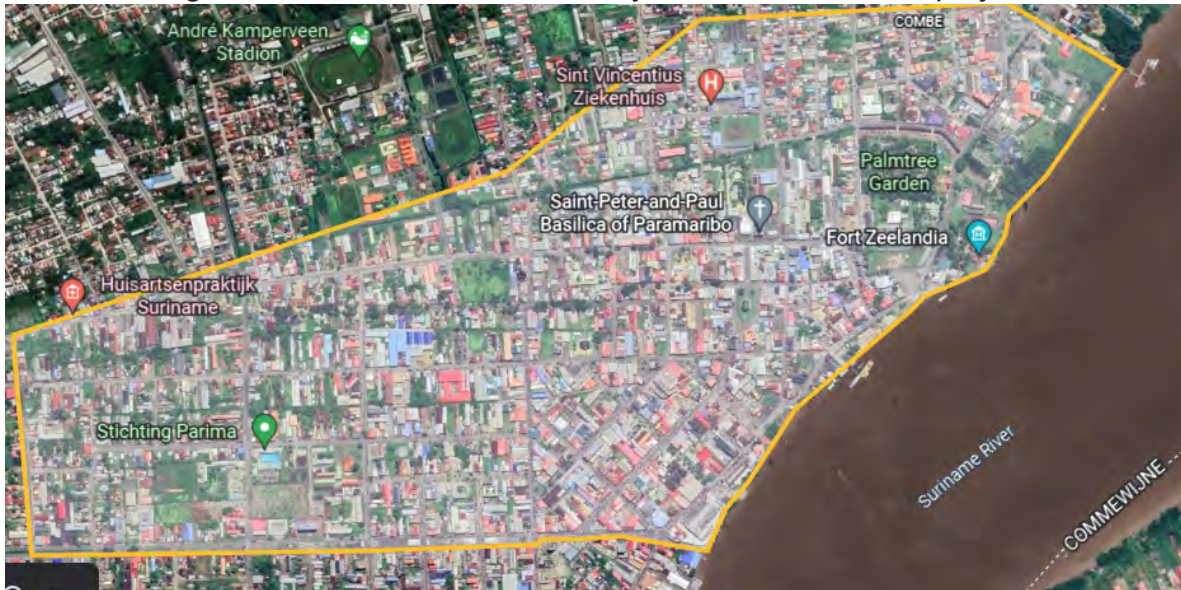
The inner city of Paramaribo is demarcated in figure 1. with approximately a surface of 2.69 km², is a business area with a lot of clothing shops, cafeterias, some casinos, jewelers, commuters, visitors, hotels, hospitals, pharmacies, restaurants, bus stops, the central market as well several government offices.

The inner city of Paramaribo is becoming an important part. This means that the whole area must be covered with updated infrastructure (streets, buildings). The infrastructure dates to the 70's when Suriname became independent and had to manage and maintain everything on its own with the responsibility put on the shoulders of the Ministry of Public Works.

After 40 years the weather conditions around the world as well in Suriname have changed. To combat these changes, the infrastructure (sewage system) as one of

the main things has to be resilient. The weather is changing and as it is now it differs from 30 years ago. Streets are flooded by the heavy rainfalls because of outdated drainage structure, low budget allocation, outdated pumping stations and inadequate maintenance. It has a lot of negative effects for beneficiaries.

Fig.1 Demarcation of the inner-city Paramaribo for this project



Source: Google Earth, 2022.

3 PROBLEM TO SOLVE

The main problem to be solved is to prevent the inner city from being flooded during rainy seasons. To this end, the four main causes that lead to this problem must be solved, the outdated drainage structure, the obstructed sewage systems, the inadequate maintenance, and the inadequate storage capacity in the inner city. The present drainage structure was constructed decades ago. In the meanwhile, the city has expanded, more buildings and infrastructure have been added. The storage capacity has not been upgraded according to the growth of the inner city. In addition, due to a shortage of finances no optimal maintenance has taken place in the past years. Because of the expansion of the shopping area and more crowds here, there is also much litter around. This litter along with sand on the streets causes a clogged sewer system. All these problems (causes) must be tackled to upgrade the drainage infrastructure and in this manner prevent the inner city from flooding. If these primary causes of the problem are addressed, their effects will also diminish.

For example, if there is a continuous influx of customers during the rainy seasons, business owners will not suffer losses. Also, problems such as the spread of waterborne disease, traffic jams, etc. will diminish.

The flooding of the inner city has especially worsened in recent decades. This is also because of Climate Change such as sea level rise, which has resulted in more rain than usual in recent years. A consequence of climate change is also the sea level rise which may already be experienced 10 or 20 years from now. Given that the effects of climate change are getting worse, it is even more reason to tackle the drainage problems in the inner city as soon as possible. If this does not happen, the situation will worsen, and the social-economic impact will increase. The inner city is a very important business area. There is a large influx of customers. Most of the shops, hotels, casinos and other businesses and offices are located here. When the city center is flooded, these services are completely or partially closed.

In addition to the losses suffered by individual companies, the collective economic effect is significant. The social impact will also be large, not only regarding waterborne diseases, but also about employment and influx of tourists to this area. It is therefore important that the government, in particular the Ministry of Public Works, prioritizes this project. One of the causes of the flooding is also that the sewage systems become clogged because sand or litter ends up in them. The ministry can reduce this problem by installing more waste bins, but it is questionable whether citizens will use these bins. Another risk factor is also the topography of the area. Because the area is a low-lying area, it is technically necessary to consider which drainage options are most suitable. It is also a challenge to retrieve data about current systems. These were built decades ago, and it is questionable whether the maps are still available. Another important risk factor in this project is the economic crisis in the country. Given that the country is deteriorating economically and there are less and less finances available, there is less chance that money will be released for the project.

4 SOLUTION ALTERNATIVE SELECTION

Project Alternatives

FM	Project Alternative 1	Project Alternative 2
1	Upgrade existing pumping stations	Construct new pumping stations
2	Fixed team & Schedule cleaning litter/sand	Placing more waste bins
3	Technical staff training	Technical staff training
4	Priority setting budget maintenance	Priority setting budget maintenance
5	Upgrade existing storage tanks	Construct new storage tanks
6	Long term climate change resilient investment plan	Long term climate change resilient investment plan

Project alternative 1 usually keeps the old system (existing pumping stations and storage tanks), but it will be upgraded. In project alternative 2, higher costs are involved, because this option involves installing new constructions. Sometimes repairing existing structures (because of aging) is more expensive than replacing the entire structure with a new one. In this case project alternative 2 is a better possibility.

A combination of alternative 1 and 2 is also a possibility. For example, in some parts of the city where the system is very outdated and cannot be repaired, it could be completely renewed. And in other parts, repair work will suffice.

Both alternatives are supported by the community in the inner city because they will be the direct beneficiaries of the project. Because of the lower costs associated with alternative 1 this is better supported by the Ministry of Public Works. Partly because there is always a shortage of finances. But the choice can also be based on sustainability rather than on costs. In that case, the ministry can choose for alternative 2.

Both alternatives are technically feasible. If the knowledge and expertise is not available within the Ministry, this will be obtained from outside.

Seen the above, alternative 1, is more feasible for the moment, given the relatively lower costs and will be chosen for the implementation. But based on further investigation (financial feasibility studies) a combination of options 1 and 2 will be implemented.

5 PROJECT OBJECTIVES

The objective of the project is to upgrade the drainage infrastructure within the inner city of Paramaribo.

To upgrade the drainage structure there are different solutions such as having, updating pumping stations, well - flowing sewage system, adequate maintenance and adequate storage capacity.

Update pumping stations

As a solution for the pumping stations, we need funding to update the existing pumping stations and construct new pumping stations.

Well- flowing sewage systems

To keep the sewage systems well - flowing and clean we need to clean the streets frequently and this can be done through a fixed schedule for cleaning and by placing more waste bins.

Adequate maintenance

To maintain the drainage structure, we need trained technical staff and funding. The technical staff needs to be trained in drainage structure maintenance. The funding is needed to have a reserved budget for maintenance.

Adequate storage capacity

Suriname knows the big and the little rain seasons. As it rains a lot in the big rain season, we need more storage for the rainwater. To create more storage, the existing storage tanks needs to be upgraded and new storage tanks needs to be built. With a good storage capacity, the inner city will be prevented from flooding.

6 JUSTIFICATION

To stimulate a continuous flow of goods and services an adequate infrastructure is needed (streets, buildings, drainage systems). To provide the inner city with adequate infrastructure the Ministry of Public Works has the lead in this. The mission of this Ministry is to develop, build and maintain the public goods for a livable, clean, and beautiful Suriname. To gain profit for everyone no one must suffer any blockage or hurdles in delivering their works or services. If there are these kinds of unnecessaries, the golden rule is how to work on it. To eliminate or reduce the hurdles, it is necessary to seek solutions and make policy on different aspects.

The drainage system of the indicated part of the inner-city of Paramaribo is outdated and currently also not being maintained optimally. There are also clogged sewer systems and insufficient storage capacity for excess water. Due to these factors, the city center is flooded with even the slightest rainfall. The business here suffers losses because of a lesser influx of customers. Furthermore, flooding streets creates potholes.

The risk of getting waterborne diseases is also higher. The above issues indicate the need for upgrading the drainage system in the city center. Firstly, the upgrading of

the drainage system will lead to fewer roads being damaged, which means that the government will also have to spend less money on road rehabilitation.

If drainage in the city center is good, hygiene will also be improved, in the sense that fewer waterborne diseases can occur. A large part of the business community is in the inner city. If they no longer suffer losses due to lesser influx of customers, this will also have a positive impact on the economy. The citizens will also be less disadvantaged. People will have to spend less time in traffic jams and be on time to their destination and less money must be spent on cars that break down on flooded streets.

Plots and buildings will also have a higher property value in this area. All this will ultimately ensure a positive socio-economic environment in the inner city and will also influence the total economy of the country. So, investing in upgrading the drainage structure will ultimately also contribute to economic benefits, not only for the business community, but also to society and public health.

7 PROJECT'S ALIGNMENT WITH DEVELOPMENT GOALS



Lack of flood resilience can undermine or even undo progress towards the Sustainable Development Goals (SDGs). Disaster risk reduction and sustainable development are closely linked and interdependent. Flooding can undercut the SDG's due to the negative impact of flooding e.g. Impacts on available jobs and livelihoods in the affected areas (SDG 8) Damage to vital infrastructure (SDG 9; industry, innovation and infrastructure), slowing economic growth and limiting investment (SDG 11 and 8; sustainable cities and communities & decent work and economic growth). Floods can affect the residents in this area and therefore it is possible that it will undermine Surinamese progress towards reaching the SDGs in a lot of ways.

Achieving the SDGs will require a radical rethink of how the Surinamese Government looks at risks, including climate change impacts. More investments in disaster risk reduction (DRR), climate change adaptation, and climate smart, risk informed development are urgently needed.

Without this, development gains are at risk of being lost in future disaster events. Any policies and strategies that national governments develop to achieve the SDGs must also incorporate climate smart, resilience thinking for floods and other hazards.

By incorporating resilient, climate-smart thinking into disaster risk management, climate change adaptation, and development agendas, countries and donors can ensure that the SDGs are not undercut by the impacts of floods.

When developing policies to achieve the SDGs national governments must also incorporate climate smart, resilience thinking for floods and other hazards (fierce squalls). Otherwise, any progress risks being undermined by disaster.

SDG 3

The third goal is about the well-being and health of young and old people. During floods, these groups deserve a lot of attention because they are quite defenseless and vulnerable in general. A great deal must therefore be invested in health care to

provide this group with high-quality health care in the event of calamities. Apart from good healthcare, rapid response is also required in the event of flooding. So, a fast response time is also necessary,

SDG 6

Goal six is about ensuring access to sustainable water management and sanitation for all. Good quality sanitation and clean drinking water contribute to a positive influence on health, food safety and health. There is enough clean drinking water in the world for everyone, but due to poor infrastructure, for example, many people die every year because of polluted drinking water. Floods can affect drinking water sources with harmful micro-organisms and water-borne diseases.

SDG Target 11.5

- By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations.

Context

Working with public authorities and other interests to plan for and mitigate flooding, supporting infrastructure projects that improve the capacity to store and move water, promoting flood insurance and other schemes to protect communities from damage, protecting natural areas that serve as buffers/filters and help with flood attenuation, and improving the capacity of water resource managers and government entities to issue warnings and respond quickly.

Climate change and climate variation may impact the frequency and severity of storms and floods, which are already difficult to predict. Storms and subsequent flooding can cause damage to communities and habitats resulting in sewer overflow and erosion that decrease water quality. Improved management of storm water and

floods has implications for public health, food security, the economy, and the environment.

SDG 15 It is important to stop the loss of biodiversity. The land area of Suriname is about 80 percent covered by forests. Forests are important for providing food security and shelter but are also crucial in combating climate change and protecting biodiversity. Desertification and deforestation, caused by climate change and man, pose extraordinary challenges to sustainable development, and undermine countless lives in the poverty struggle. By 2020, deforestation must stop, and global forestation must increase. In addition, in 2020 freshwater and terrestrial ecosystems must be protected, forests, mountain areas, swamps and steppes. Desertification must be stopped by 2030. Reforestation in the northern part of the coastal area can also provide protection against seawater encroachments due to climate change. Furthermore, reforestation in the hinterland (south) can also protect the urban area against landslides from the hinterland.

SDG 17 The last goal aims to keep the global partnership for sustainable development alive and strengthen the means of implementation. To achieve all the above goals by 2030, governments, organizations, businesses and citizens must work together. This mainly concerns trade, knowledge transfer, technology, data, and financial flows. To make the inner city of Paramaribo resilient to flooding, it is also important to establish partnerships with foreign actors so that in the worst-case foreign aid can get underway quickly.

This project is also in alignment with targets mentioned in the Suriname's Multi-annual Development Plan (MOP). In the MOP, under the theme "roads and drainage", the following is stated as strategic action points:

-The construction of pumping stations and dewatering pumps will be carried out with the same diligence as the clearing and excavating of main drainage channels

Under the theme "spatial planning" as strategic action points, the following is stated as strategic action point:

-Increase resilience to flooding by constructing basins in low-lying areas to collect rainwater to prevent or minimize flooding, and by regularly maintaining waterways (canals, ditches, etc.) to prevent silting

So, this project of upgrading the drainage system in the inner-city would also contribute to implementation of the Suriname's Multi-Annual Development Plan.

8 AVAILABLE RESOURCES

To keep the city of Paramaribo dry during heavy rain periods, we need to upgrade drainage systems and rehabilitate the sluices and pumping stations. The resources are available from an institutional and community perspective. From an institutional perspective we have human resources (skills and expertise), technical resources (construction designs) and facilities (equipment like excavators).

- There are no financial resources available for the project. The project needs to be done through funding. From a community perspective there will be an implementation plan and schedule for consultation and engagement activities.
- The aims of a community consultation plan should be:
- Background information: includes project context and any previous community engagement learnings from other projects that are relevant to this project and community.
- Clearly defined engagement purpose and engagement objectives: this will determine the engagement methods you select and help when evaluating your community engagement activities and provide measures of success.
- Engagement principles: to guide how you're going to engage with the community.
- Risks and challenges and mitigation strategies: think through any potential risks, rate the likelihood and impact of each risk and consider ways to reduce any risks. This is beneficial for the project and the community.

- Level of engagement: this determines how you will engage with the community and what role the community will have in decision making (if any) from informing/ being informed to empower /being empowered to decide.
- Stakeholder analysis: includes details of all stakeholders, internal and external, their level and nature of interest in the project and level of engagement.
- Engagement methods: identifying how and when you will engage with each stakeholder.
- Evaluation: What worked well and what learnings can you carry forward for your next community engagement project? Did you meet the engagement? purpose and engagement objectives of your community engagement plan?
- Keeping the community up to date on the process and progress of the project's development.

9 BENEFICIARIES

In the heart of Suriname's Capital, the Paramaribo historic center is a UNESCO's World Heritage site that includes architectural buildings such as governmental buildings, wooden mansions, clothing shops, malls, cafeterias, casinos, jewelers, hotels, the central market and churches with high transit and national interest.

The direct beneficiaries of the project are the daily commuters such as shops, malls , cafeteria, pharmacy owners, bus, taxi drivers and market vendors. They use the streets to earn a living. The indirect beneficiaries of the project are the occasional commuters such as tourists, people from other districts / towns (shop visitors). It can be concluded that the inner city of Paramaribo is focused on delivering goods and services that bring a lot of movement between peoples.

To stimulate a continuous flow of goods and services an adequate infrastructure is needed (streets, buildings, drainage systems). To provide the inner city with

adequate infrastructure the Ministry of Public Works has the lead in it. This can lead to an increase in the value of properties or services in the business area for every beneficiary.

10 ANNEXES (LOGICAL FRAMEWORK WORKSHOP DELIVERABLES)

10.1 STAKEHOLDER ANALYSIS

Stakeholders	Issues	Expectations	Leadership and influence	Strategies to follow
Business owners (hotels, shop owners, markets, casino's)	<ul style="list-style-type: none"> -Reduced income (no or less clients) -flooded entrance -Damaged goods 	<ul style="list-style-type: none"> Well drained streets Increase of client traffic 	<ul style="list-style-type: none"> -Highly favored -High influential (unión of business owners) 	Contribute with finances so the Ministry can upgrade the drainage system or maintain regularly
Shop visitors tourists, commuters	<ul style="list-style-type: none"> -Unable to walk for shopping and sightseeing -Exposure to waterborne diseases - Difficult accessibility for people with disability 	<ul style="list-style-type: none"> Well drained streets 	<ul style="list-style-type: none"> -Highly favored -Low influential 	Work along the associations to gain viability through public opinion positioning
Road user (transport vehicle users, pedestrians)	<ul style="list-style-type: none"> -traffic jam -Broken cars -Overheated cars, busses and motorcycles -Road damages -Unwanted water splashes for pedestrians 	<ul style="list-style-type: none"> Well drained streets 	<ul style="list-style-type: none"> -Highly favored -Low influential 	<p>The association of buses and taxis can highlight this problem through the media or file a petition with the government</p>

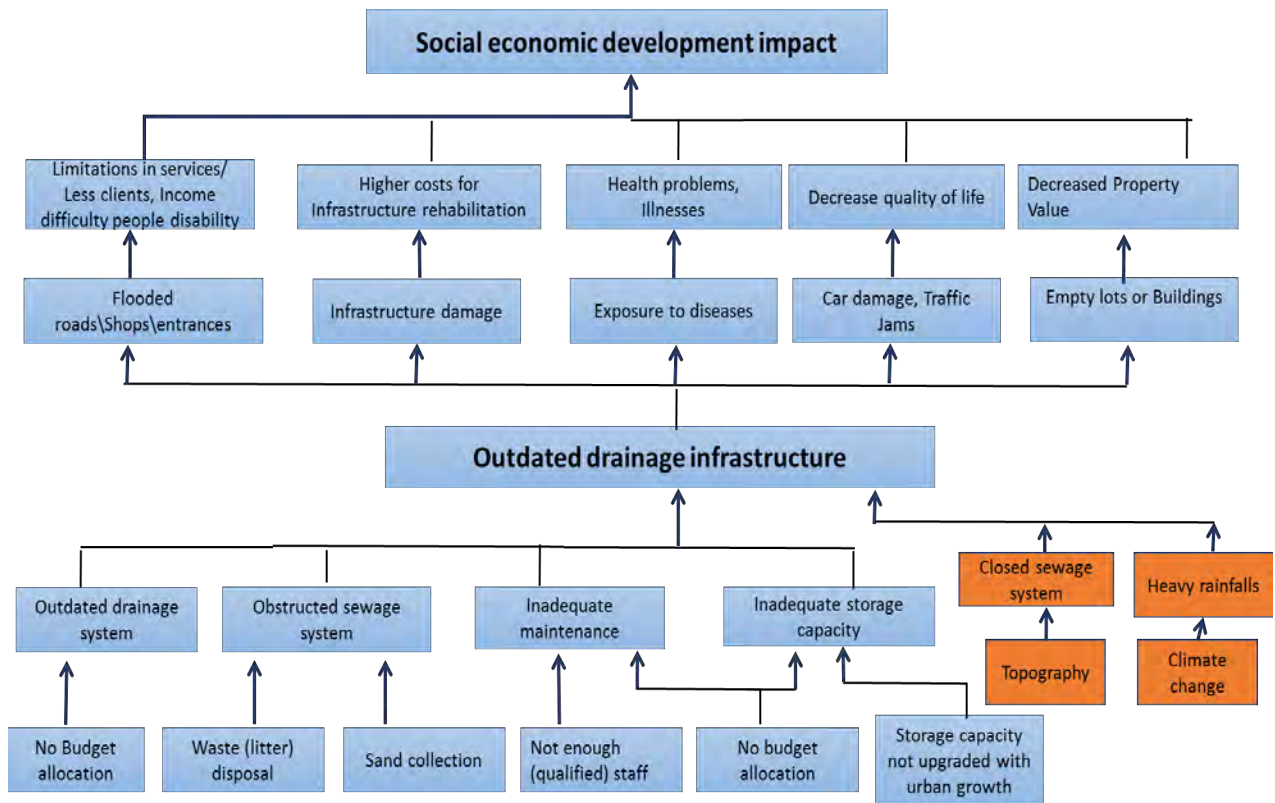
Contractors	Flooded streets -Clogged sewage system	-Flexible\ faster water discharge -Increased storage capacity	-Highly favored - High influence	- Open the tender to international companies to make it more competitive
Public Works (OGR): Owners and Execution	-Flooded streets -Clogged sewage system -Outdated drainage infrastructure -Finance to tackle drainage system	-Flexible\ faster water discharge -Increased storage capacity	-Highly favored - High influence	-Supervision of the project -Assist with technical Knowledge and experience
Media Houses	Flooded streets Public Safety	-Flexible\ faster water discharge Minimal Public Health and Safety	-Highly favored -Low influential	reporting proper and improper flood risk management practices. Investigative journalism to ensure projects stick to their objectives without interference.
Ministry of Public Health	-Flooded streets -Public Exposure to waterborne diseases	-Flexible\ faster water discharge Minimal Public Health and Safety requirements	-Highly favored - High influence	Give public guidelines to avoid dealing with direct and indirect flood related diseases such as water-borne and vector-borne diseases
Ministry of Finance	Flooded streets -Clogged sewage system	-Flexible\ faster water discharge -Increased income tax	-Highly favored - High influence	Make additional funds available for the project execution in case of budget deficit

National Coordination Centre for Disaster Management (NCCR)	-Flooded streets -Clogged sewage system	-Flexible\ faster water discharge Minimal Public Health and Safety requiremen ts	-Highly favored - High influence	- identification of critical facilities -preparation plans for the occurrence of a disaster - education of the public
Utility Companies (water, electricity, telephone)	-Flooded streets -Clogged sewage system	Well drained streets	-Highly favored -Low influential	Rerouting and laying of utility pipes during project execution

10.2 PERCEIVED PROBLEMS

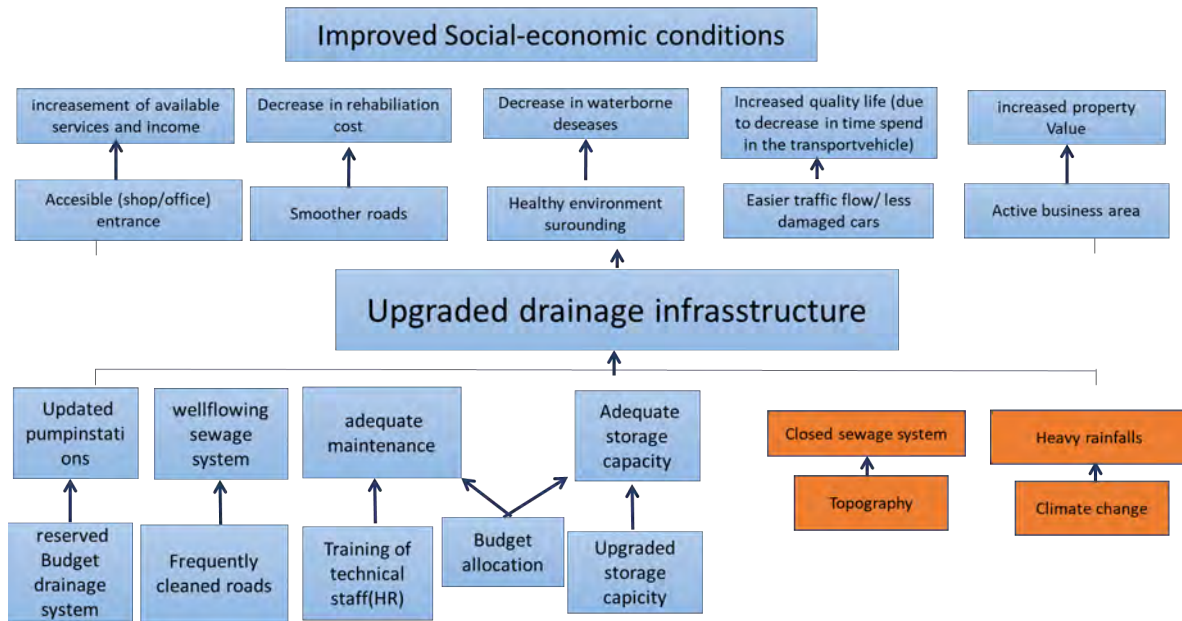
Stakeholders	Perceived problems	Evidence	Information source
Business owners [hotels, shop owners, markets, casino's etc.]	<ul style="list-style-type: none"> •Flooded entrance or shop •Damaged goods •Reduced income [no or less clients] 	<ul style="list-style-type: none"> •Photos/videos of the situation •Financial accounting shop etc. •Tax numbers 	<ul style="list-style-type: none"> •Media •Photos made by stakeholders •Accounting shop •Tax company
Shop visitors, tourists	<ul style="list-style-type: none"> •Unable to walk for shopping and sightseeing •Exposure to waterborne diseases •Difficult accessibility for people with disability 	<ul style="list-style-type: none"> •Interviews with visitor's area •Data from dept. Public Health 	<ul style="list-style-type: none"> •Interviews with visitor's area •Data from dept. Public Health
Road user [car-bus drivers, pedestrians, motor and bicycle drivers]	<ul style="list-style-type: none"> •Traffic jam •Broken cars •Overheated cars, busses and motorcycles •Road damages •Unwanted water splashes for pedestrians 	<ul style="list-style-type: none"> •Photos/videos of the situation •Receipts from the mechanic •Data from "Roads dept.) 	<ul style="list-style-type: none"> •Photos/videos of the situation •Receipts from the mechanic •Data from "Roads dept.)
Public Works [OGR] Owners and Execution	<ul style="list-style-type: none"> •Flooded streets •Clogged sewage system •Outdated drainage infrastructure •Finance to tackle drainage system •Road damages 	<ul style="list-style-type: none"> •Data from "Roads, Drainage or Waste departments of Min. Public Works 	<ul style="list-style-type: none"> •Data from "Roads, Drainage or Waste departments of Min. Public Works

10.3 PROBLEM TREE



a.

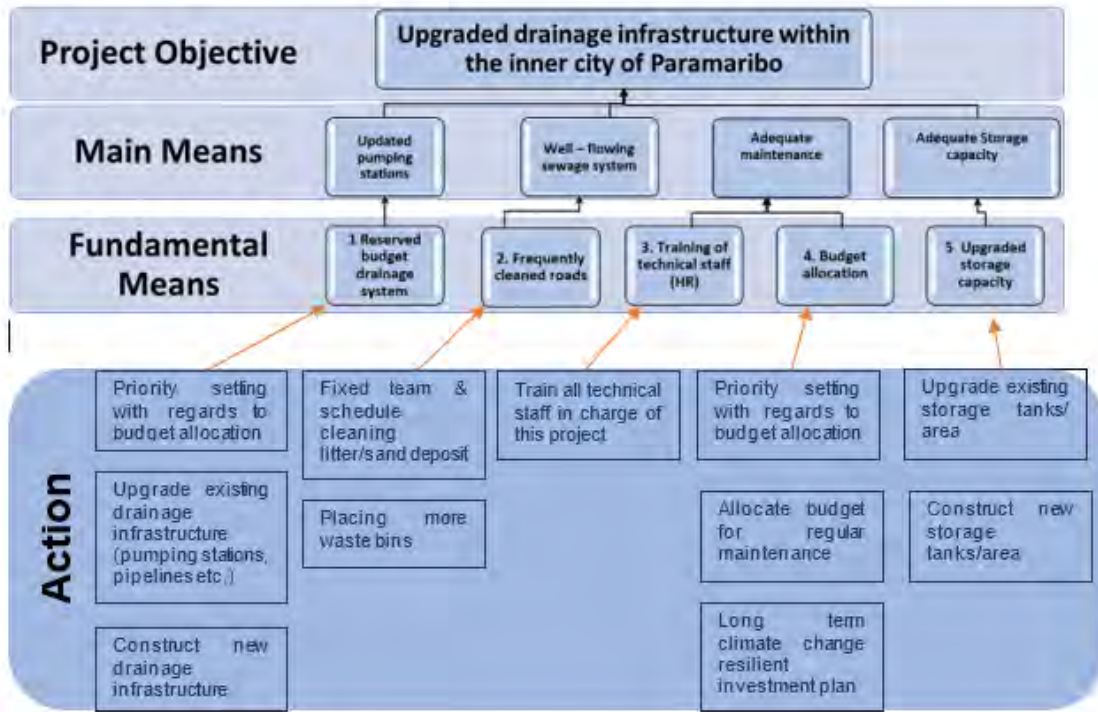
10.4 OBJECTIVE TREE



10.5 LOGICAL FRAMEWORK MATRIX

	Objectives	Indicators	Means of Verification	Risk assumptions
Development Goal	Improved social-economic conditions	-decrease in rehabilitation cost by 60% -decrease in waterborne diseases -increase in the quality life of transport vehicle users -increased property value of the inner city	-municipal tax numbers -medical costs on waterborne illness in Paramaribo from the data presented by Ministry of Public Health - Time spent on commuting, money spent on repairs due to floodings from interviews -tax collection & tourism numbers	-Climate change -Data availability -Construction and maintenance cost increase. -National priority setting. -Economic crisis.
Project Objective	Upgraded drainage infrastructure within the inner city of Paramaribo	-100% of the drainage system is functional within the impact area. -100% of the pipeline is maintained during the project's lifetime.	-Project execution within time, budget and quality. -Preventive maintenance related to avoiding garbage and waste. Data will be presented in newspapers. -the attendance list shows that 100% of technical staff needed for this project is trained. -the project reportage document shows that the (needed) storage capacity is upgraded	-Climate change -Construction and maintenance cost increase. -Fiscal situation -Data availability -Human behavior
Component	1. Updated pumping station 2. Well flowing sewage system 3. Adequate storage 4. Adequate maintenance	1. all new pumping station installed 2. 3 m3/sec flowing rate of wastewater per pumping station. 3. reduction of 10% waste/litter collection in inspection tank 3. enough storage capacity (m3) is created/installed	-number of updated pumping stations -grade well flowing sewage system -frequency of adequate maintenance -(no litter)awareness campaign -volume of storage capacity -weather resilient infrastructure (all data should be available in the project dossier)	-Data availability -Construction and maintenance cost increase -Topography -Climate change
Activities	-Priority setting -Negotiation in other to have budget allocated	-Storage tank construction -Tanks leaks and damages repairs -Technical staff training -Long term climate change resilient investment plan	-number of storage tank - number of leaks repairs (all data should be available in the project dossier) -number of staff trained (training attendance list) -number of documents in the context of climate change resilient plan of Suriname	-Climate change -Construction and maintenance cost increase

10.6 PROJECT OBJECTIVES, MEANS AND ACTIONS



b. 10.6 PROJECT ALTERNATIVES AND CRITERIA TO SELECT

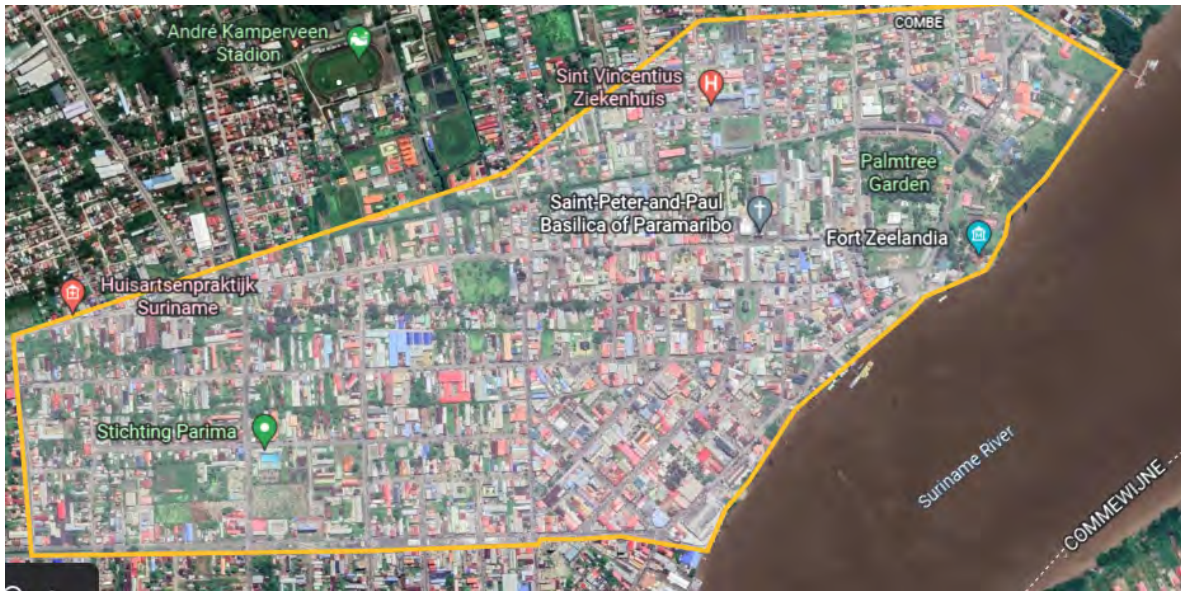
Project Alternatives

FM	Project Alternative 1	Project Alternative 2
1	Upgrade existing pumping stations	Construct new pumping stations
2	Fixed team & Schedule cleaning litter/sand	Placing more waste bins
3	Technical staff training	Technical staff training
4	Priority setting budget maintenance	Priority setting budget maintenance
5	Upgrade existing storage tanks	Construct new storage tanks
6	Long term climate change resilient investment plan	Long term climate change resilient investment plan

Proposed Alternatives	Costs (50%)	Community Support (10%)	Institutional Support (10%)	Technical Feasibility (30%)	Total score
Option 1	60%	10%	10%	20%	100%
Option 2	40%	10%	10%	20%	80%

c. 10.7 OTHERS (MAPS, GRAPHICS, STATISTIC, NEWS, REPORTS, ETC).

Fig.1: Demarcation of the inner city Paramaribo for this project



Source: Google Earth, 2022.

Annex 2

Group 2 Project Document – CReW+ Suriname Nov 2022

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Formulation and Evaluation of Water and Sanitation Public Investment Projects in Suriname. Skills Development Academic Program.

Project Document

Water Treatment Plant in Pusugrunu

Paramaribo, Suriname

November 2022

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1 INTRODUCTION

The Skills Development Academic Program on Formulation and Evaluation of Water and Sanitation Public Investment Projects in Suriname is part of the Global Environmental Fund (GEF) CReW+ program, which is a partnership financed by the GEF, and co-implemented by the Inter-American Development Bank (IDB) and the United Nations Environment Programme (UNEP) in 18 countries of the Wider Caribbean Region: Barbados, Belize, Colombia, Costa Rica, Cuba, Dominican Republic, Grenada, Guatemala, Guyana, Honduras, Jamaica, Mexico, Panama, Saint Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines, Suriname, and Trinidad and Tobago.

The GEF CReW+ program is being executed on behalf of the IDB by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and the Organization of American States (OAS) and on behalf of UNEP by the Secretariat of the Cartagena Convention, the GIZ partners with ICAP as a specialized academy and advisory organism on public administration to deliver knowledge transfer and research deliverables.

The Skill Development Academic Program is oriented to prepare public servants specialized in Public Investments National Systems, Public Planning, Environmental, Agricultural and Finance Ministries, as Water and Sanitation agencies to upskilling on project formulation and evaluation, following the ICAP's methodology.

This document is a result of this academic program, confirming that the participants acquire new skills and enhance existing ones for a resultant better project management skill set put into practice.

2 BACKGROUND

In Suriname, the Ministry of Natural Resources (MNR) is the responsible institute for the drinking water mandate by formulating and implementing the national drinking water policy. For the purpose of policy implementation, the Ministry has working arms, including the Surinamese Water Supply Company (SWM NV) and the Water Supply Service (DWV).

The Surinamese Water Supply Company is a fully government owned company with a commercial set-up. The working area of the Surinamese Water Supply Company (SWM) includes the entire coastal area and some areas in the districts of Para, Marowijne, Brokopondo and Sipaliwini.

The Water Supply Department (DWV) is a government institute that mainly has to take care of the drinking water supply in the distant village communities including in the south of Suriname. It is a complete government institution and is financed and managed from the budget of the central government.

- In order to implement the project objective, support from the stakeholders and local people is required.

Such as:

- Bureau of Public Health
- Ministry of Finance
- Ministry of Regional Development and Sport
- Local community in the hinterland

Ad.1 Bureau of Public health is committed to the health of the population. They do regular lab tests to check the quality of the water

Ad. 2 Ministry of Finance: Not only budget the finances that can be released for the project but they also search for finances for projects.

Ad. 3 Ministry of Regional Development and Sport same as Ministry of Finance. The district commissioners fall under this ministry

Ad. 4 Local community they are engaged in organizing the cultural activities in the village for the benefit of the project such as krutu's (meeting of the village)

- During the initiating phase, the project document will be developed in a group session in collaboration with ICAP. This document will mainly describe the following: management planning elements, description and main stakeholders of the project.
- Afterwards, the project scope statement will be defined with an elaborated work breakdown structure and criteria for team resources and the development of a financial- procurement- and a monitor and evaluation plan. During this planning phase the PIU will be established and will be responsible for development of the project planning and implementation.

Project location and basic information:

The village Pusugrunu is located on the headwaters of the Saramacca River and is inhabited by maroons of the Matawai tribe in the district Sipaliwini. The chieftain or the Gaanman, Mr. Lesley Valentijn resides on site and has a board office located there. Pusugrunu has a central location along the river within a radius of approximately 1500 m compared to the nearby villages including Bethel, Tevreden, Pijeti and Soekibaka. The inhabitants of the five villages (a total population of approximately 200) have been lacking safe and healthy drinking water for years, with all the negative consequences that this entails for their daily lives. During the dry seasons, the rainwater harvesting storage tanks are dry and the river is the only alternative to drinking water. This causes many unhygienic situations, especially at the primary school present and the stay of the teachers in the area is therefore not easy.

Transportation

There are three types of transportation

- By road: connecting Pusugrunu via Atjoni with Pokigron, a connection to the North South;
- By air: is served by the Pusugrunu Airstrip, offering scheduled services to and from Paramaribo;
- By water: villages on the Saramacca River are reachable by dugout canoes, which regularly travel the rivers.

Around mid-2018, two (2) groundwater wells were tapped in the village Pusugrunu. These sources have not been further developed but offer good opportunities to provide the surrounding villages with sufficient drinking water.

3 PROBLEM TO SOLVE

Currently, approximately 75 – 80% of the population in the coastal area and less than 40% of the population in the interior have access to safe drinking water in Suriname.

Due to lagging development of basic infrastructure for water and electricity, the districts in the interior Marowijne, Brokopondo and Sipaliwini compared to the other 7 districts in Suriname, have poor access to drinking water.

The primary source of drinking water for the majority of the households in Pusugrunu is rainwater collected in tanks or drums and creek or river water.

However, a main concern is the contamination of surface water due to various reasons, the impact of Climate Change and the uncontrolled use of pesticides. These are major challenges for water quality. Amidst the Covid -19 pandemic where hygiene and sanitation as well as access to water is more than ever of higher importance in prevention schemes against Covid- 19.

Pusugrunu, therefore, is part of the priority areas involved in the trajectory of increasing availability of water and sanitation in rural areas.

The village Pusugrunu had a drinking water supply system set up around 1975. This system is outdated and has not been operational for more than 15 years. The remains cannot be incorporated into the new set-up, due to contemporary regulations.

If this problem of Pusugrunu is not solved soon, there is a high probability that, through the conscious or unconscious use of the polluted water, numerous diseases will start to occur in this area and the surrounding villages. Pregnant women may lose babies, outbreak of cholera and dengue. There can be an outbreak of gastrointestinal diseases. Also, Suriname can be taken to task because we have signed treaties where we are obliged to provide society with healthy and safe drinking water. We are thinking of the SDGs and human rights treaties

Another big problem is the maintenance of the drinking water installation systems. This is because the donor is only responsible for the project for 3 years after completion. After the period of max 3 years, we often have no idea how to proceed with the maintenance. Apart from the fact that the knowledge is often lacking, we also lack the finances to meet optimal maintenance of the systems. With this project we also want to solve this problem.

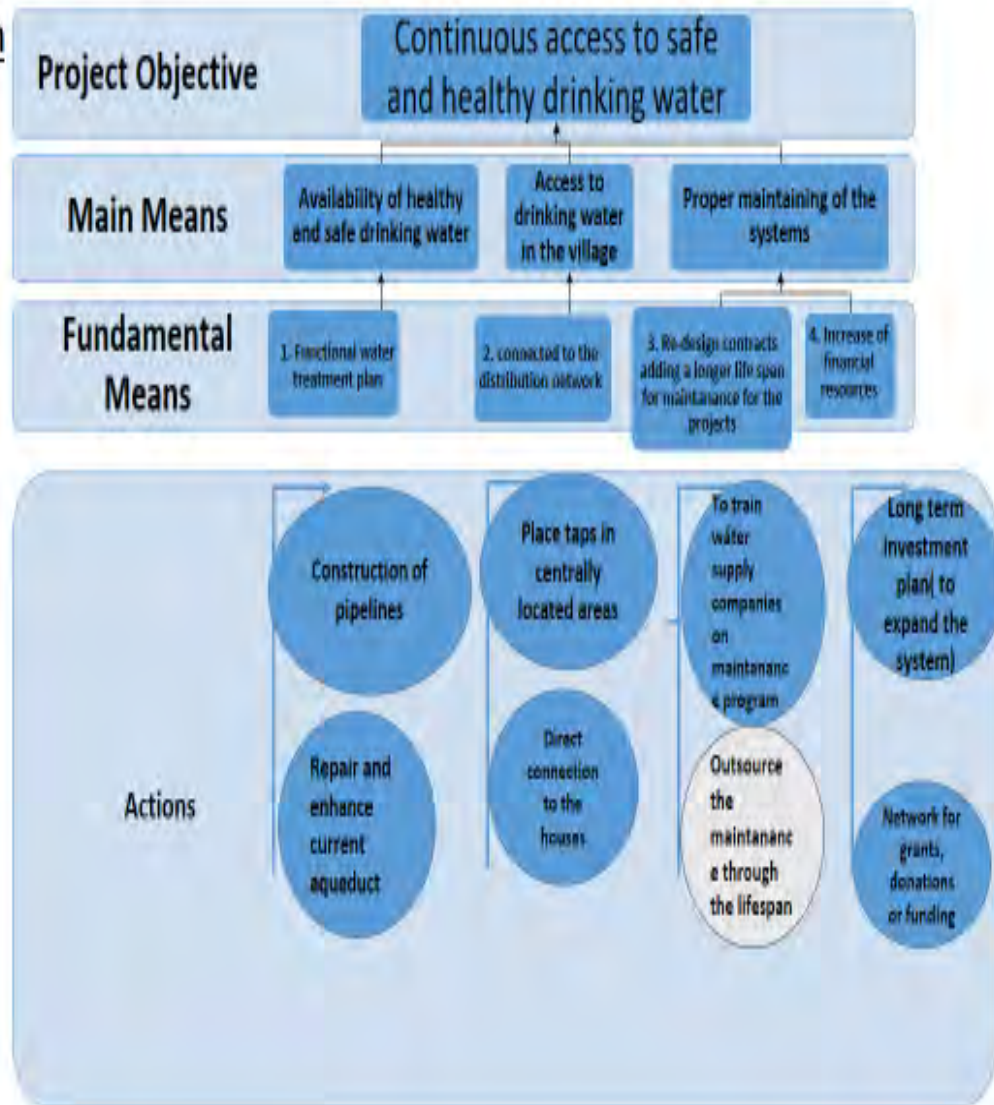
4 SELECTION OF SOLUTION ALTERNATIVE

In the village Pusugrunu, the decision was made to install a water treatment plant. The choice was made for Pusugrunu, because it is centrally located from several other villages. These villages (Bethel, Tevreden, Pijeti and Soekibaka) will benefit from/ be connected to this system also.

To solve this project, a whole new system will first have to be set up, as the previous one is very outdated. We will place taps at centrally located stations so that everyone can be provided with safe and healthy drinking water without traveling long distances. We will also work on a proper maintenance contract through the projects lifespan of approximately 20 years. During this period we will also clearly state that our Water Supply Company will be fully trained to be able to do the maintenance of these installations after those 20 years, while the maintenance will be outsource in this period

When this is accomplished, i.e. installing the drinking water system, we as a government can work to introduce Integrated Water Resource Management to achieve sustainable water management.

Action Formulation



Project Alternatives

FM	Project Alternative 1	Project Alternative 2	Project Alternative 3
1	Construction of pipelines	Repair and enhance current aqueduct	Construction of pipelines
2	Place taps in centrally located areas	Direct connection to the houses	Place taps in centrally located areas
3	To train water supply companies on maintenance programs, (SWM, DWV)	Outsource the maintenance through the lifespan	Both
4	Long term investment plan(to expand the system)	Network for grants, donations or funding	Both
			Selected alternative

5 PROJECT OBJECTIVES

The policy objective of MNR regarding the water sector is: ***“to provide the entire Surinamese society with quality, healthy, safe and affordable drinking water and increasing the accessibility of drinking water in all water management areas nationwide.”*** The government's policy is therefore, aimed at safeguarding the availability of good, healthy and affordable drinking water in the interest of a healthy development of the community.

The objective for this project is limited to: **providing the Pusugrunu population a village in Sipaliwini with quality, healthy, safe and affordable water.** As a result, the establishment of a directorate specifically focused on water policy, which goes beyond more water supply, is of paramount importance.

This project will have a direct impact on the quality of water and the accessibility of water for villagers, resulting in better health and sanitation of the villages. In general: improving living and housing conditions through community engagement, awareness for sustainable management and ownership of the water distribution systems will be created.

6 JUSTIFICATION

The Ministry of Natural Resources (MNR) is the Ministry responsible for sustainable development and management for safe and healthy drinking water and for supervising the National Drinking Water Supply Company (SWM) and implementing Integrated Water Resource Management (IWRM) in Suriname. The Ministry aims at increasing drinking water distribution in the rural areas of Suriname and has been involved throughout the preparation and design phase of the operation at the highest level (Minister and Permanent Secretary).

The implementation of this project is of eminent importance because it will ensure that there will be a continued availability of healthy and safe drinking water. In addition, the implementation of IWRM can finally begin. Also, less water related diseases will occur which will boost the welfare of the village.

7 PROJECT'S ALIGNMENT WITH DEVELOPMENT GOALS

In the context of the United Nations Sustainable Development Goal 6 to be achieved by 2030, there will be a need to increase awareness among policy makers, society as a whole, with a special emphasis on young people, women and disadvantaged areas. Around 2030, the implementation of integral management of water resources should be a reality, as well as the accessibility of water for all Surinamese.

The need for this project is to implement the following water policy action points for 2021-2026:

1. Tapping new water sources for an optimal supply of good drinking water.
2. Expansion water mains network.
3. Further work on the extraction and purification of surface water.
4. The replacement and expansion of the water supply network in the various districts will also be continued.
5. Optimizing the constructed infrastructure (pipes, sources and treatment) as well as expanding the number of connections realized throughout Suriname.

With the implementation of this project, several SDG goals will be relayed. These are:



The important SDG Goals for this project are:



Good Health and Well-Being

Ensure healthy lives and promote well-being for all ages. Over the last 15 years, the number of childhood deaths has been cut in half. This proves that it is possible to win the fight against almost every disease. Still, we are spending an astonishing amount of money and resources on treating illness that are surprisingly easy to prevent. The new goal for worldwide Good Health promotes healthy lifestyles, preventive measures and modern, efficient healthcare for everyone.



Gender Equality

This aims to achieve gender equality by ending all forms of discrimination, violence and any harmful practices against women and girls in the public and private spheres. It also calls for the full participation of women and equal opportunities for leadership at all levels of political and economic decision-making.



Clean Water and Sanitation

Ensure availability and sustainability management of water and sanitation for all



Affordable and Clean Energy

Ensure universal access to affordable, reliable and modern energy services.

Clean energy provides a variety of environmental and economic benefits, including a reduction in air pollution. A diverse clean energy supply also reduces the dependence on important fuels.



Industry, Innovation and Infrastructure

Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.

A functioning and resilient infrastructure is the foundation of every successful community. To meet future challenges, our industries and infrastructure must be upgraded. For this, we need to promote innovative sustainable technologies and ensure equal and universal access to information and financial markets. This will bring prosperity, create jobs and make sure that we build stable and prosperous societies across the globe.



Reducing inequalities and ensuring no one is left behind are integral to achieving the Sustainable Development Goals. Inequality within and among countries is a persistent cause for concern.



Make cities inclusive, safe, resilient and sustainable. The world is becoming increasingly urbanized. Since 2007, more than half the world's population has been living in cities, and that share is projected to rise to 60 per cent by 2030.



Ensure sustainable consumption and production patterns. Worldwide consumption and production — a driving force of the global economy — rest on the use of the natural environment and resources in a way that continues to have destructive impacts on the planet.



Climate Action

Take urgent action to combat climate change and its impacts. Including flooding, drought, disasters.



Partnership for the goals

Strengthen the means of implementation and revitalize the global partnership for sustainable development. The global goals can only be met if we work together. International investments and support is needed to ensure innovative technological development, fair trade and market access, especially for developing countries. To build a better world, we need to be supportive, empathic, inventive, passionate, and above all, cooperative.

8 AVAILABLE RESOURCES

For this project, the Ministry's in-kind input will be in the form of personnel from the Ministry, such as DWV, CE&D

As the Executing Agency (EA), MNR will be responsible for:

- The technical execution of Project activities;
- Selecting and contracting of consultancies, and procurement of works, goods and related services;
- Reviewing and approving consulting products;
- Registering accounting information of Project funds;
- Managing consulting contracts and processing payments for consulting services and procurement of goods;
- Reporting periodically to the financial donor on the technical and administrative activities of the Project;
- Monitoring of Project progress towards outcomes and goals, and the identification of needs for adaptive management;
- Preparing and presenting progress reports.

Program Steering Committee (PSC): At the strategic level, the Government has established a Program Steering Committee (PSC) to provide high-level guidance and orientation on Program priorities, to monitor progress of implementation according to the agreed time schedule and to recommend on operational issues. The PSC will be composed of the Ministry of Finances and Planning, Ministry of Labor Employment and Youth Affairs, the Ministry of Regional Development & Sport and the Ministry of Natural Resources (MNR). The PSC will meet at least once each year and will be convened by the MNR. The Ministry of MNR (Executing Agency) will maintain communication with the PSC.

The CE&D-NH: The unit will specifically focus on raising awareness on the proper use of the systems (e.g., stopping vandalism and vandalism or illegal use of the system) and creating ownership by having the beneficiaries contribute some of the equipment. During the expansion of the distribution network, maintenance training will be part of the contract for the contractor to be hired to deliver the water treatment system. Eventually, the overall system will be included within DWV's regular maintenance programs in cooperation with SWM, especially water quality management control and will be budgeted as such. After technical completion of the project, a water quality monitoring system will be established with SWM. DWV has dedicated staff working and living in the area. The ministry will develop a system in

which beneficiaries contribute to the maintenance costs of the system, working closely with traditional authorities.

SWM: becomes a partner in guiding and enforcing water quality standards. Consultation in water quality testing and quality of materials to be purchased at the implementation stage. In all plans undertaken by the government in implementing water projects, the state water company SWM will be involved in guiding the quality control processes and maintaining and monitoring water quality. Even in this project, SWM will continue to do so at the request of the ministry. Water quality monitoring is a high priority of SWM. It has its own laboratory equipped with modern equipment to check the water for the presence of pathogenic bacteria. The SWM lab follows a strict monitoring program to monitor water quality from source to tap. (From extraction, in the treatment process and in the distribution network). There is also an Inspection and Control Department whose responsibilities include inspecting the facilities. A regular water monitoring schedule will be established after the technical completion of the project.

Local people: will contribute manpower, materials and other supplies such as maintenance of the area where systems are installed, land for installing the systems, reporting irregularities. They will be trained to maintain the equipment and/or make minor repairs to the system. This is to create a sense of ownership and involvement of the communities in the development of their living space and in the maintenance of their own environment.

9 BENEFICIARIES

Pusugrunu is a Matawai village located in North Saramacca in the district Sipaliwini along the Saramacca river. A road connecting Pusugrunu via Atjoni with Pokigron, where there is a connection to the North South Corridor.

Pusugrunu is served by the Poesoegroenoe Airstrip, offering scheduled services to and from Paramaribo. As for Pusugrunu and other villages on the Saramacca River, they are also reachable by dugout canoes. The head of the community is the Gaanman of the Matawaai village. Pusugrunu has a population of approximately 200 people. Pusugrunu is home to a Medische Zending healthcare centre.

The target population who can benefit from this project is the community of Pusugrunu (maroon people) including tourists who are in the area during vacations and other activities such as: small farming, hunting, fishing and logging.

Near the village are other villages who will be able to benefit from these drinking water installation systems such as Bethel, Tevreden, Pijeti and Soekibaka.

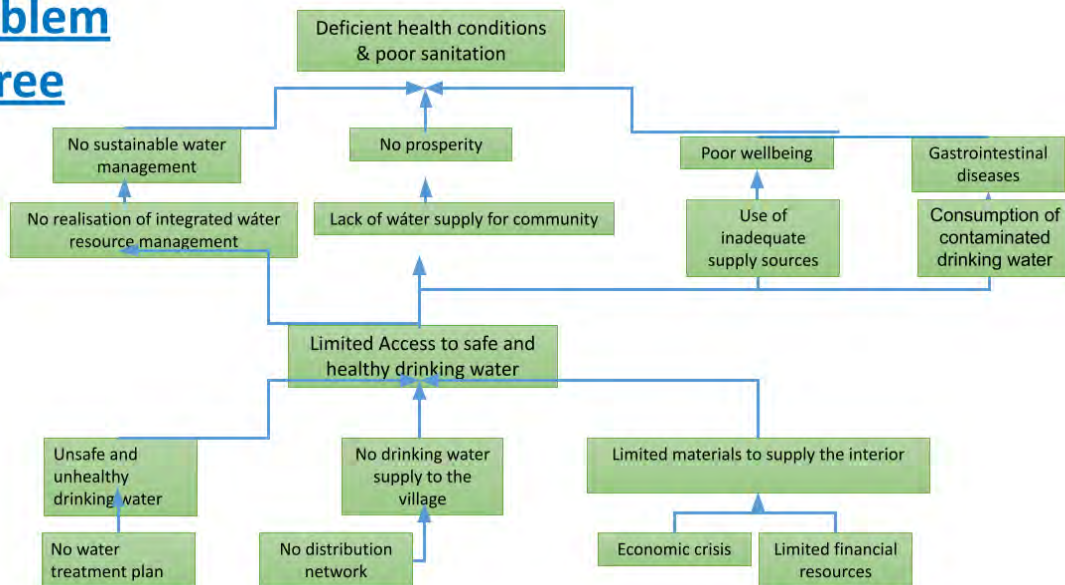
10 ANNEXES (LOGICAL FRAMEWORK WORKSHOP DELIVERABLES)

10.1 STAKEHOLDER ANALYSIS

Stakeholders	Issues	Expectations	Leadership and influence	Strategies to follow
Ministry of Natural Resources	Low Coverage of drinking water in the Pusugrunu village	Guarantee of safe and healthy drinking water supply	High influence	To make project proposals to find funding/donors
Village Community	Unsafe and unhealthy drinking water	Access to safe and healthy drinking water	Medium influence, some are in favor and some are not	Raising awareness of the importance of safe drinking water
Bureau of Public Health	Disease outbreak	Healthier Community	High influence	Deliver frequent water test labs (Monitoring)
Water Supply Company	Limited budget to supply drinking water for the village	Setting up a water treatment plan	High influence	Create opportunities for grants, donations, loans, or even state resources for the execution

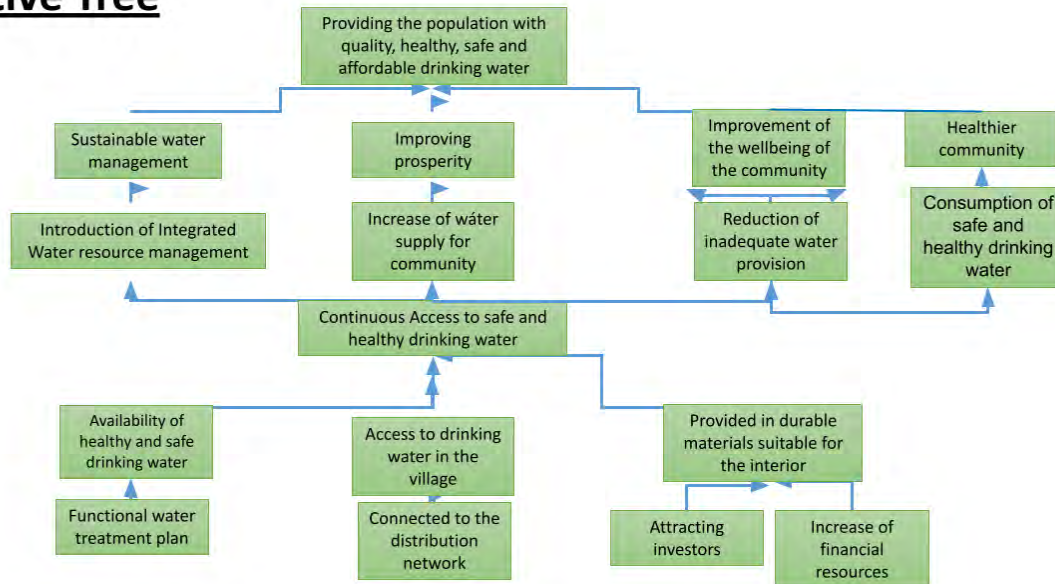
10.2 PROBLEM TREE

Problem Tree



10.3 OBJECTIVE TREE

Objective Tree



10.4 LOGICAL FRAMEWORK MATRIX

Logical Framework Matrix

Objectives	Indicator	Means of Verifications	Risk Assumptions
Goal: Providing the population with quality, healthy, safe and affordable drinking water	<ul style="list-style-type: none"> - Satisfied community for consuming healthy and safe drinking water - Decrease in waterborne diseases 	Monitoring of the water quality and the distribution network by BOG and SWM Statistics of reported diseases/consumption of contaminated drinking water	Financial partner may withdraw. Low capacity within MNR and Water Supply Department. Early elections may cause that the projects may have less priority. No cooperation from the community in the village.
Project goal: Continuous Access to safe and healthy drinking water	The community has continuous access to safe and healthy drinking water	Monitoring of the water quality and the distribution network by BOG and SWM	Maintenance of the water treatment plan Involvement of the gramam
Components: 1. Availability of healthy and safe drinking water 2. Connected to the distribution network 3. Provided in durable materials suitable for the interior	<ul style="list-style-type: none"> - The community is provided with durable materials suitable for the interior for building and monitoring of the water treatment plan - The community is connected to the water distribution network to be provided with safe and healthy drinking water 	Monitoring of the water quality and the distribution network by BOG and SWM	Availability of the financial resources for repair and maintenance
Activities: 1. Educate the community to use and maintain the water treatment plan 2. Construction of (drinking water) storage	<ul style="list-style-type: none"> - The community is trained and aware of the importance of safe and healthy drinking water - The water treatment plan is in 	Monitoring of the water treatment plan and the involvement of the community	Availability of financial resources for the monitoring

10.5 OTHERS (MAPS, GRAPHICS, STATISTIC, NEWS, REPORTS, ETC).



Map of Pusugrunu, Suriname



Road to Pusugrunu

Annex 3

Group 3 Project Document – CReW+ Suriname Nov 2022

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Formulation and Evaluation of Water and Sanitation Public Investment Projects in Suriname. Skills Development Academic Program.

Project Document

Clean Drinking Water and Sanitation Solutions for Brokopondo

Paramaribo, Suriname

November 2022

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1 INTRODUCTION

The Skills Development Academic Program on Formulation and Evaluation of Water and Sanitation Public Investment Projects in Suriname is part of the Global Environmental Fund (GEF) CReW+ program, which is a partnership financed by the GEF, and co-implemented by the Inter-American Development Bank (IDB) and the United Nations Environment Programme (UNEP) in 18 countries of the Wider Caribbean Region: Barbados, Belize, Colombia, Costa Rica, Cuba, Dominican Republic, Grenada, Guatemala, Guyana, Honduras, Jamaica, Mexico, Panama, Saint Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines, Suriname, and Trinidad and Tobago.

The GEF CReW+ program is being executed on behalf of the IDB by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and the Organization of American States (OAS) and on behalf of UNEP by the Secretariat of the Cartagena Convention, the GIZ partners with ICAP as a specialized academy and advisory organism on public administration to deliver knowledge transfer and research deliverables.

The Skill Development Academic Program is oriented to prepare public servants specialized in Public Investments National Systems, Public Planning, Environmental, Agricultural and Finance Ministries, as Water and Sanitation agencies to upskilling on project formulation and evaluation, following the ICAP's methodology.

This document is a result of this academic program, confirming that the participants acquire new skills and enhance existing ones for a resultant better project management skillset put into practice.

2 BACKGROUND

Brokopondo is the capital town of the Brokopondo District, Suriname. It is located on the west shore of the Suriname river, just north of the Afobaka dam. Brokopondo can be reached via the Afobakaweg from Paranam to Afobaka. There is an urban center with scattered traditional marroon villages.

Brokopondo has a population of approximately 20.381 people. Demographically, the largest ethnic group of Brokopondo are the Maroons. The Marroon communities primarily depend on the environment (rivers). The main sources of income in this district are goldmining, agriculture, tourism, and fisheries (small scale). Primary level education is available, but students have to move to other districts for further education.

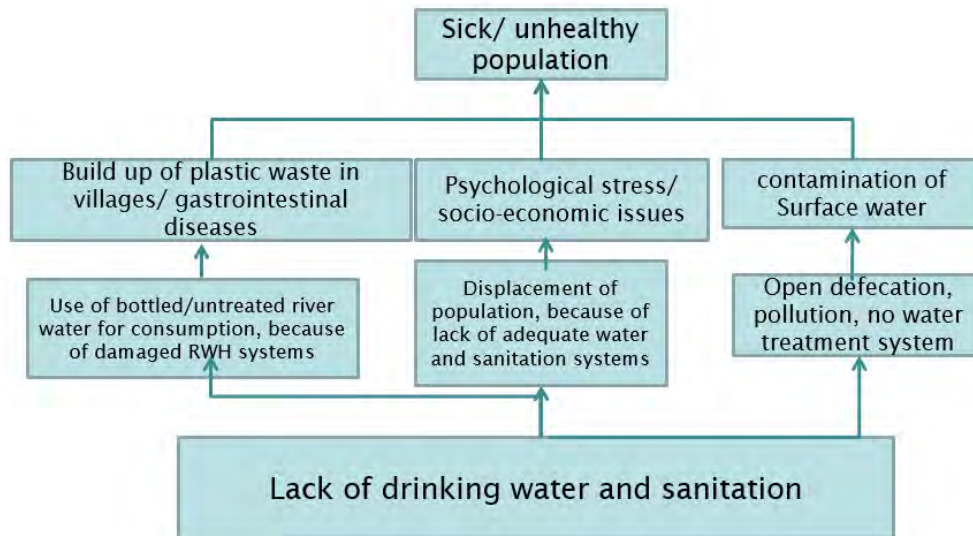
The Brokopondo Development Plan has designated the town of Brokopondo as one of the two major centres in the region - the other being Brownsveg - with a focus on tourism. There is a large beach next to the Suriname river near the city centre called Anani Beach. Additional developments will be a proper city centre, a bus station, a large hotel with at least 200 beds, and a centre for cultural studies.

Brokopondo is home to a Medische Zending healthcare centre, hotel, school, police station, and the Brokopondo Hydropower Plant and Reservoir. In 2014, multi functional centre was opened. On 10 January 2020, a waste incinerator was installed. A growing concern is the activity of gold prospectors who not only poison the rivers with mercury but are digging away the edge of the town.

The urban areas of Brokopondo have access to some basic utilities, although the recent flooding incidents have caused a lot of damage to these systems. The remote villages that are scattered all over the district lack most of these provisions.

The Ministry of Natural Resources is responsible for the provision of drinking water in general. Their water utility company, SWM, provides drinking water to the urban areas through their water network. However, the Ministry of Regional Development and Sports is responsible for water provision in the rural areas. The Ministry of Public Works has the mandate for sanitation infrastructure and drainage. The Ministry of Health has a role in ensuring that drinking water is safe for consumption and sanitation systems do not cause public health issues.

3 PROBLEM TO SOLVE



Many remote areas in Brokopondo are not connected to the drinking water network and have no access to clean potable water. They rely on rainwater for consumption and surface water (rivers) for other uses. In dry seasons surface water is also used

for consumption. The unpurified river water does not comply with drinking water quality standards.

Furthermore, adequate sanitation is a challenge in many of the remote villages. The standard toilet and septic tank system that is used in the urban areas is not suitable or culturally acceptable for many of these communities. Therefore, open defecation is a common practice in certain areas. This creates public health issues, especially during flooding.

These problems became more evident during the recent flooding of March – July 2022, caused by heavy rainfall and emergency water discharge from the Brokopondo hydropower reservoir. This flooding damaged the existing water and sanitation systems. A platform of representatives of village leaders was formed to seek help for these communities. Up to now there has been no institution responsible for monitoring the systems.

If these issues are not resolved in time, the following future scenarios may arise:

- Serious threats to public health
- Increasing expenses as they will have to buy bottled water to drink
- Disease outbreak during flooding, as sanitation is not adequate.

4 SELECTION OF SOLUTION ALTERNATIVE

FM	Project Alternative 1	Project Alternative 2
1	a. Adequate decentralised RWH systems b. Proper maintenance of RWH system	a. One central water distribution network in Brokopondo b. Proper Maintenance by dedicated personnel
2	a. Adequate water treatment system b. proper maintenance of water treatment system	a. One central water treatment system in Brokopondo b. Proper Maintenance by dedicated personnel

3	a. Adequate, acceptable sanitation system b. proper maintenance of sanitation system	a. Flush toilets with septic tank system or central drainage system b. Proper Maintenance by government
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In alternative 1 each household or village will have their own complete RWH system and acceptable sanitation system, both with adequate maintenance. Each village will have a proper water treatment system that can provide the local community with safe drinking water.

Alternative 1 is a tailored approach, where the local communities are responsible for their own RWH system to keep it clean and to have access to safe drinking water.

In alternative 2 the whole district is provided with one central water distribution (stand-alone system) and one central water treatment system where the maintenance is done by dedicated personnel. This is a solution that require a huge initial investment and high maintenance costs. Alternative 2 poses more risks in terms of hygiene. If the system is not maintained in time, a lot of people can get sick at once.

Proposed Alternatives	Costs	Community Support	Institutional Support	Technical Feasibility	Overall Score
Alternative 1	\$\$\$	high	++++	++++	4/5
Alternative 2	\$\$\$\$	medium	++	++	2/5
Optimize current situation	\$\$\$	low	+	+++	1/5
Do nothing	\$\$\$\$\$	low	-	-	0/5

For the selection of the project alternatives, the criteria that were evaluated are the costs, level of community support, institutional support, and technical feasibility.

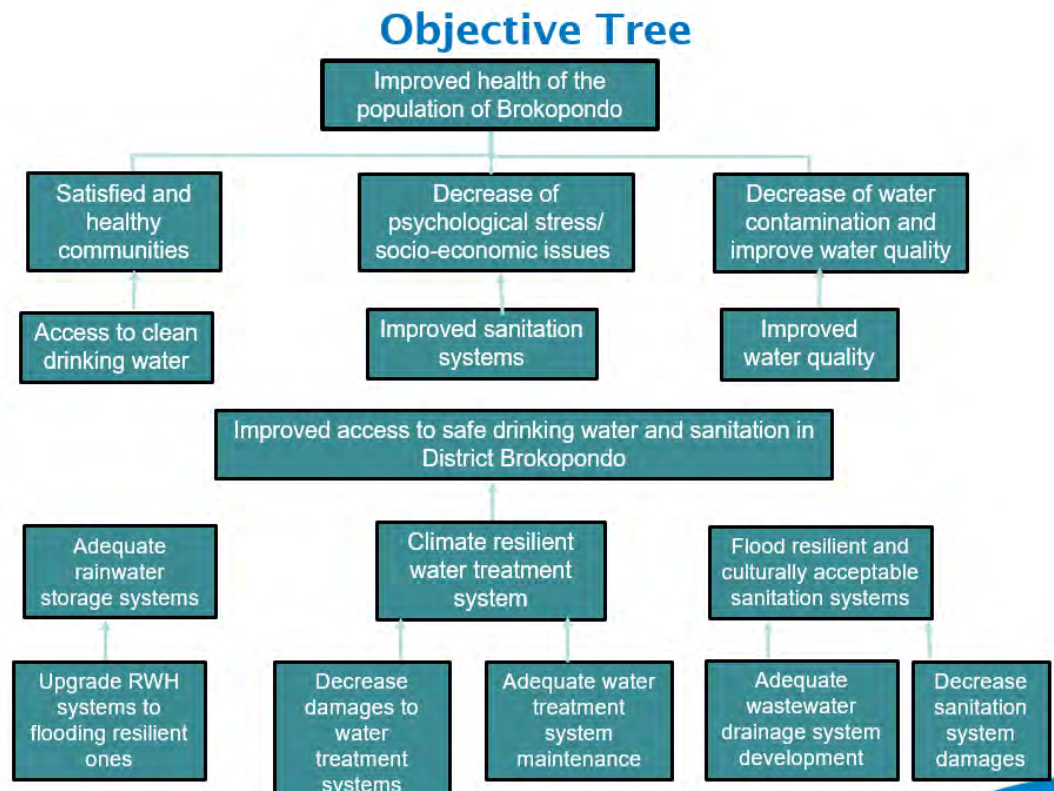
Alternative 1 is cost efficient. It fits well as a solution to our problematic, as it will contribute to improved access to safe drinking water and sanitation in district

Brokopondo in such a way that it is culturally acceptable and applicable for rural communities.

Alternative 2 as solution to the problem is based on a centralized system, needs more human capacity and institution strengthening and greater financial availability.

After a comparison of these two alternatives, also considering the geographical and demographic characteristics of Brokopondo, it is concluded that the population will benefit more from alternative 1.

5 PROJECT OBJECTIVES



To provide the community of Brokoondo with safe drinking water and adequate sanitation, the following things can be done:

- Adequate rainwater storage system: this can be done by upgrading RWH systems to flooding resilient ones.
- Make climate resilient water treatment system. This can decrease damages to water treatment systems and these systems needs to be maintained.
- Build flood resilient and culturally acceptable sanitation systems. An adequate wastewater drainage system can be developed, which can withstand flooding incidents.

Improving their access to safe drinking water and sanitation can also improve the health of the population. This community will have:

- Satisfied and healthy communities because they will have access to clean drinking water.
- Decrease of psychological stress/ socio-economic issues, due to improved sanitation systems.

- Decrease of water contamination and improve water quality, due to an improved water quality system.

6 JUSTIFICATION

Due to the flooding and climate change certain risks can be identified, which have a major negative effect on the population of district Brokopondo. The health of the local population of Brokopondo can be negatively impacted by lack access of drinking water and sanitation.

Poor hygiene in the impacted areas could favor spreading of health-related issues due to discontinued access to clean water and sanitation.

The direct negative effects caused by flooding are:

1. The dismantled water treatment systems (and no proper maintenance).
2. Destroyed Rainwater Harvesting Systems (RWH).
3. Destroyed latrines and no drainage existing systems in place.

Doing nothing will lead to a huge negative impact on the health and well-being of the local population in Brokopondo as well as social unrest. Therefore the project intervention is necessary to improve the access to safe drinking water and sanitation in these areas which have been severely disrupted by flooding and heavy rains.

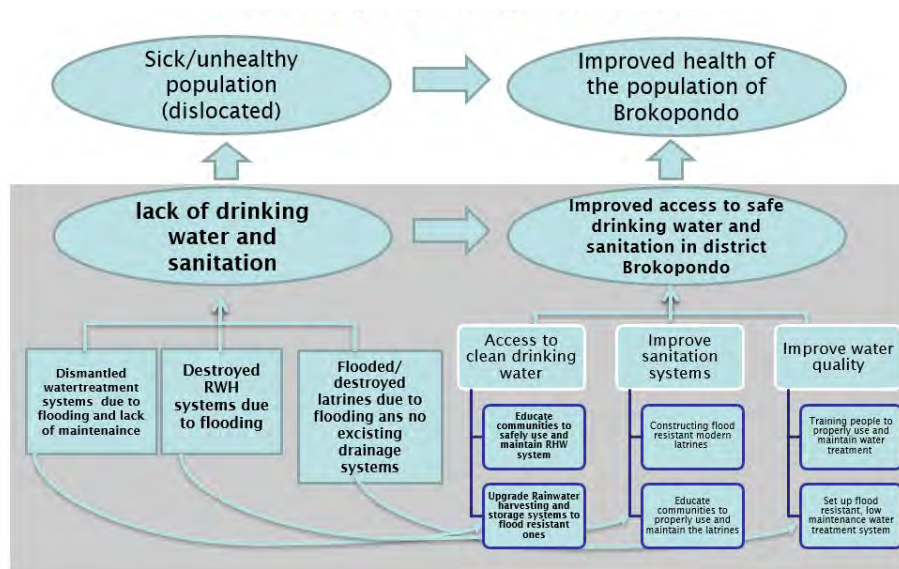


Diagram: Selected Proposal Justification

7 PROJECT'S ALIGNMENT WITH DEVELOPMENT GOALS



This project will address several Sustainable Development Goals, mainly SDG-6 Water and Sanitation. The planned activities aim to meet the urgent hygiene needs of the affected population impacted by the hydrometeorological events, including access to storage of safe water for sanitation.

These are the SDG-6 indicators for Suriname that are relevant to this project:

- Population using at least basic drinking water services: 98.0% (2020).
- Population using at least basic sanitation services: 90.0% (2020).
- Freshwater withdrawal: 4% of available freshwater resources (2018).
- Anthropogenic wastewater that receives treatment: 0.0 % (2018).

Furthermore, the project will contribute to the reduction of poverty and hunger (SDG-1 and SDG-2) by addressing some of the basic needs of the communities in Brokopondo. Providing clean water and sanitation solutions will certainly decrease water borne diseases and improve the health and well-being (SDG-3) of the Brokopondo population.

In addition, the local government, and non- and other government agencies to develop and implement strategies that reduce the risk to vulnerable populations and create opportunities for the greater involvement of women in the decision-making process. The project will empower women who play a pivotal role in the households in the villages, therefore promoting gender equality. (SDG-5).

By providing drinking water and adequate sanitation systems to the remote villages, the inequalities between urban and rural areas will reduce (SDG-10). The project also contributes to sustainable communities (SDG-11) by providing sustainable

solutions to their water and sanitation problems. The project considers the climate vulnerability of the systems and proposes solutions that are climate resilient. The project will provide new insights into community resilience to flooding and into possible ways to increase this resilience (SDG-13).

The project requires mutual efforts from different ministries, institutions and civil society and aims to strengthen their partnerships (SDG-17). Policy makers will benefit through gaining a better understanding of the temporal dimensions of individual and community flood resilience, i.e. of the role of community memory of floods and flood management measures. Representatives of selected government agencies will be able to input to the research project design and progress through participation.

8 AVAILABLE RESOURCES

As different institutions have a role in this project, the following institutional resources are identified:

- The Ministry of Health and its partners such as PAHO can provide technical expertise, monitoring and testing capacity and possible funding from the health perspective.
- The Ministry of Spatial Planning and Environment and NIMOS along with their partners can provide technical expertise, guidelines, and funding within the environmental context.
- The Ministry of Finance that is responsible for the budget allocations can help with funding.

Taking into consideration the cultural aspects of the maroon communities in Brokopondo, the traditional leaders can provide significant community resources to support this project, such as communication within and among villages, human resources (laborers), local information for situation analysis, supervisory role.

9 BENEFICIARIES

The beneficiaries of this project are the communities in Brokopondo, that have no access to clean drinking water and that rely primarily on rainwater and rivers for water consumption.

10 ANNEXES (LOGICAL FRAMEWORK WORKSHOP DELIVERABLES)

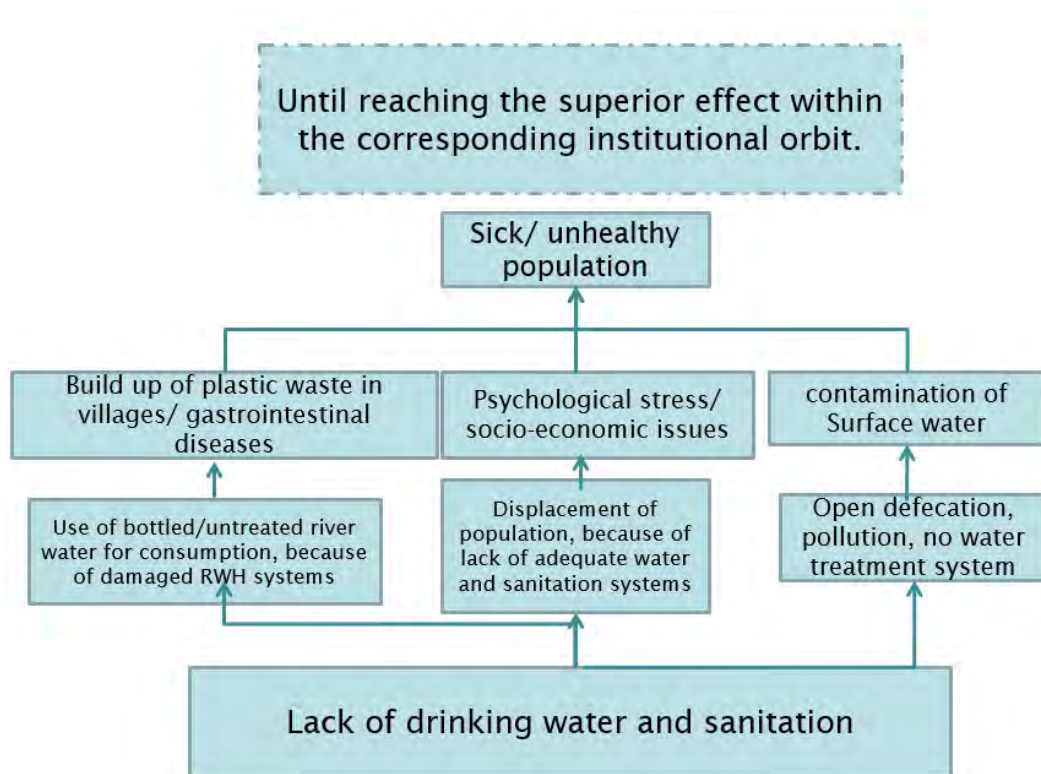
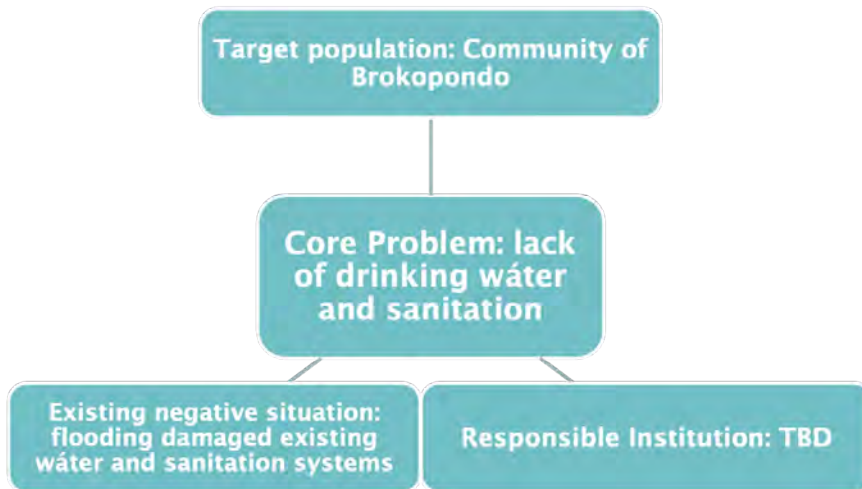
10.1 STAKEHOLDER ANALYSIS

Stakeholders	Issues	Expectations	Leadership and influence	Strategies to follow
Ministry of Health	Contaminated water caused health issues such as skin irritation, waterborne diseases, investment of flies and mosquitoes which can cause diseases	Healthy and safe environment for the village communities	Medium influence	<p>Involvement in emergency response guidelines regarding water and sanitation</p> <p>Use medical mission primary healthcare data to identify priority areas for intervention</p>
Ministry of Natural Resources	Existing waterpurification systems were damaged in the flooding.	Equitable Access to safe drinkingwater	Medium Influence	Design and setup system that resilient to flooding incidence
Ministry of Public Works	Limited accessibility to infrastructure due to flooding	<p>Early warning system for flooding</p> <p>Drainage system for household and septic water</p>	Medium influence	Development of Sanitation infrastructure in rural and urban areas
Ministry of Regional Development and Sport	Existing rainwaterharvesting systems completely washed away during the flooding	Ensuring culturally acceptable water and sanitation system provided to community	High Influence	Distribution of rainwater (harvesting) by Districtsommissioners and Ministry.
Platform of Traditional Village Leaders of Brokopondo	Disruption and displacement caused by flooding	Improve quality of life for the communities	High Influence	Involve cultural leaders to gain support and communicate to the different villages

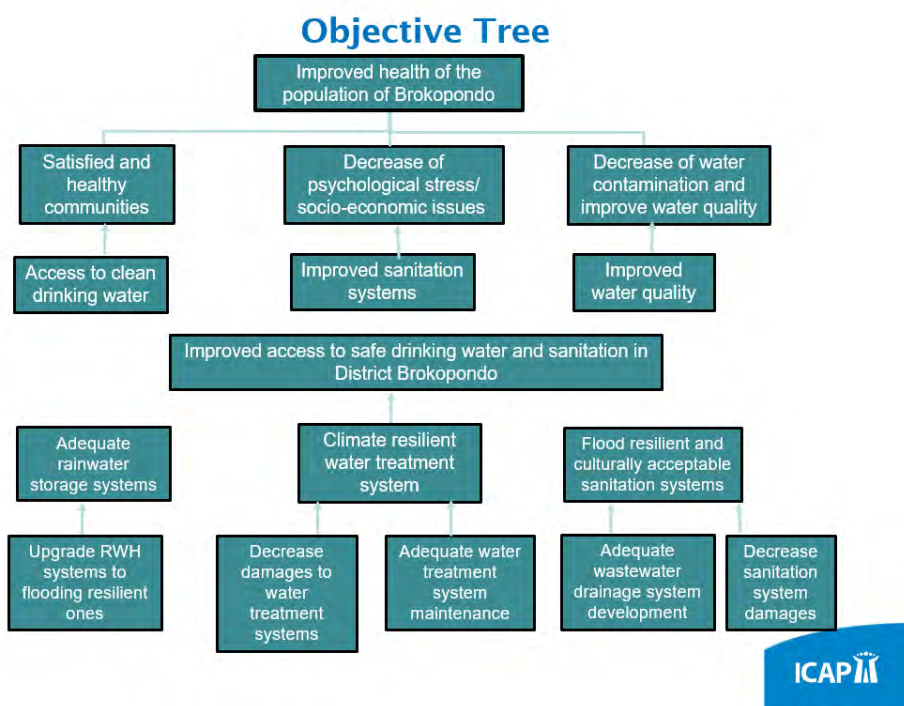
Communities	Disruption and displacement caused by flooding. Lack of drinking water and sanitation systems.	Improve quality of life for the communities	Medium Influence	Involve community directly for set up and maintenance of systems to increase community ownership.
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Stakeholders	Perceived problems	Evidence	Information source
Ministry of Health	Contaminated water caused health issues such as skin irritation, waterborne diseases, investment of flies and mosquitoes which can cause diseases	Received complaints Data reports from environmental Inspection and medical Mission	Community District Commissioner Environmental Inspection Medical Mission Reports and statistics (Ministry of Health – Statics Bureau)
Ministry of Natural Resources	Existing waterpurification systems were damaged in the flooding.	Received Complaints Report from Ministry Personnel	District Commissioner Community
Ministry of Public Works	Limited accessibility to infrastructure due to flooding	Daily Situation reports from NCCR	District Commissioner Community NCCR
Ministry of Regional Development	Existing rainwaterharvesting systems completely washed away during the flooding	Field inspection by personnel from District Commissioner	District Commissioner Community
Platform of Traditional Village Leaders	Disruption and displacement caused by flooding	Community Complaints Road Blockages	Community Media

10.2 PROBLEM TREE



10.3 OBJECTIVE TREE



10.4 LOGICAL FRAMEWORK MATRIX

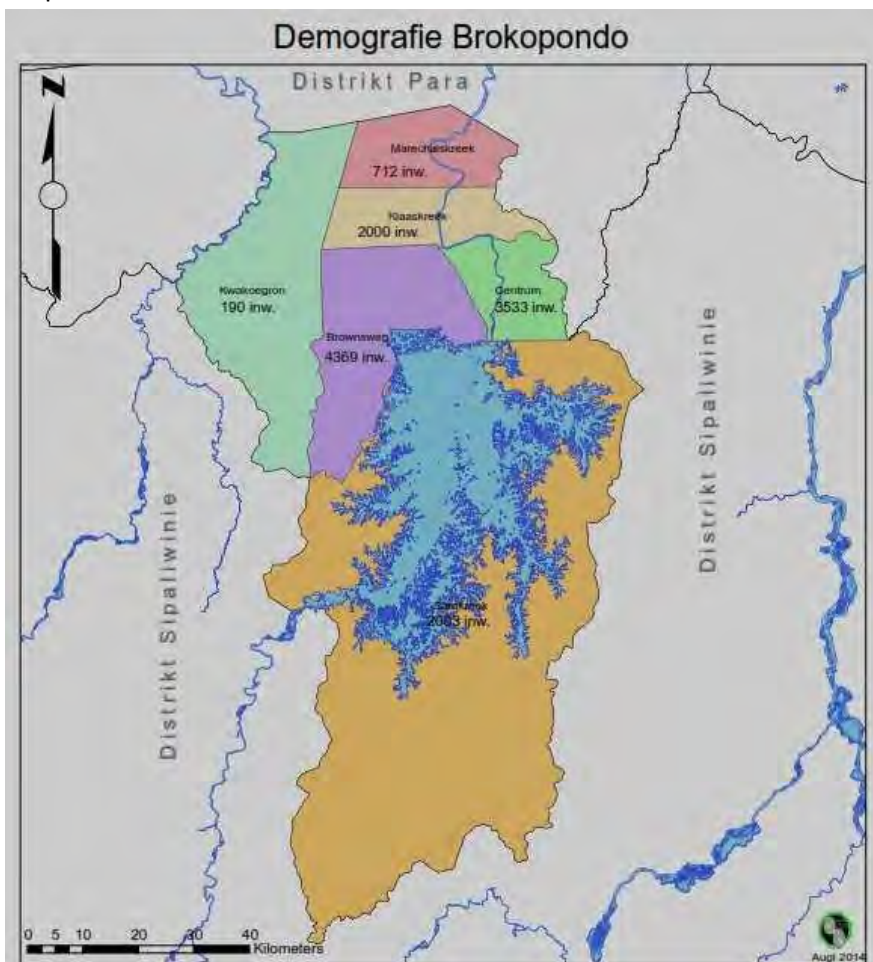
Objectives	Indicator	Means of Verifications	Risk Assumptions
Goal: Improved health of the population of Brokoondo	85% Satisfied and healthy communities Decrease of psychological stress/ socio-economic issues Decrease of water contamination	Health statistics (number of reported diseases) Population surveys Water quality monitoring	Survey Responses can be subjective. Willingness to provide culturally sensitive information. Water testing subjective to human errors.
Project purpose: Improved access to safe drinking water and sanitation in Brokoondo	90% of population has continuous access to safe drinking water 90% of population has an adequate sanitation system	Inspections by SWM, BOG and DC Surveys	Maintenance of systems Water contamination by external activities (e.g. small scale gold mining)

	90% reduction of open defecation		Communities going back to previous practices
<p>Outputs:</p> <ol style="list-style-type: none"> 1. Adequate RWH system + proper maintenance 2. Adequate, acceptable sanitation system + proper maintenance 3. Adequate water treatment system + proper maintenance 	<ol style="list-style-type: none"> 1. 90% of population is provided with improved RWH system 2. 90% of population has an adequate sanitation system 3. 90% of population is connected to an adequate water treatment system 4. Maintenance plan and procedures are in place 	<p>Inspections by SWM, BOG and DC</p> <p>Water testing</p> <p>Recurring training</p>	<p>Availability of Finances for continuous maintenance and repairs</p> <p>Economic crisis that compromises funds</p>
<p>Activities:</p> <ol style="list-style-type: none"> 1. Upgrade Rainwater harvesting and storage systems to flood resistant ones 2. Educate communities to safely use and maintain RHW system 3. Constructing flood resistant modern latrines 4. Educate communities to properly use and maintain the latrines 5. Set up flood resistant, low maintenance water treatment system 6. Training people to properly use and maintain water treatment system 	<ol style="list-style-type: none"> 1. 90% flood resistant RHW systems; 2. 90% of the community are trained and aware; 3. No system failures (for activity 2,4 and 6); 4. Water treatment system is in operation; 5. Modern Latrines build for 90% of population. 	<p>Monitoring of the systems during different weather conditions/seasons;</p> <p>Involvement of the cultural/traditional leaders to ensure compliance with maintenance plan;</p>	<p>Availability of Finances for monitoring.</p> <p>No support of traditional leaders.</p> <p>Extreme Weather conditions</p> <p>Low Accessibility to certain villages</p> <p>Economic crisis that compromises funds</p> <p>Communities going back to previous practices</p> <p>Inadequate maintenance</p>

10.5 OTHERS (MAPS, GRAPHICS, STATISTIC, NEWS, REPORTS, ETC).



Map of Suriname



Map of Brokopondo

Annex 4

An example of official budget allocation

Annex 04: An example of official budget allocation. Specific date.

National budget allocated to each ministry for investments in water management (CVR, 2017)

Nr.	Ministry	Program	Activity	Government budget
1	Regional Development (RO)	Subsidies and Contributions	Water boards	2,85 million SRD
2	Agriculture, Livestock and Fisheries (LVV)	Infrastructural works	Reactivation of water boards	0,75 million SRD
3	Natural Resources (NH)	Research and development	Institutional provision and legislation of the water sector	0,348 million SRD
		Drinking water supply	Water supply	3,7 million SRD
			Cost maintenance of water companies and new connections	1,5 million SRD
			Drinking water production center Commewijne	83,41 million SRD
TOTAL				89.7 million SRD

Water Forum Suriname. Capacity Building for Integrated Water Resource Management in Suriname. Development Objectives. Paramaribo. July 2019. *Water Forum Suriname, Ministry of Natural Resources, the Global Climate Change Alliance Plus Initiative, European Union, and UNDP. Table 4-2.*

National budget allocated to each ministry for recurrent costs of IWRM elements (CVR, 2017)

Nr.	Ministry	Department	Program	Activity	Government budget
1	Public Works (OW)	Civil technical works	Infrastructural works	Maintenance bridges	1,180 million SRD
				Construction bridges	2,85 million SRD
				Maintenance drainage works	4,15 million SRD
				Improvement irrigation and drainage works	53,6 million SRD
				Maintenance of flood defense works	1,0 million SRD
				Improvement of flood defense works	0,750 million SRD
TOTAL					63.53 million SRD

Water Forum Suriname. Capacity Building for Integrated Water Resource Management in Suriname. Development Objectives. Paramaribo. July 2019. *Water Forum Suriname, Ministry of Natural Resources, the Global Climate Change Alliance Plus Initiative, European Union, and UNDP. Table 4-3.*