



MINISTRY OF
PUBLIC WORKS



tot 2050



**SUSTAINABLE INFRASTRUCTURE
DEVELOPMENT PLAN SURINAME 2050
(SIDPS 2050)**

*INFRASTRUCTURE AS THE CARRIER
OF ECONOMIC AND SOCIAL
DEVELOPMENT*

Publisher
Ministerial Plan Unit
Ministry of Public Works
(2025, April)



Foreword

Climate change affects every country on every continent. Policy decisions must therefore provide climate-resilient spatial planning and infrastructural measures to prevent future consequences as a result of climate change. Infrastructure development plays a crucial role in supporting the economy, transport, mobility, and ensuring the quality of life for citizens. Infrastructure is therefore seen as a key driver of sustainable development, growth and diversification of various sectors in Suriname.

With this as a starting point, the Ministry of Public Works is presenting the Sustainable Infrastructure Development Plan Suriname 2050 (SIDPS 2050) for Suriname. This plan is a roadmap that highlights the key development projects to be executed by 2050 on areas such as roads, bridges, jetties, drainage systems, traffic management, coastal protection, river dredging, subdivision plans and multi-story apartments, state and monumental buildings, urban greening, landscaping, waste management, and climate change. All these intended projects are linked to estimated costs based on current insights, which can be adjusted in the future if prices change.

The Ministry of Public Works intends to implement these projects in Public-Private Partnership (PPP) as well as in cooperation with other ministries, organizations and our international financial partners such as the World Bank, Inter-American Development Bank (IDB), Caribbean Development Bank (CDB), and countries such as Brazil, Japan, China, India, the Netherlands, France and French Guiana, Belgium, Morocco etc. These partnerships must be maintained at all times based on the principles of mutual respect, cooperation and shared benefits.

Finally, it is requested that the prioritized areas in this SIDPS 2050 be seen as a roadmap for policymakers and be continued regardless of any change of government.



Dr. Riad Nurmohamed

Minister of Public Works





Table of Contents

List of abbreviations	2
List of Figures	3
List of Tables	5
1 Introduction	6
2 Sustainable infrastructure development.....	8
2.1 Road design	8
2.2 Road upgrading and expansion	12
2.3 Traffic management.....	33
2.4 Bridges and jetties	34
2.5 Drainage systems.....	46
2.6 Coastal protection	56
2.7 River dredging.....	64
3 Urban Development.....	67
3.1 Development of subdivision plans and multi-story apartments.....	67
3.2 Historical city of Paramaribo and state monumental buildings.....	70
4 Public green and waste management.....	74
4.1 Urban greening, landscaping and green infrastructure	75
3.2 Waste management and circular economy.....	77
5 Research and Services	83
5.1 Meteorological Department of Suriname (MDS)	83
5.2 De Hydraulic Research Division (HRD)	88
5.3 Laboratory for Soil Mechanics and Building Materials Research.....	94
Reference list.....	96





List of abbreviations

AI	: Artificial Intelligence
CDB	: Caribbean Development Bank
EPR	: Extended Producer Responsibility
EV	: Electric Vehicle
FDI	: Foreign Direct Investment
HRD	: Hydraulic Research Division
IDB	: Inter-American Development Bank
IoT	: Internet of things
ITLCS	: Improving Transport Logistics and Competitiveness in Suriname
Lidar	: Light Detection and Ranging
LGM	: Soil Mechanics and Building Materials Laboratory
MDS	: Meteorological Department of Suriname
NMHS	: The National Meteorological and Hydrological Service
PPP	: Public Private Partnership
SCSRP	: Saramacca Canal System Rehabilitation Project
SDG	: Sustainable Development Goals
SIDPS	: Sustainable Infrastructure Development Plan Suriname
UN	: United Nations
UNASUR	: Union of South American Nations
UNFCCC	: United Nations Framework Convention on Climate Change
WB	: World Bank





List of Figures

Figure 1: SDGs linked with SIDPS 2050.....	7
Figure 2: Proposed expanding and widening of road infrastructure in urban areas by 2050	9
Figure 3: Roads with green corridors by 2050	9
Figure 4: Eco friendly concrete roads 2050.	10
Figure 5: Bus parking facilities.....	10
Figure 6: EV charging networks 2050.....	11
Figure 7: Inclusive roads 2050.....	11
Figure 8: Reflective road studs(cat-eyes) on highways 2050.....	12
Figure 9: Proposed North-South connection road between Suriname Brazil and neighbor countries Guyana and French-Guyana by 2050.....	13
Figure 10: Upgrading, widening and paving existing roads and development of new roads 2050 (1).....	17
Figure 11: : Paving and upgrading brownsweg to Nw. Jacobkondre, Mamadam and Brownsweg to Poesoegroenoe and the nearby villages.....	19
Figure 12: Asphalt pavement of the road from Joden-Savanna to Moengo.....	21
Figure 13: Upgrading, widening and paving existing roads and development of new roads (2).....	22
Figure 14: Extending Ringweg to Weg naar Zee and upgrading existing roads 2050.	23
Figure 15: Projected bridge and road development Domburg-Laarwijk Meerzorg	24
Figure 16: Road Domburg-Laarwijk connecting with Tamanredjo.	24
Figure 17: Road development to connect the communities at the right bank of the Commewijne river and the road to Matapica beach.	25
Figure 18: Road development from Albina to Galibi.	27
Figure 19: Road development for the future development of Tapajai project.....	28
Figure 20: Road improvement and increasing of load capacity of the roads van 't Hogerhuysstraat Ronde, Willem Campagnestraat, Herhuttersstraat, Molenpad, pedestrians and cycling paths by 2050.	31
Figure 21: Traffic Management by 2050.....	34
Figure 22: Overview 11 bridges to be replaced with concrete, steel bridges or a combination road Moengo-Snesikondre.....	36
Figure 23: Bridge over the Saramacca canal from Adhinstraat to Goede Verwachtingweg	37
Figure 24: Projected bridge Marrowijnestraat over the Domineekreek by 2050	38
Figure 25: Projected bridge to Kroonenburg at the right bank Commewijne river by 2050.	39
Figure 26: Two proposed bridges: Bridge domburg- Laarwijk, Bridge Leonsberg to Nw-Amsterdam and Morgenstond Paramaribo-Suzanadaal.....	41
Figure 27: Proposed bridge over the Corantine river in the west and the bridge over the Marowijne river in the east by 2050.....	42
Figure 28 Overview of main drainage systems Groot-Paramaribo.....	46
Figure 29: Drainage of Groot-Paramaribo through pumps, locks and open waterways	47





Figure 30: Pumping stations and locks in Groot-Paramaribo 49

Figure 31: Open box model tertiary waterways and HDPE pipes to be replaced with culverts 51

Figure 32: Protection against flooding per drainage area of Groot Paramaribo..... 51

Figure 33: An entire northern coastline protection integrating green-grey infrastructure..... 56

Figure 34: The sea dike route projection along the Brantimakkaweg Weg naar Zee. 57

Figure 35: 3D view projected river dike 4.5 km Brantimakkaweg Weg naar Zee. 58

Figure 36: Projected river dike 4 km from the Hindu temple and pilgrimage to cremation ground Weg naar Zee 59

Figure 37: Proposed green grey coastal infrastructure protection right and left bank Commewijne river 60

Figure 38: Proposed steel sheet pile construction with rock cladding right and left bank of the Commewijne river 60

Figure 39: Steel sheet pile construction protection of Groot-Paramaribo..... 61

Figure 40: Protection of the land nearby Albina Marowijne river..... 61

Figure 41: Proposed rip rap dike with rocks to prevent coastal degradation Galibi 62

Figure 42: Future sea dike constructionline burnside to afdamming Coronie 63

Figure 43: Dredgingline Suriname River 64

Figure 44: Dredgingline Nickerie to SML Port Wageningen..... 65

Figure 45: Dredgingline corantine river to Apoera Port..... 66

Figure 46: Creating parks for recreation in subdivision areas..... 68

Figure 47: Building upward or vertical construction by 2050..... 68

Figure 48: Current boundaries of the historic city center and buffer zones in S.B. 2001 No. 74..... 72

Figure 49: Proposal to expand buffer zones and core area of the historic city center 73

Figure 50: Trees planted along the verges of roads by 2050..... 76

Figure 51: The future of our public spaces, parks and roads 2050..... 76

Figure 52: Color coded bins for separate waste. 78

Figure 53: The 6 R model: Step by step towards circularity 79

Figure 54: Supply chain in an EPR system 80

Figure 55: Sanitary Landfill 81

Figure 56: Overview meteorological stations in Suriname (AWS, AWLS and ARS)..... 84

Figure 57: Acoustic Doppler Current Profilers (ADCPs)..... 88

Figure 58: High Tech Drone for Hydrological and Water quality purposes..... 90

Figure 59: C.P.T. execution (soil quality inspection) by lab personnel..... 95





List of Tables

Table 1: : Overview asphalted, paved and unpaved roads current situation under supervision of Ministry of Public Works 2025.....	16
Table 2: Overview projected road investments to enhance economic and social development of communities with estimated budget by 2050	32
Table 3: Sustainable rehabilitation of existing bridges in Suriname	34
Table 4: Bridges to be maintained and replaced with concrete or concrete-steel bridges in the 2nd East-West connection in district Sipaliwini.....	35
Table 6: Overview 32 jetties to be maintained and replaced by 2050.....	43
Table 7: Overview projected investments for bridge and jetties by 2050.....	45
Table 8: Overview maintenance plan for primary, secondary and tertiary waterways, street gullies, pumping stations and discharge sluices 2050.....	48
Table 9: Overview replacement plan for primary and secondary waterways, street gullies, pumping stations and discharge sluices 2050.....	48
Table 10: Overview sluices and pumping station in all districts.....	50
Table 11: Estimated costs of structural actions for each area towards 2050.....	52
Table 12: Overview drainage estimated costs 2050.....	54
Table 13: Overview estimated costs sea defence and dike construction 2050.....	63
Table 14: Overview estimated costs dredgingplans by 2050.....	66
Table 15: Two (2) proposed multi-story apartment by 2050	69
Table 16: : Annual renovation and restoration costs state monumental buildings.....	71
Table 17: Overview costs urban greening, afforestation and landscaping actions every 5 years.....	77
Table 18: Overview estimated costs zero waste and circular economy by 2050	82
Table 19: Current Instruments MDS and Hydraulical Division.....	83
Table 20: Operational estimated costs MDS.....	87
Table 21: Budget in USD: 2025 - 2050 Hydraulic Research Division (HRD / WLA).....	93
Table 22: Expansion investments LGM 2050.....	95





1 Introduction

Climate change already affects our environment in many ways, including rising temperatures, sea level rise, droughts, flooding, and more. It further impacts essential aspects of life, such as our water resources, energy, agriculture, ecosystems, health, transportation, sewage, and irrigation systems. Every person worldwide will be affected in some way by the consequences of climate change.

In response to these global and future concerns, 193 member countries of the United Nations (UN), including Suriname, committed in 2015 to achieving seventeen Sustainable Development Goals (SDGs). These goals aim to create a better and more sustainable world for all citizens by 2030 and for future generations.

In the context of Suriname, one of the smallest countries in the South American hemisphere, which is set to emerge in the coming years as a promising new oil and gas producer, it is crucial to reduce the country's dependence on fossil fuels and mining. Diversifying the economy and developing various sectors will be essential to ensuring long-term prosperity, economic growth, and social development for its citizens and future generations. Therefore, infrastructure development is an indispensable requirement to achieve this.

At the heart of this ambitious transition process is the Sustainable Infrastructure Development Plan Suriname 2050 (SIDPS 2050), which is a roadmap toward 2050 and will play a critical role in revolutionizing the infrastructure in Suriname. This infrastructure development will benefit the following aspects:

- human development
- urban living
- economic opportunities and employment across various sectors in Suriname.

Good and resilient infrastructure will also attract Foreign Direct Investment (FDI), as multinational corporations often prefer to invest in countries with reliable infrastructure. A functioning and resilient infrastructure will be the foundation for further development of our communities in Suriname, especially for those in the hinterland who lack access to well-maintained infrastructure. Therefore, investments in sustainable infrastructural development projects will facilitate the smooth functioning of our economy by providing the necessary support for the production, transport, and distribution of goods and services.

The Ministry of Public Works is committed to implement SIDPS 2050 in close cooperation with all counterparts to address current and future challenges in prioritized areas such as roads, bridges, jetties, drainage and sewage systems, coastal protection, river dredging, subdivision plans, and building multi-story apartments, state monumental buildings, urban greening, landscaping, waste management, hydrological and meteorological infrastructure, and the Laboratory for Soil Mechanics and Building Materials Research (L.G.M.). By 2050,





the Ministry of Public Works aims to maintain, upgrade, and expand all physical infrastructure to support the country's development. The infrastructure itself must be resilient to the shocks and stresses it will face due to climate change and should be integrated with the concept of green infrastructure.

Green infrastructure (GI) will be a significant solution to climate change, addressing both climate adaptation and mitigation. For instance, promoting green spaces such as parks and forests will help absorb carbon dioxide and mitigate heat.

Therefore, Suriname SIDPS 2050 is aligned with the following SDGs:



Figure 1: SDGs linked with SIDPS 2050

By aligning the strategic development proposals in this SIDPS 2050 with the SDGs, Suriname will achieve sustainable economic growth, diversification, social progress, and environmental stability.





2 Sustainable infrastructure development

This chapter discusses the roadmap towards important proposed infrastructural investment projects that the Ministry of Public Works will focus on until 2050. As ministry, we are fully committed to implementing sustainable infrastructural development projects in Suriname in areas such as roads, bridges, jetties, drainage and sewage systems, traffic management, coastal protection and river dredging.

Investments in these focus areas will be crucial for further economic growth, environmental sustainability, and the well-being of citizens and future generations in Suriname. These commitments are linked to the main SDGs:

SDG 5: Gender Equality

SDG 3: Good Health and Well-being

SDG 8: Decent Work and Economic Growth

SDG 9: Industry, Innovation, and Infrastructure

SDG 11: Sustainable Cities and Communities

SDG 13: Climate Action

2.1 Road design

The goal toward 2050 is to carry out an ambitious north-south, east-west road development plan, which will open the doors for new businesses, industrial diversification, employment in various sectors, tourism, cultural exchange, and most importantly, the connection and integration between our neighboring countries such as Brazil, Guyana, French Guiana, and other South American countries. Our roads will be integrated with the concept of green infrastructure, technological integration, smart mobility, inclusive access, and climate resilience in the interest of all road users.

This goal also includes development and paving (asphalt/bricks/concrete) of new roads that will connect (new) cities, towns, and key infrastructure hubs such as ports, airports, and industrial zones in the country to reduce travel time and congestion. Investment in long-lasting durable roads will reduce maintenance costs and improve the overall road quality.





Figure 2: Proposed expanding and widening of road infrastructure in urban areas by 2050

The road design in Suriname will have the following key elements to enhance efficiency, increase traffic capacity, traffic safety, and sustain the transportation system:

A. Green infrastructure and green integration

- **Green Corridors**

Roads and verges will become "Green Corridors" by planting trees and flowers. These green areas will be created to absorb carbon emissions, improve the overall environmental quality, provide a green view around highways and urban roads, and maintain Suriname's image as the greenest country in the world.



Figure 3: Roads with green corridors by 2050

- **Eco-Friendly Road Surfaces**

In some areas, concrete pavement will be promoted for road construction to minimize environmental impact of traditional asphalt roads. Traditional road surfaces, like asphalt, are made from petroleum-based products, which contribute significantly to greenhouse gas emissions.

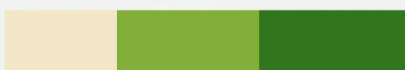




Figure 4: Eco friendly concrete roads 2050

Source: www.guyanachronicle.com: From mud dam to concrete road: Black Bush Polder residents rejoice.

- **Public Transport and Mobility Integration**

By 2050, the road network in Suriname will be integrated with public transportation facilities to reduce the number of private vehicles on the road, leading to less traffic congestion and fewer emissions. All necessary road and bus parking facilities alongside roads should be in place.



Figure 5: Bus parking facilities





B. Smart, electric, and sustainable mobility.

- **Electric Vehicle (EV) charging networks**

By 2050, the vast majority of vehicles will likely be electric. Our roads will feature facilities for fast EV charging stations built into service areas, rest stops, and even at strategic points along roads and gas stations.



Figure 6: EV charging networks 2050

C. Inclusive, equity, and accessibility.

- **Inclusive and accessible roads**

Road designs will prioritize equity by ensuring that infrastructure is accessible to all individuals, including those with disabilities. This means lower curbs, improved crosswalks for pedestrians, and ramps for easier mobility.



Figure 7: Inclusive roads 205.





- **Reflective road studs (cat's eyes)**

Reflective road studs will be placed on most roads in Suriname to enhance visibility at night, providing drivers with clear road delineation even in dark or unlit areas. These markers reflect headlights, allowing drivers to see the roads path, curves, and boundaries from a distance.



Figure 8: Reflective road studs(cat-eyes) on highways 2050

2.2 Road upgrading and expansion

There is a total of twelve ambitious road infrastructural projects identified to be implemented by 2050, including:

1. **Initiative for the Integration of Regional Infrastructure in South America (IIRSA) project implementation.**





Figure 9: Proposed North-South connection road between Suriname, Brazil, and neighboring countries Guyana and French Guiana by 2050

The development of a physical infrastructure and integration is increasingly recognized as one of the main avenues toward sustainable development among South American nations particularly with the advent of IIRSA initiative, a program initially conceptualized under the auspices of the Union of South American Nations (UNASUR).

IIRSA is an intergovernmental project for the improvement of interstate road and bridge connections between countries in South America for transport, energy and telecommunications. IIRSA seeks to promote economic integration, facilitate intra-regional trade and markets, improve the quality of life for people in the region, build or enhance road and bridge infrastructure across borders, encourage knowledge, technology, and cultural exchange, and definitely create a platform for dialogue and cooperation among the private sector and governments. The initiative was established at a South American summit in 2000 and is now a project of the Union of South American Nations (UNASUR). All twelve member states are involved, including Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Uruguay, Venezuela, and Suriname (Haanskorf M., 2014 & Roach K.Q., 2014).

Given its geographic location, Suriname can perfectly serve as a transshipment point in the trade relations between South America and the Caribbean. It should also be noted





that Suriname is the only country the African, Caribbean, and Pacific (ACP) group which a physical border with Europe, sharing a border with France through French Guiana in the east. A fortunate and promising consequence of this geographic situation is that Suriname has easy road access to Europe. Suriname must actively pursue integration with regional countries to fully exploit this geographic advantage. That is why Suriname attaches great relevance to this IIRSA initiative for physical integration with other South American countries.

Suriname's participation in the IIRSA initiative aims to improve interconnecting roads and bridges between Suriname and neighboring countries such as Brazil, French Guiana, and Guyana, facilitating the movement of goods, services, and people between countries, and promoting regional trade and cooperation. This physical connection within the IIRSA project for Suriname will be as follow:

A. Expanding and widening of the northern first East-West Link ± 405 km:

- The first East-West Link will be an important route in the coming decades, as it will facilitate trans-border tourism and trade. This connection is, and will continue to be, essential for further economic activities, particularly the development of the agricultural, livestock, and fishing sectors in the coastal areas.

Estimated costs: \$ 250 million

B. Improvement and paving of the second East-West Link ± 389 km:

- The second East-West Link will play a key role in the further development of West Suriname and Kabalebo, and will also serve as an interstate road connection with Guyana and other South American countries. Paving this road from Zanderij-Zandlanding-Apoera-Section-Washabo-South Drain will yield the following benefits:
- **Economic Opportunities:** The future development of activities such as small local businesses (handicrafts), forestry, agriculture, livestock farming, (freshwater) fisheries, eco-tourism, hydro-power, an alumina refinery and an aluminum smelter of the future bauxite industry in Bakhuis Mountains, as well as other mining ventures (iron, gold and granite), will create employment opportunities for local indigenous communities and stimulate the local economy.





Additionally, the emerging offshore oil and gas production near the Nickerie district will provide a financial boost to Suriname's economy. This will significantly improve the country's economic situation (*Tjang-A-Sjin, J., 2025*).

- **Improved Accessibility:** A paved road to Apoera and the indigenous communities of Washabo, Section, and Zandlanding will improve access to surrounding areas, which are currently somewhat isolated due to poor road conditions. Enhanced connectivity will result in better access to healthcare, education, and government services, thus improving the standard of living for local communities.
- **Tourism Development:** The area around the Bakhuis Mountains, rich in pristine landscapes, biodiversity, and indigenous cultures, has the potential to become an attractive eco-and cultural tourism destination.

Estimated costs: \$ 395 million

C. Construction of the North-South Link (Pokigron to Viergebroeders ± 305 km).

- This road will link Suriname with Brazil. Through Brazil, Suriname will gain access to the rest of South America, which has an estimated GDP of 4.2 trillion USD.
- Aside from the irregular sea connection and regular air travel, Suriname currently lacks direct access to the rest of South America. Brazil and France have agreed to complete the road link between Macapá and Cayenne in French Guiana. Once this connection is completed, Suriname will have indirect access, to Brazil and the rest of South America through French Guiana. Additionally, Brazil and Guyana have agreed to construct the road link between Boa Vista and Georgetown. If this link is completed in the future, Suriname will have another indirect access to Brazil (*Country report Suriname, n.d. & www.iirsa.org*).

Estimated costs: \$ 320 million





2. Asphalted, paved, and unpaved roads current situation 2024

Table 1: Overview of asphalted, paved, and unpaved roads under the supervision of the Ministry of Public Works, 2025

No.	District	Paved roads in KM			Unpaved roads in KM			TOTAL
		Asphalt	Brick Pavement	TOTAL	Shellsand-klinksand	Laterite	TOTAL	
1	Paramaribo	711.00	152.00	863.00	270.00	0.00	270.00	1,133.00
2	Wanica	410.00	93.00	503.00	674.00	0.00	674.00	1,177.00
3	Saramacca	223.00	37.00	260.00	214.00	0.00	214.00	474.00
4	Coronie	85.00	0.00	85.00	15.00	0.00	15.00	100.00
5	Nickerie	86.00	2.00	88.00	229.00	0.00	229.00	317.00
6	Commewijne	111.00	14.00	125.00	169.00	0.00	169.00	294.00
7	Marowijne	138.00	8.00	146.00	108.00	52.00	160.00	306.00
8	Para	161.00	86.00	247.00	121.00	185.00	306.00	553.00
9	Brokopondo	144.00	0.00	144.00	16.00	36.00	52.00	196.00
10	Sipaliwini	15.00	4.00	19.00	0.00	367.00	367.00	386.00
	Total	2,084.00	396.00	2,480.00	1,816.00	640.00	2,456.00	4,936.00

Source: Ministry of Public Works

- By 2050, at least 50% of our existing asphalt roads and 30% of the bricked paved roads will be upgraded and widened, including the installation of modern traffic facilities at important intersections.

Estimated costs: \$ 1,500 million

- Furthermore, at least 70% of our unpaved road infrastructure will be maintained (backfilled with sand material), and at least 30% of the unpaved roads will be asphalted or paved, depending on urgency and available budget.

Estimated costs: \$ 1,000 million

Total estimated costs: \$ 2.5 billion





3. Upgrading, widening, and asphaltting/brick paving of existing and development of new roads 2050

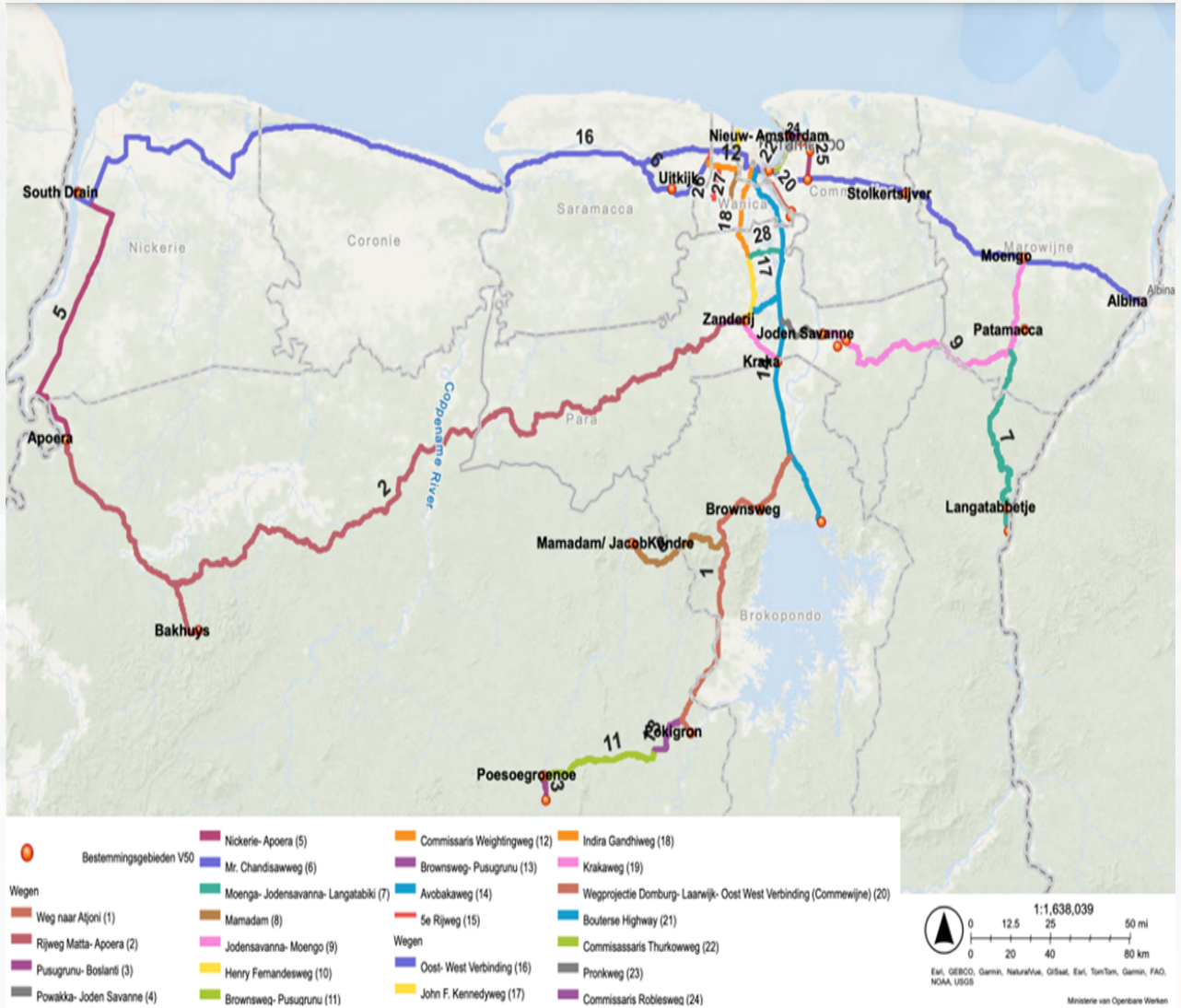


Figure 10: Upgrading, widening, and paving of existing roads and development of new roads 2050 (1)





Upgrading and widening JFK-road to Zanderij-Johan Adolf Pengel Airport (JAP) (± 27-29 km), as indicated by number 17 in Figure 10 will have the following benefits:

- The JFK road connects Paramaribo, the country's commercial center, to the JAP airport, facilitating the flow of goods and services to southern Suriname. This road ensures efficient transportation for passengers, cargo, and freight, directly impacting the economy by supporting trade, tourism, and local businesses.
- JAP is Suriname's main international airport. A well-maintained and efficient highway between Paramaribo and JAP is essential for fast and comfortable access for all travelers.
- The JFK road will be connected with the second East-West Link.
- With the expected growth of Paramaribo and the surrounding areas, it is important that this road connection has sufficient capacity to support increasing traffic in the long term.
- For residents living along the route to Zanderij, this road provides essential access to employment, education, and healthcare. It also facilitates social interactions between different parts of the country.
- The road provides an important link between Paramaribo, Suriname's capital with its cultural and historical significance, and JAP. It helps facilitate cultural exchanges, and the movement of people between urban and rural areas.

Estimated costs: \$ 100 million





4. Paving and upgrading Brownsweg to Nw. Jacobkondre, Mamadam, and Brownsweg-Poesoegroenoe to the villages



Figure 11: Paving and upgrading Brownsweg to Nw. Jacobkondre, Mamadam, and Brownsweg to Poesoegroenoe and the nearby villages





A good paved road connection from Brownsweg to Nw. Jacobkondre Mamadam ($\pm 40\text{km}$) and Brownsweg-Poesoegroenoe ($\pm 67\text{km}$) providing accessible road connections to the villages in Upper-Saramacca, will be crucial for several reasons:

- **improved accessibility:** Paved roads in these areas will make it easier for locals to travel, reducing travel time and ensuring more reliable transportation, particularly during rainy seasons.
- **economic development:** Well-maintained roads will enable the smoother transportation of goods and services to these areas, benefiting local businesses, agriculture, and trade.
- **healthcare access:** These paved roads will make it easier for tribal communities to reach medical facilities, especially in rural or remote areas with limited healthcare access.
- **education:** Students and teachers can travel more easily to schools, encouraging higher attendance rates and providing children in this area with equal opportunities for personal and educational development.
- **tourism:** Upper-Saramacca has many eco-tourism attractions. With better road connections to these communities, more visitors can be attracted to these areas, creating income opportunities for local people in the hospitality, eco and cultural tourism, and other service sectors.
- **social integration:** This infrastructure will facilitate the movement of people between villages and towns, especially Atjoni Pokigron , which is becoming a rising town in this region. It will encourage social interactions, cultural exchanges, and collaboration among various ethnical groups.

Estimated costs: \$ 100 million





5. Asphalt pavement of the road from Joden-Savanna to Moengo

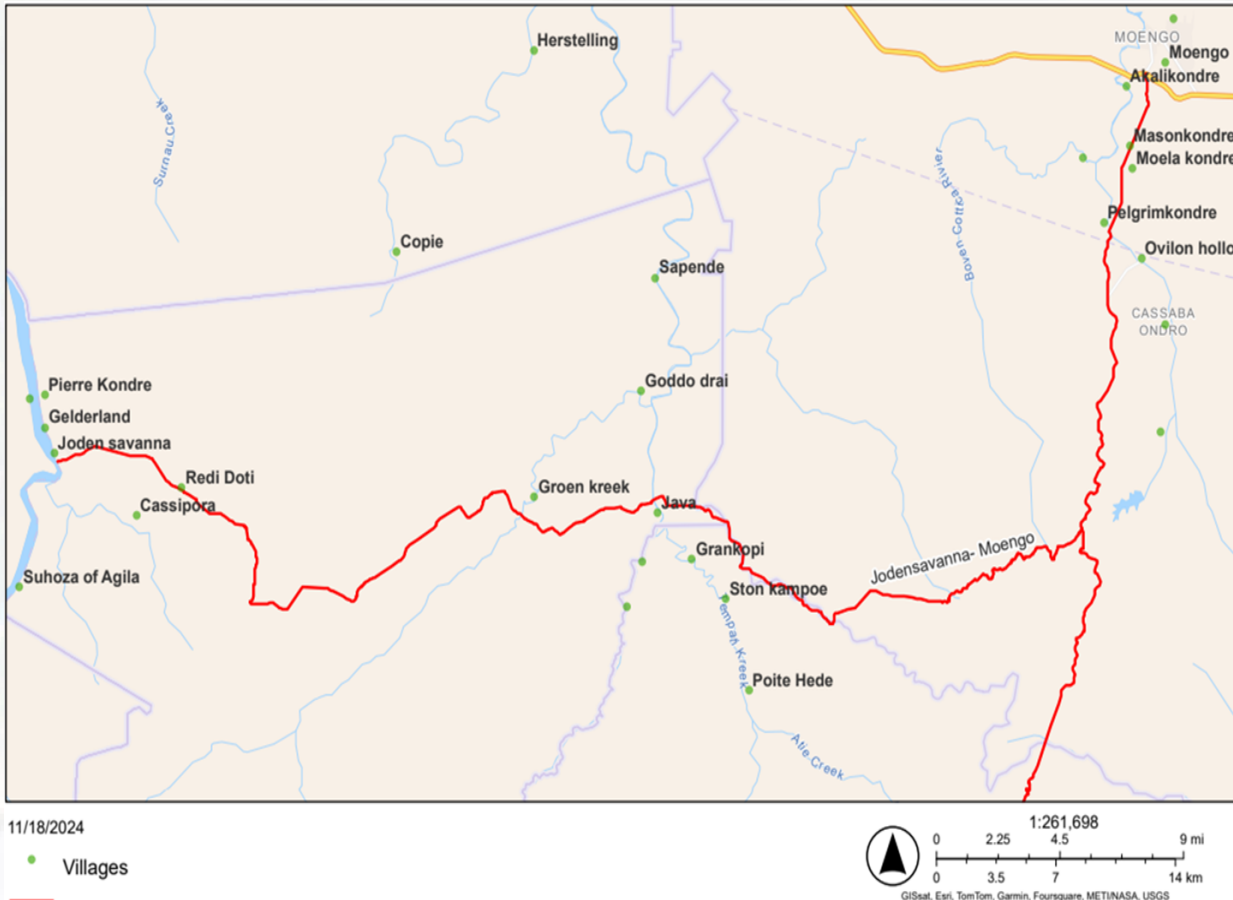


Figure 12: Asphalt pavement of the road from Joden-Savanna to Moengo

- A future paved road connection (± 138 km) from Joden-Savanna to Moengo crucial for developing various sectors in this area, such as forestry, mining, agriculture, transport of goods, services and tourism for local indigenous and others in Moengo Albina.

Estimated costs: \$ 160 million





6. Upgrading, widening, and paving of existing roads and development of new roads by 2050

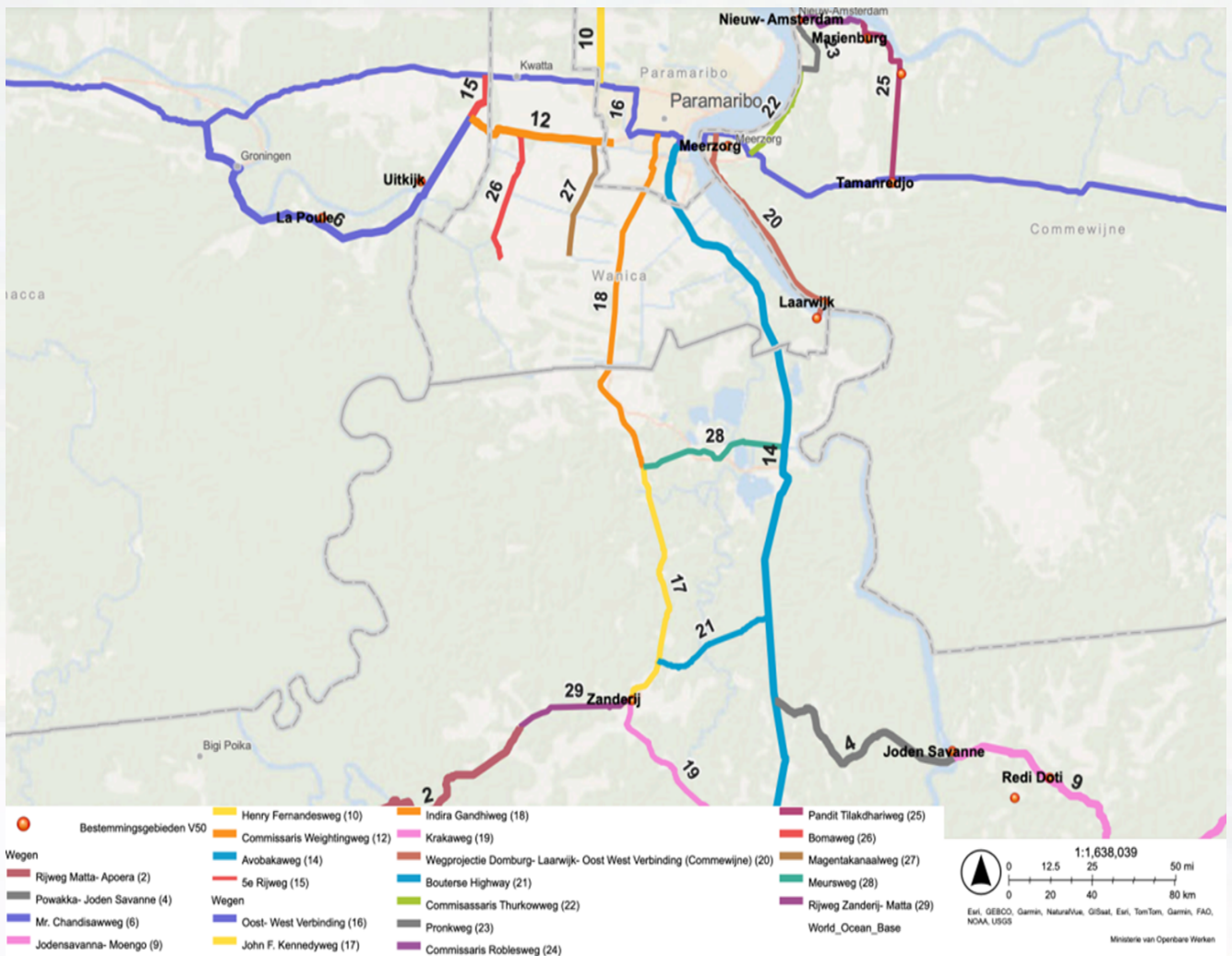


Figure 13: Upgrading, widening, and paving existing roads and development of new roads (2)



7. Extension Ringweg to Weg naar Zee

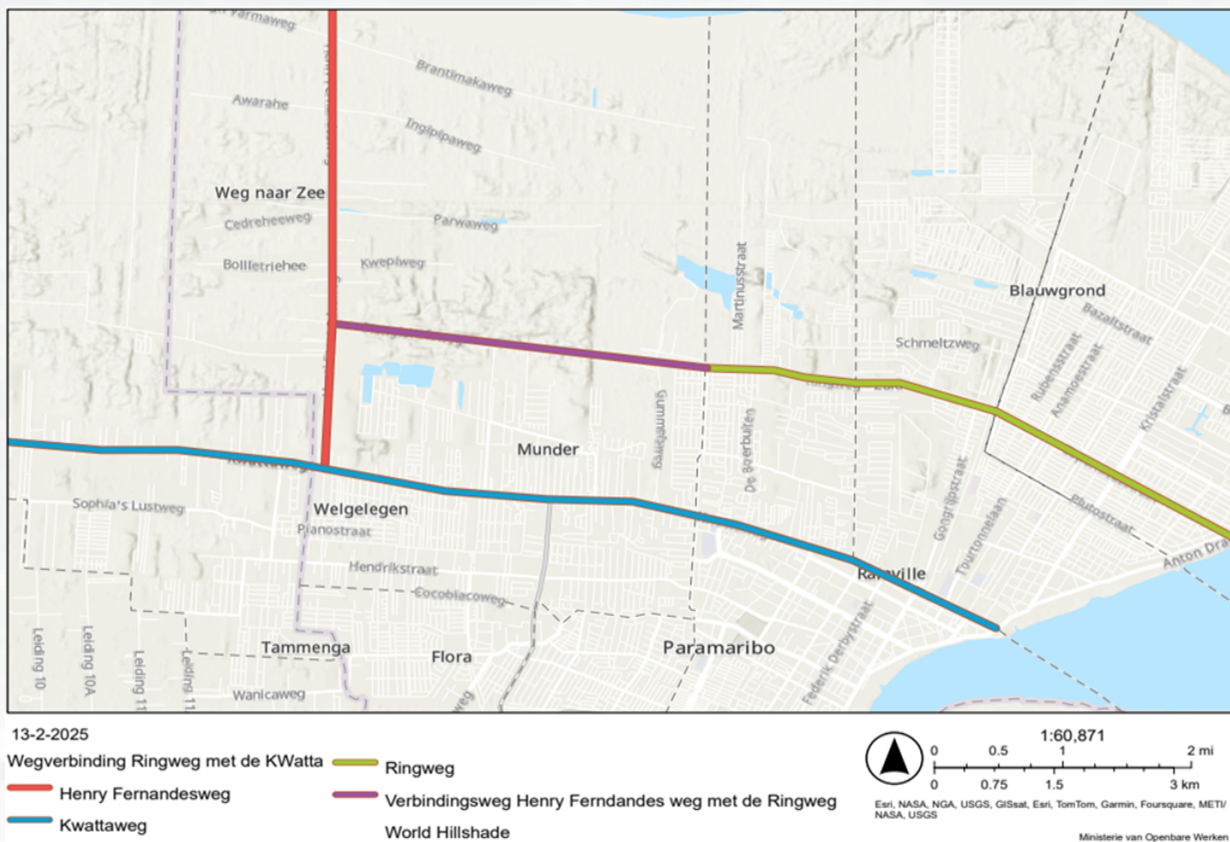


Figure 14: Extending Ringweg to Weg naar Zee and upgrading existing roads by 2025

- The main goals of extending the Ringweg (± 4.7 km) to Weg naar Zee are to alleviate traffic congestion in Paramaribo, improve connectivity to the coastal region, particularly towards Weg naar Zee and Kwattaweg, which is essential for both residential and commercial purposes, and stimulate local business activities in the surrounding areas. The road will also support new residential developments and tourism.

Estimated costs: \$ 10 million





8. Projected road development Domburg - Laarwijk Meerzorg



Figure 15: Projected bridge and road development Domburg-Laarwijk Meerzorg

- This road development (± 16 km) along the Suriname River will connect the entire area around Laarwijk and provide an alternative route for local residents and people from the south to reach Meerzorg, Commewijne. It will support the development of residential areas, shops, and tourism opportunities along the Suriname River.

Estimated costs: \$ 30 million

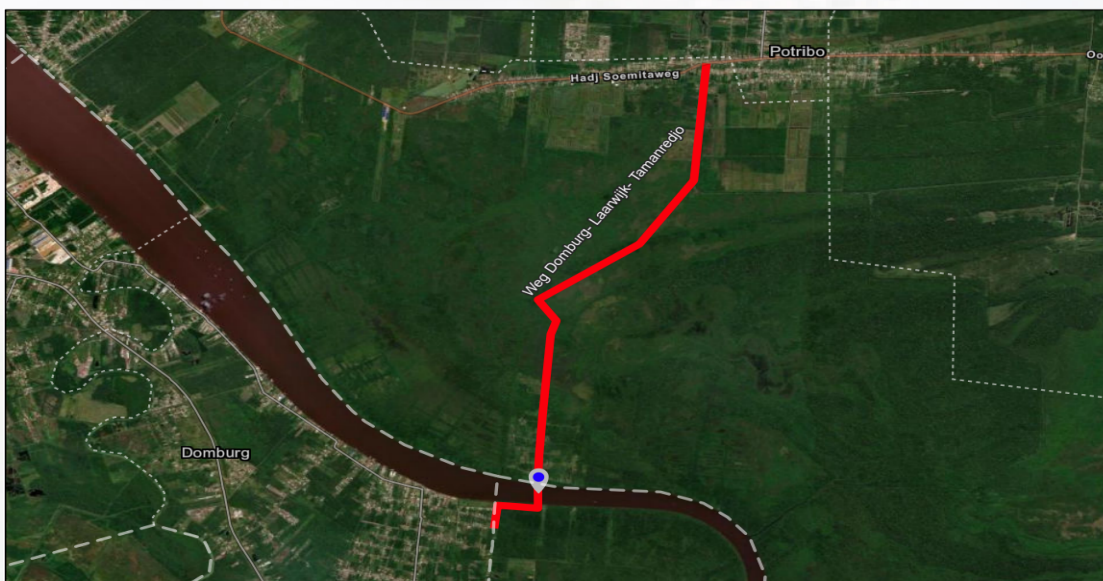


Figure 16: Road Domburg-Laarwijk connecting Tamanredjo

Estimated costs 11 km: \$ 20 million





9. Road development between the plantation at the right bank of the Commewijne River and the road to Matapica Beach

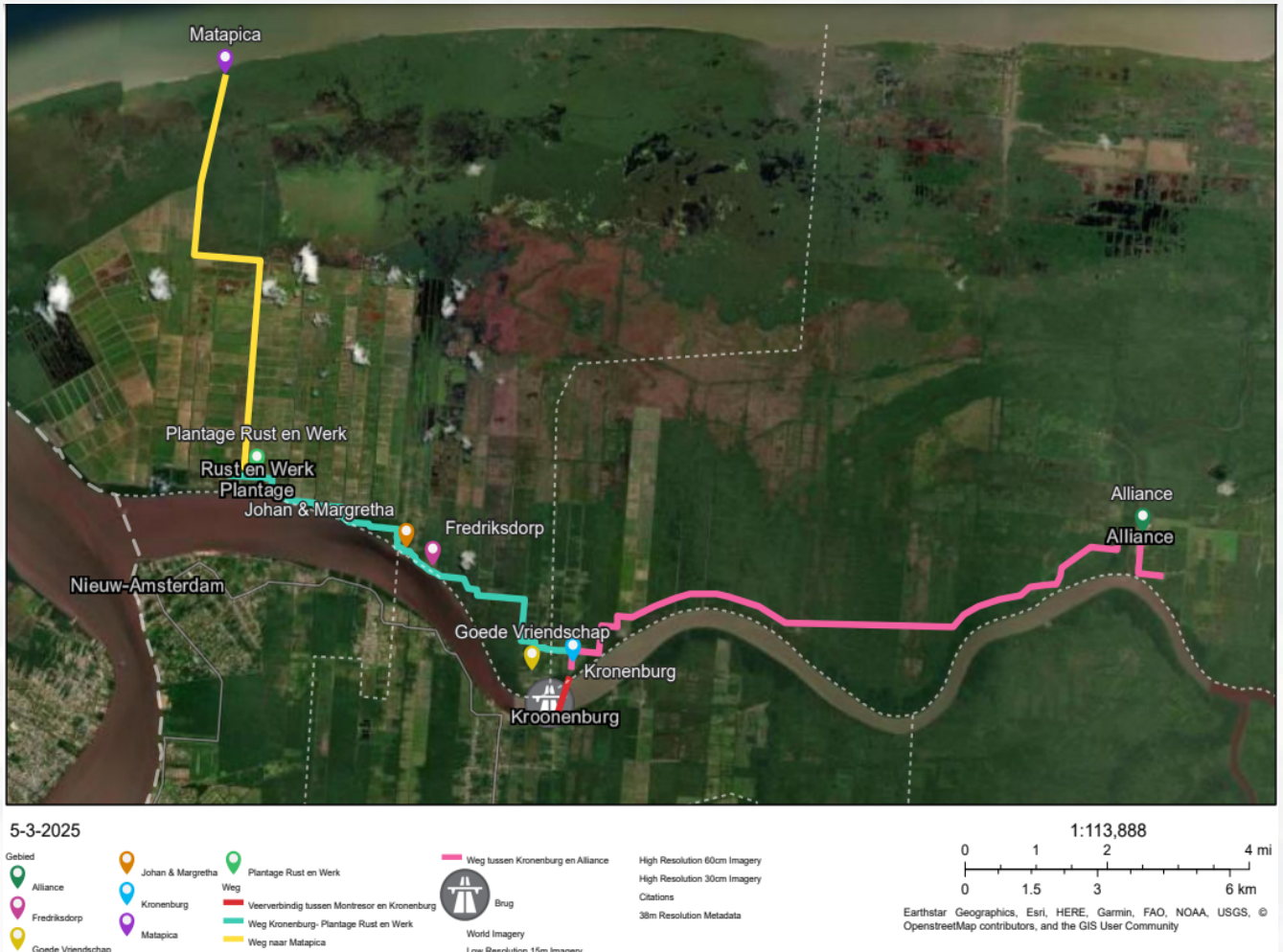


Figure 17: Road development to connect the communities on the right bank of the Commewijne River to the road to Matapica Beach





Improving infrastructure and living conditions in deprived areas must always be a priority. Therefore, a proposed future bricked paved road connection (± 38 km) between the plantations Alliance, Kroonenburg, Goede Vriendschap, Frederiksdorp, Johanna Margretha and Rust-en Werk to Matapica Beach on the right bank of the Commewijne River, will lay the foundation for further development, including:

- **economic and social development:** These communities rely on road networks for agriculture, livestock, fisheries, trade, and economic growth. The road will allow farmers and businesses to produce and transport goods more efficiently, lowering costs and improving service delivery.
In addition, this road will provide safer access for school children and residents, especially during the rainy season and improve social cohesion and unity between the plantations.
- **tourism development:** Easier access to this area will attract more tourists, boosting the local tourism industry, including small accommodations, restaurants, and tours, as this area is known for its natural beauty.

Estimated costs: \$ 45 million





10. South-East road development: A paved road from Powakka- Joden Savanna to Moengo, Albina, Langatabbetje, and Albina to Galibi

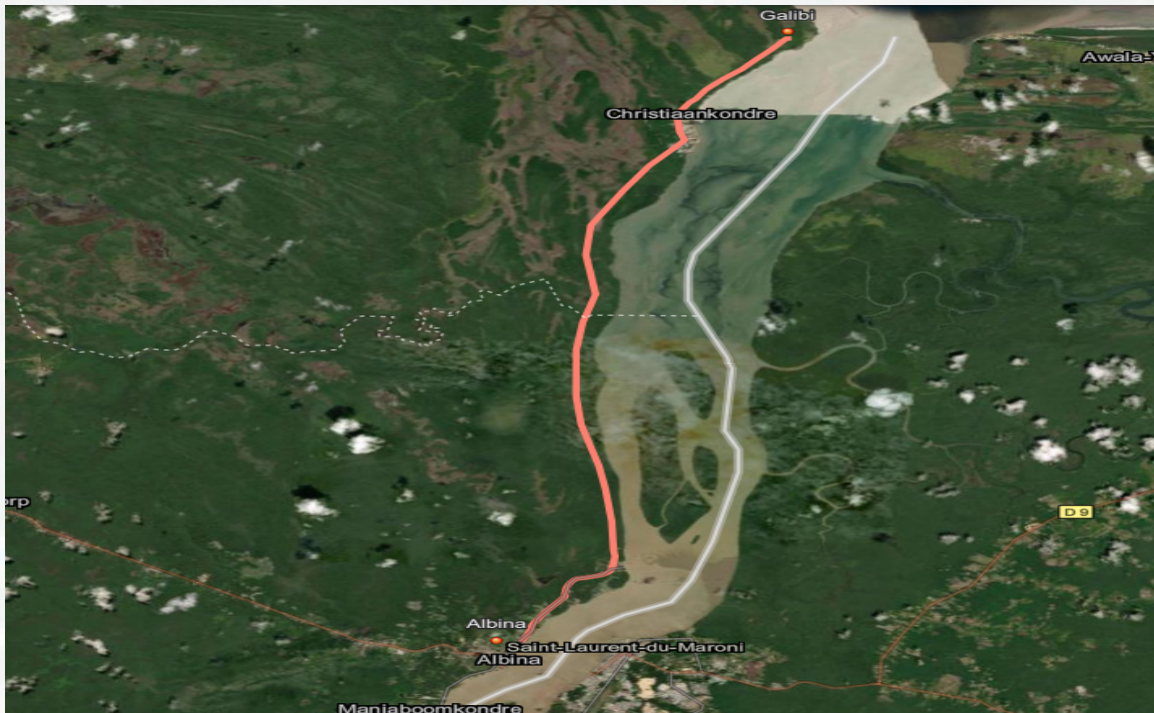


Figure 18: Road development from Albina to Galibi

This road connection will provide the following benefits:

- **economic opportunities:** South-East Suriname has vast potential for agricultural production (rice, palm oil, soybeans, corn, bananas, cacao, fruits, vegetables, etc.), livestock, fisheries, forestry, and mining. Investments in infrastructure can boost the local economy and create employment opportunities for both local and international communities.
- **tourism development:** The region's natural beauty, including rainforests, rivers, wildlife, and its connection with French Guiana holds immense potential for eco- and cultural tourism.

Road development from Albina to Galibi (± 30 km) will significantly impact on the tourism industry in this region. Particularly, Galibi with its pristine nature reserves, turtle nesting sites, and indigenous cultures, has great potential as a tourist destination.

Estimated costs: \$ 50 million





11. Road development for the future development of Tapajai project

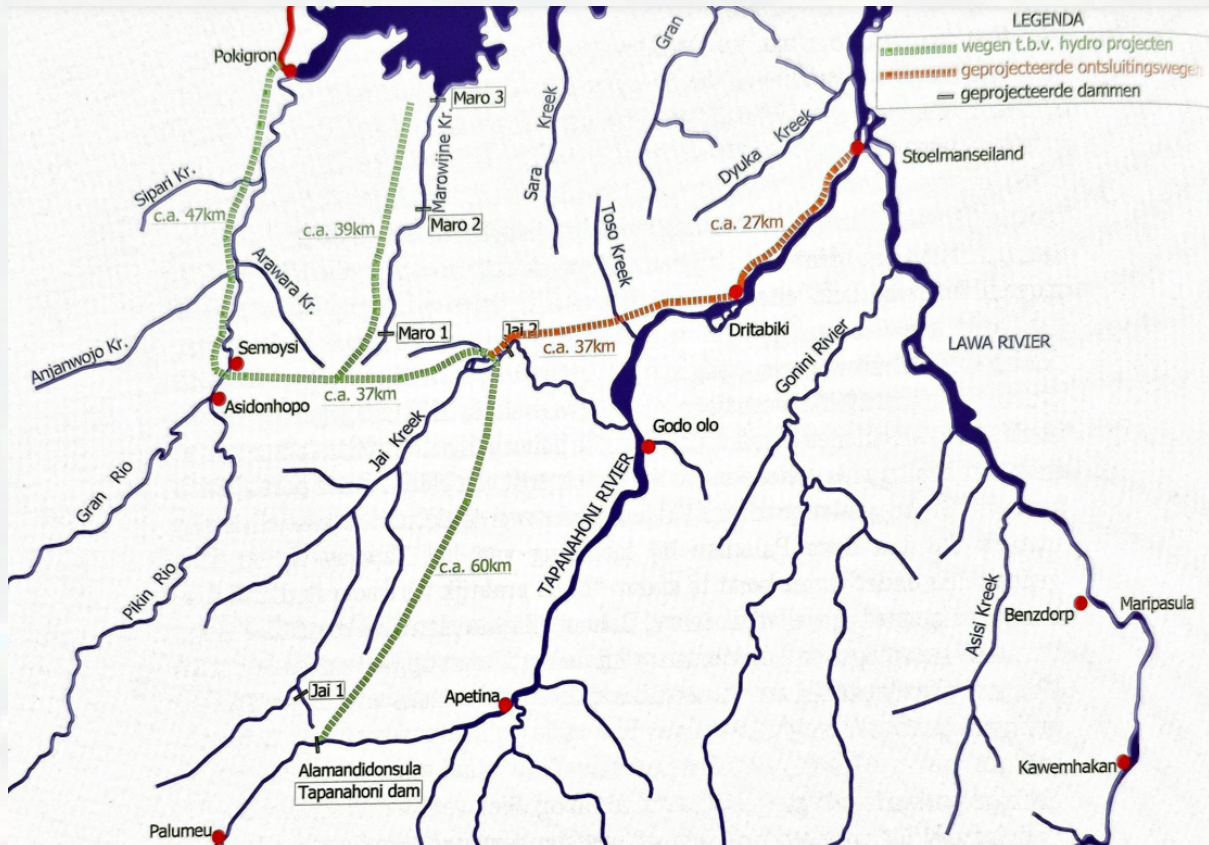


Figure 19: Road development for the future Tapajai project

Suriname urgently needs to expand its energy capacity. In this context, the Tapajai Hydro Plan is indispensable for Suriname's further economic development. This plan aims to build dams and a water reservoir in the Tapanahoni River and the Jaikreek in order to divert water from these rivers to the Brokopondo reservoir generating more energy. For the construction of dams and transmission lines, approximately 420 km of roads need to be built. The Afobakaweg should be extended from Pokigron along the Upper-Suriname River to the Jaikreek and the Tapanahoni River. Along the Tapanahoni River there are three indigenous Wayana and Trio villages: Apetina, Tepu, and Palumeu. The projected roads will reduce these communities' dependence on waterways and foster economic, social, and tourism development throughout the region (Haanskorf, M, 2024 & Lothar, B., 2008b).

Estimated costs: \$ 450 million





12. Case study: Improvement of the road network near Dr. Jules Sidney Port, Paramaribo

The Inter-American Development Bank (IDB) approved loan SU-L1057 amounting to USD 45 million, to support the ITLCS project.

This project includes the following components:

Component 1. Logistics Centre ("Truck Terminal") and Port Interventions.

- The project focuses on improving infrastructure and operations at the Dr. Jules Sydney Port. By enhancing efficiency, the time and costs involved in handling goods will decrease, improving the overall competitiveness of Suriname's exports and imports. This includes the construction of a truck center, offices, and parking for cars and light trucks (1.53 hectares), and storage facilities (1.52 hectares), including container loading, stripping, cross-docking, consolidation, and packaging, while ensuring accessibility for people with disabilities.
- A critical aspect of this is the development of a **Port-Community System**, which automates operational processes and improves document compliance, reducing delays and administrative issues.

Component 2: Interventions on the adjacent road network of the port.

This component will upgrade the following road sections, improving their load-bearing capacity and safety:

- the bridge over the Saramacca Canal in the van 't Hogerhuysstraat, where the current bridge (1 x 3 lanes) will be replaced by a widened bridge (2 x 3 lanes);
- From 't Hogerhuysstraat (from Saramacca Canal to Molenpad);
- Slangenhoutstraat (from Van 't Hogerhuysstraat to Hernhutterstraat);
- Willem Campagnestraat (between Hernhutterstraat and Van 't Hogerhuysstraat);
- Hernhutterstraat (from Slangenhoutstraat to Willem Campagnestraat);
- Molenpad;
- Martin Luther Kingweg (from Latourweg to Saramacca Canal).

A distinguishing element within this project is the construction of an automatic





traffic control system (Intelligent Traffic System – ITS) for traffic regulation, control, planning and enforcement, integrating so-called "SMART" traffic lights and dynamic traffic signs for sections adjacent to the port and along the road sections described above.

Component 3: Institutional strengthening and administration

- Development of a Road Asset Management System for the national road network, enabling systematic planning and maintenance. The road authority will oversee the maintenance of roads and will be the ultimate beneficiary of the Road Asset Management System;
- Training for project management, engineering, monitoring, and evaluation, and stakeholder capacity building, as well as availability to register and use the Port Community System;
- Monitoring and evaluation;
- Implementing a comprehensive gender approach, including training and integration women to perform specialized logistics services and related activities in collaboration with stakeholders;
- Initiatives aimed at the inclusion of people with disabilities in the labor market in relation to the economic activities of the port.





Figure 20: Road improvement and increasing the load capacity of roads (Van 't Hogerhuysstraat roundabout, Willem Campagnestraat, Herhuttersstraat, Molenpad), as well as the addition of pedestrian and cycling paths by 2050

In total, 7.5 km of roads will be reconstructed.

Estimated costs: \$ 26.6 million





Table 2: Overview of projected road investments to enhance the economic and social development of communities, with estimated budgets by 2050

	Overview projected road maintenance and development by 2050	Estimated costs in million USD
1	Initiative for the Integration of Regional Infrastructure in South America (IIRSA) project implementation. <ul style="list-style-type: none"> Expanding and widening of the northern first East-West Link ± 405 km. Improvement and paving of the second East-West Link (JAP-Apoera-South Drain Nickerie ± 389 km). The North-South Link (Pokigron to Viergebroeders ± 305 km). 	\$ 965
2	Asphalted, paved, and unpaved roads - current situation in 2024.	\$ 2,500
3	Upgrading and widening John F. Kennedyweg to Zanderij-Johan Adolf Pengel Airport (JAP) and other areas (± 27-29 km).	\$ 100
4	Paving and upgrading Brownsweg to Nw. Jacobkondre, Mamadam, and Brownsweg-Poesoegroenoe to the villages (107 km)	\$ 100
5	Asphalt pavement of the road from Joden-Savanna to Moengo.	\$ 160
6	Upgrading, widening, and paving of existing roads and development of new roads by 2050.	\$ 100
7	Extension Ringweg to Weg naar Zee.	\$ 10
8	Projected road development Domburg-Laarwijk Meerzorg & Laarwijk to Tamanredjo.	\$ 50
9	Road development between the plantation at the right bank of the Commewijne River and the road to Matapica Beach.	\$ 40
10	Road development from Albina to Galibi.	\$ 50
11	Road development for the future development of Tapajai project.	\$ 450
12	Improving Transport Logistics and Competitiveness in Suriname (ITLCS).	\$ 26.6
	Total	\$ 4.551.600.000,-

Source: Ministry of Public Works





2.3 Traffic management

Traffic management is the process of monitoring and controlling traffic flow, highways, and other transportation systems to ensure the safe and efficient movement of vehicles and pedestrians. It includes traffic monitoring, signal timing, road construction and maintenance, parking management, and incident response.

By 2050, all traffic lights will be replaced by fully actuated traffic signals. These signals will have sensors on all approaches to intersections and will change based on traffic demand, optimizing traffic flow and reducing delays. Actuated signals are ideal for intersections with fluctuating traffic volumes, reducing unnecessary waiting times and improving traffic efficiency.

Flashing Traffic Signals

Flashing traffic signals alert drivers to specific road conditions or control traffic in non-standard situations (e.g., temporary road closures or high-traffic intersections).

Emergency Vehicle Signals

Emergency vehicle signals prioritize ambulances, fire trucks, and other emergency vehicles. These signals can be manually controlled by emergency personnel or automatically activated when an emergency vehicle approaches. The system changes the traffic lights to allow the emergency vehicle to pass safely and quickly, reducing response times and improving public safety.

Estimated costs: \$ 100 million



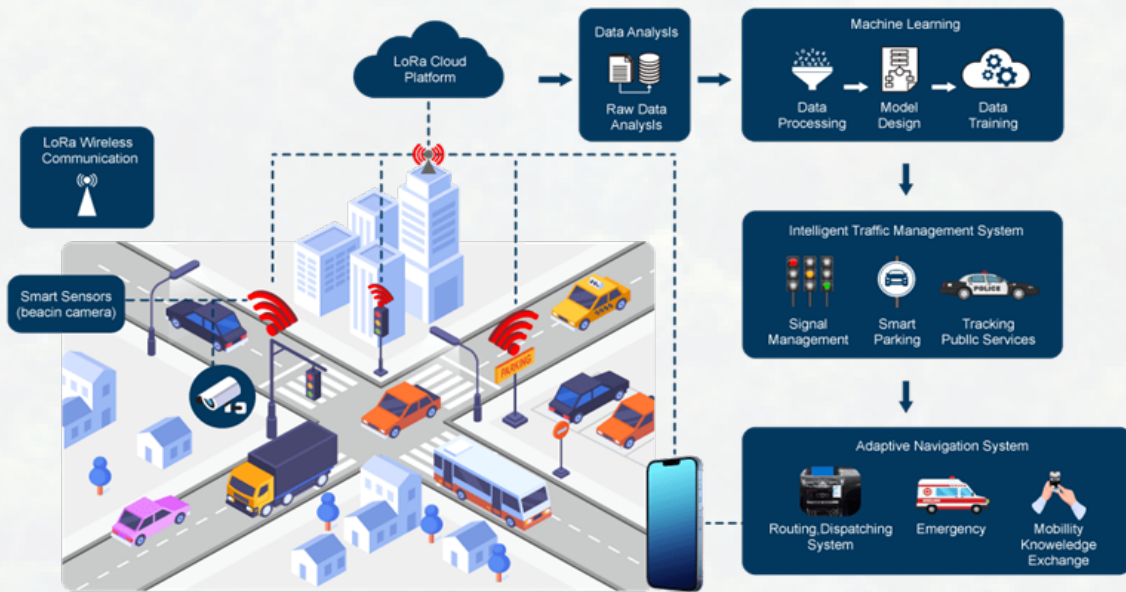


Figure 21: Traffic Management by 2050

2.4 Bridges and jetties

Bridges

1. Rehabilitation of existing bridges

Table 3: Sustainable rehabilitation of existing bridges in Suriname.

No.	District	Wood	CONCRETE	STEEL	CONCRETE-STEEL	STEEL-WOOD	Plastic	TOTAL
1	Paramaribo	12	23	-	4	2	3	44
2	Wanica	9	43	-	2	2	-	56
3	Saramacca	2	3	-	2	1	-	8
4	Coronie	-	-	-	-	-	-	0
5	Nickerie	2	10	-	3	-	-	15
6	Commewijne	3	19	-	1	-	-	23
7	Marowijne	3	8	1	-	3	-	15
8	Para	5	16	-	1	4	-	26
9	Brokopondo	1	3	7	-	-	-	11
10	Sipaliwini	2	1	-	-	9	-	12
Total		39	126	8	13	21	3	210

Source: Ministry of Public Works

- By 2050, 100% (39) of the wooden bridges will be replaced by concrete, steel, or concrete-steel bridges. Wood is vulnerable to rot, decay, and insect damage, which





are accelerated by moisture and temperature fluctuations, weakening the structure.

Estimated costs for replacing 39 wooden bridges: \$65 million.

Annual maintenance (repairs, painting, etc.) will be required for the remaining bridges.

Estimated costs: \$ 11 million

2. Bridges to be replaced in the second East-West Link.

Table 4: Bridges to be maintained and replaced with concrete or concrete-steel bridges in the second East-West Link, district of Sipaliwini.

	Bridge	Material	Length
1	Saronbrug (Pikin Saron)	Concrete	170.00 x 9.60 m
2	bridge over Franskreek	Concrete	34.00 x 9.60 m
3	bridge over Upper Coesewijne River	Wood	25.00 x 5.00 m
4	bridge over Goliath Kreek	Concrete	52.50 x 9.60 m
5	bridge over Kabo Kreek	Concrete	34.00 x 9.60 m
6	bridge over Sparikreek	Wood	15.00 x 5.00 m
7	bridge over Tibiti River	Wood/steel	35.00 x 5.00 m
8	bridge over Witagron	Concrete/steel/wood	240,00 x 6.00 m
9	bridge over Mazoniakreek	Wood/steel	25.00 x 7.00 m
10	bridge over Kleine Falawatrakreek	Concrete	33.00 x 12.50 m
11	bridge over Falawatrakreek	Wood/steel	25.00 x 7.00 m
12	bridge over Mozeskreek	Wood/steel	25.00 x 7.00 m
13	bridge over van Amskreek	Wood/steel	25.00 x 7.00 m
14	bridge over Nickerierivier	Wood/steel	80.00 x 6.00 m
15	bridge over Paris Jacobkreek	Wood/steel	80.00 x 6.00 m
16	bridge over Kabaleborivier	Wood/steel	80.00 x 6.00 m
17	bridge over Mapanekreek	Concrete/Wood	30.00 x 6.00 m

- By 2050, most of the wooden bridges on this road will be replaced by concrete/steel bridges for a longer lifespan and durability. These bridges will play an important role in transporting goods and services and further developing and improving accessibility of this whole area.

Estimated costs: \$ 20 million





3. Bridges to be replaced on the Moengo-Snesikondre road



Figure 22: Overview of eleven bridges to be replaced with concrete or steel bridges, or a combination, on the Moengo-Snesikondre road

The importance of replacing the bridges on the route Moengo–Snesikondre:

- By 2050, the eleven bridges shown in Figure 22 on the Moengo–Snesikondre route will be replaced in concrete-steel bridges to increase the safety of road users, as concrete and steel bridges can withstand heavier loads, are resistant to environmental damage, are sustainable, and have a longer lifespan. The Moengo-Albina region is known for its natural resources, forestry, and natural beauty and tourism potential. Improved infrastructure, including more reliable bridges, will open up opportunities for sector development, benefiting the local economy and creating new revenue stream for the local communities.

Estimated costs: \$ 20 million





4. Proposed bridge over the Saramacca Canal from Adhinstraat to Goede Verwachtingweg



Figure 23: Proposed bridge over the Saramacca Canal from Adhinstraat to Goede Verwachtingweg

- This bridge will provide an alternative route from north to south, helping to resolve traffic congestion by 2050.

Bridge length \pm 35m by 9 m.

Estimated costs: \$ 1.8 million





5. Projected bridge Marrowijnestraat over the Domineekreek



Figure 24: Projected bridge Marrowijnestraat over the Domineekreek by 2050

- This bridge will facilitate smooth traffic flow for both vehicles and pedestrians, reduce congestion at peak times, reducing travel time, and enhance accessibility, providing an alternative route for all road users.

Bridge dimensions: $\pm 20\text{m}$ by 9m .

Estimated costs: \$ 990,000



6. Projected bridge to Kroonenburg, Commewijne



Figure 25: Projected bridge to Kroonenburg on the right bank of the Commewijne River by 2050

- The lack of a bridge is a major obstacle for further developing this area. Currently, communities rely on small boats for transportation. This future bridge will ensure full accessibility to the plantations, eliminating reliance on small boats. This bridge will allow for 24-hour access to the area.
- Residents will also benefit from better access to entertainment and recreational opportunities, that other districts offer. Schoolchildren and others will easily be able to cross the bridge using vehicles or busses to reach their destinations. This project is expected to create more equal opportunities, ensuring that no one is left behind in line with the sustainable development goals.

Estimated costs (± 650 m): \$ 32 million

7. Proposed second and third bridge over the Suriname River.

Paramaribo, the rapidly growing capital, generates heavy traffic in terms of goods and people travelling to all parts of the country. Many of Suriname's economic activities depend on the harbor, industries, and services in and around the city. With the recent discoveries of new oil resources, economic activities are expected to expand





substantially, putting even more pressure on the existing infrastructure. Currently, all motorized traffic from the western part of the country, including Groot Paramaribo, to the eastern part of the country must cross the Suriname River using the existing Jules Wijdenbosch Bridge, a two-lane bridge located in the city center, with no alternative river crossings nearby.

New bridges over the Suriname River to Commewijne are crucial. They will offer opportunities for developing new economic and residential areas allowing companies to transport products and services more efficiently.

As Paramaribo continues to expand and attract more residents, there will be an increasing demand for infrastructure that supports traffic flow. Suriname's natural beauty and unique cultural landmarks in the Commewijne region will also attract more tourists. Improved infrastructure such as these bridges, will foster increased tourism and sustainable development for this district. It is essential that at least two new bridge are constructed by 2050.

Proposed locations for the two bridge over the Suriname River are:

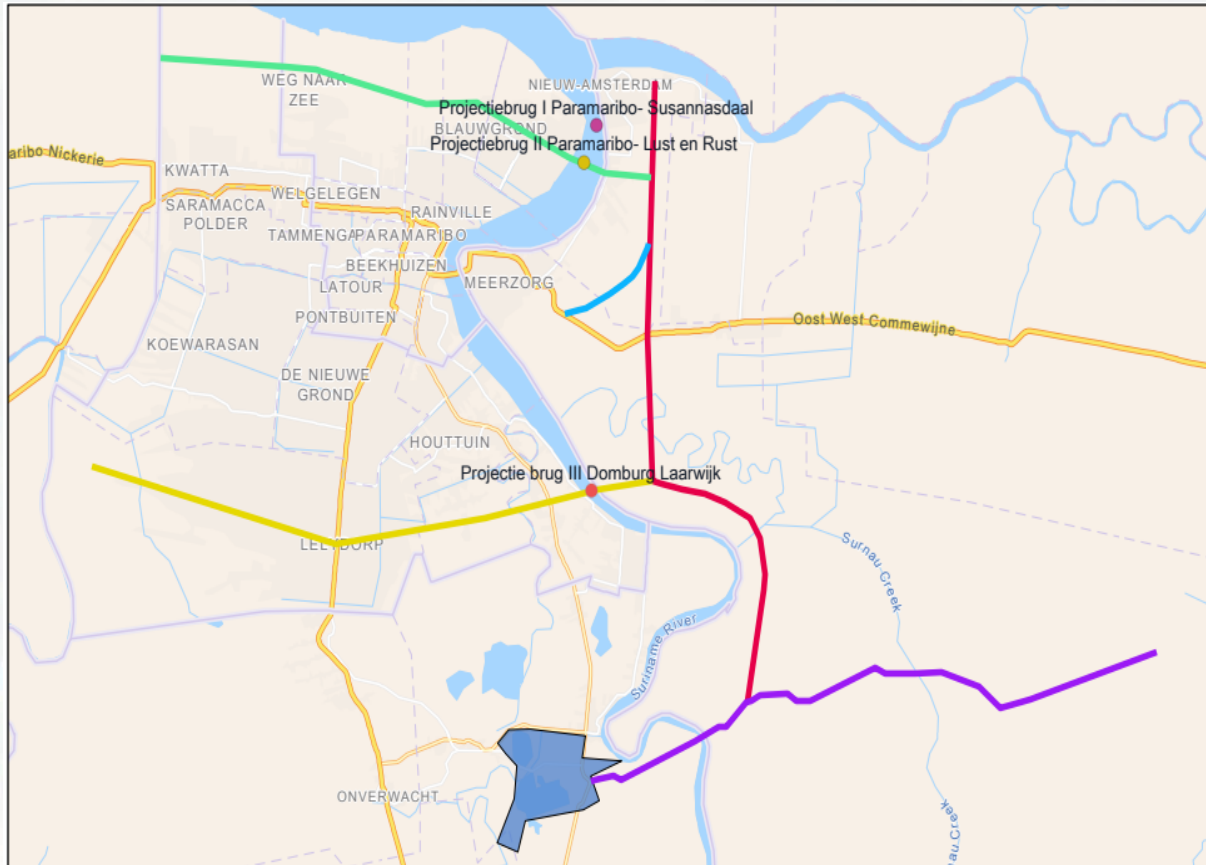
- bridge at Leonsberg-Nw Amsterdam or Morgenstond Paramaribo-Suzanadaal, Commewijne.

Estimated costs: \$ 60 million

- bridge over the Suriname River, connecting Domburg-Laarwijk.

Estimated costs: \$ 50 million





26-2-2025

Bruggen

- Projectiebrug I Paramaribo- Susannasdaal
- Projectiebrug II Paramaribo- Lust en Rust
- Projectie brug III Domburg Laarwijk

Hoofdwegen

- Nieuw-Amsterdam naar weg naar Kaaimangrasi
- Tussenverbinding
- Verbinding Paramaribo Noord en Commewijne

Wanica Zuid

- Weg naar Kaaimangrasi
- Gebieden

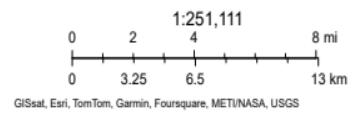


Figure 26: Two proposed bridges: Domburg-Laarwijk, and Leonsberg to Nw-Amsterdam and Morgenstond Paramaribo-Suzanadaal





8. Proposed bridges with neighboring countries of Suriname

In the context of regional development, economic growth, and diplomatic relations two proposed bridges with Suriname's neighboring countries are:

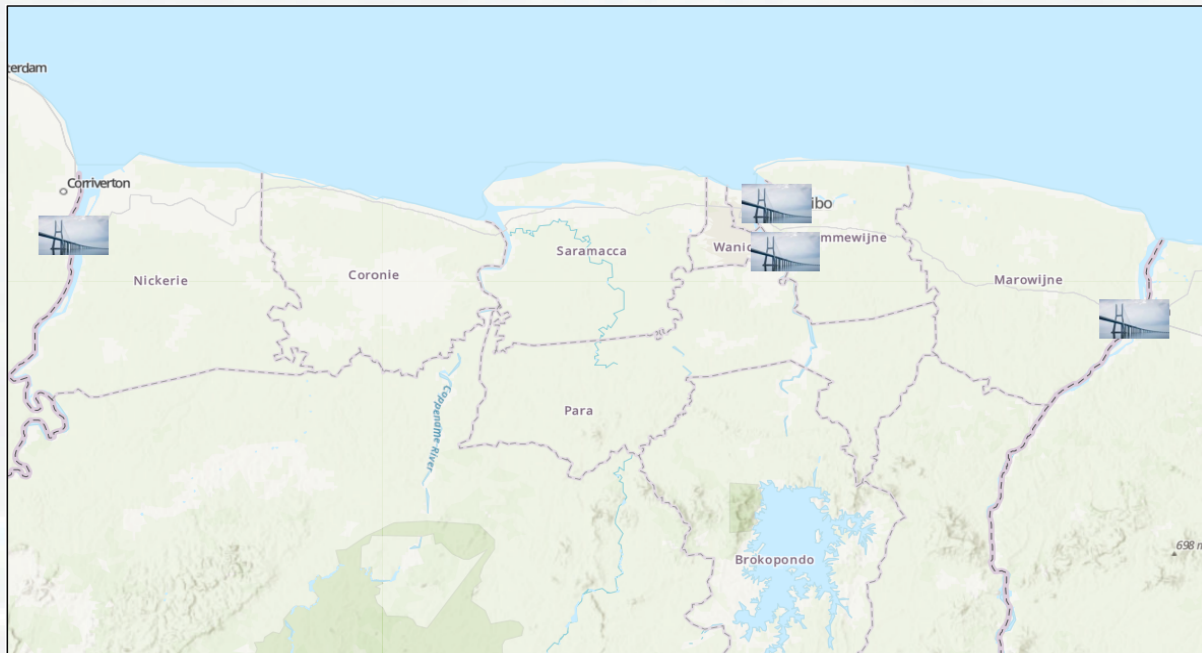


Figure 27: Proposed bridges over the Corantine River in the west and the Marowijne River in the east by 2050

- The Suriname-Guyana Bridge.
Estimated costs: \$ 236 million
- Bridge between Suriname and French Guiana.
Estimated costs: \$ 150 million

By 2050, these two projected bridges will be of great importance, strengthening cross-border connections between the two neighboring countries. They will enhance economic ties, regional integration, trade, and tourism. Currently, many people cross the rivers for trade and other services, so these bridges will improve the flow of goods and services.





Jetties

Many jetties in Suriname are still of wood, which is often unreliable and may not comply with modern safety standards. Many people, especially schoolchildren in certain areas of Suriname, rely on small boats for their connectivity to other regions. These outdated or poorly maintained jetties pose risks, especially during adverse weather conditions or busy periods.

Table 5: Overview 32 jetties to be maintained and replaced by 2050

	Jetties	Location	Construction
1	Leonsberg walking scaffold	Left bank Suriname River	wood
2	Marinetrap Waterkant walking scaffold	Left bank Suriname River/ Waterkant	concrete/wood/ steel
3	Abatoir walking scaffold	Left bank Suriname River	wood
4	Meerzorg walking scaffold	Right bank Suriname River, Meerzorg	wood
5	Meerzorg mooring jetty	Right bank Suriname River, Meerzorg	steel
6	Kabel walking scaffold	Right bank of the Suriname River, Kabel between Voorburg and Nw. Amsterdam	wood
7	Nw. Amsterdam mooring jetty	Right bank of the Suriname River, Nw. Amsterdam	wood
8	Rust en Werk mooring jetty	Right bank of the Commewijne River, Plantation Rust en Werk	wood
9	Marienburg walking scaffold	Left bank of the Commewijne River, Mariënborg	wood
10	Johanna Margaretha jetty	Right bank of the Commewijne River, Johanna Margaretha	wood
11	Ellen walking scaffold	Left bank of the Commewijne River te Ellen	wood
12	Liliendaal walking scaffold	Left bank of the Commewijne River Liliëndaal	wood
13	Alkmaar jetty	Left bank of the Commewijne River, Alkmaar behind terrain kids home Alkmaar	wood
14	Alkmaar walking scaffold	Left bank of the Commewijne River, Alkmaar	wood
15	Aanlegsteiger Frederiksdorp jetty	Right bank of the Commewijne River, Frederiksdorp Plantation	wood





16	Loopsteiger Montresor walking scaffold	Left bank Commewijne River, Montresor	wood
17	Aanlegsteiger Kronenburg jetty	Right bank of the Commewijne River, Kronenburg	wood
18	Aanlegsteiger Hecht en Sterk jetty	Right bank of the Commewijne River, Hecht en Sterk Plantation	wood
19	Aanlegsteiger Alliance jetty	Leftbank of the Matapicakreek, Alliance Plantation	concrete
20	Aanmeersteiger Citrusbedrijf Alliance mooring jetty	Leftbank of the Matapicakreek, Alliance	wood
21	Loopsteiger Constancia	Right bank of the Matapicakreek, Constancia	wood
22	Aanlegsteiger Reynsdorp (Bakki) jetty	Right bank of the Matapicakreek Reynsdorp	concrete
23	Aanlegsteiger Laarwijk	Right bank of the Suriname River, Laarwijk	wood
24	Loopsteiger Huwelijkszorg walking scaffold	Left bank of the Saramacca River, district Saramacca	wood
25	Veersteiger Albina-Fransguyana French Guiana ferry jetty	Ferry between Albina/Saint Laurent Marowijne River	steel
26	Veersteiger Nickerie-Guyana South Drain ferry jetty	Ferry between Nickerie en Guyana Corantijn River	steel
27	Aanlegsteiger Calcutta west jetty	Beside the Saramacca River, district of Saramacca	concrete
29	Loopsteiger Kalebaskreek walking scaffold	Alongside the Coppename River, district of Saramacca	concrete/steel
30	Loopsteiger Goede Verwachting walking scaffold	Saramacca River behind Staatsolie Goedeverwachting	wood
31	Loopsteiger Maho walking scaffold	Alongside Saramacca River, district of Saramacca	wood
32	Loopsteiger Loksi Bong walking scaffold	Village Loksi Bong alongside the Coppename River	wood

Source: Ministry of Public Works

- By 2050, all the wooden jetties listed in Table 6 will be replaced with concrete/steel jetties and all jetties which are already made of concrete/steel should be maintained and rehabilitated on time to ensure the safety of all users.

Estimated costs: USD 5 million





Table 6: Overview projected investments for bridges and jetties by 2050

	Projected investments for bridges and jetties 2050	Estimated costs in million USD
1	Sustainable rehabilitation of existing bridges in Suriname	\$ 65
2	Bridges to be maintained and replaced with concrete or concrete-steel bridges in the second East-West Link	\$ 20
3	Replace eleven bridges with concrete, steel bridges or a combination thereof on the road from Moengo to Snestikondre.	\$ 11
4	Bridge over the Saramacca Canal from Adhinstraat to Goede Verwachtingweg	\$ 1.8
5	Bridge Marrowijnestraat over the Domineekreek	\$ 0.990
6	Projected bridge to Kroonenburg on the right bank of the Commewijne River.	\$ 32
7	Two proposed bridges: Leonsberg to Nw-Amsterdam, Morgenstond Paramaribo-Suzanadaal Bridge and the Domburg-Laarwijk Bridge,	\$ 110
8	Proposed bridge over the Corantine River in the west and the bridge over the Marowijne River in the east.	\$ 236 \$ 150
	Jetties	
1	Replacement of wooden jetties	\$ 5
	Total	\$ 631.7

Source: Ministry of Public Works



2.5 Drainage systems



Figure 28: Overview of main drainage systems Greater Paramaribo

The drainage of Greater Paramaribo takes place through pump stations, sluices and a combination of primary and secondary canals, sewers, natural creeks and rivers. Through this extensive main system of primary, secondary canals and sewers with a total length of ± 863 km, the excessive water during rainy days is discharged towards the Suriname River, Saramacca River and the Atlantic Ocean.

- The Saramacca canal connects the Suriname River with the Saramacca River. This makes it the most important waterway in the plan area.
- The Para River is also an important river in the southeast of the plan area. This river flows from the forest area in the Para district towards the Suriname River.

Only 3.6% of the main waterways are enclosed in the form of sewerage. The main, secondary, and tertiary water systems are poorly maintained in many locations. As a



result, the effective discharge capacity of the drainage system is significantly lower than its design capacity in many areas.

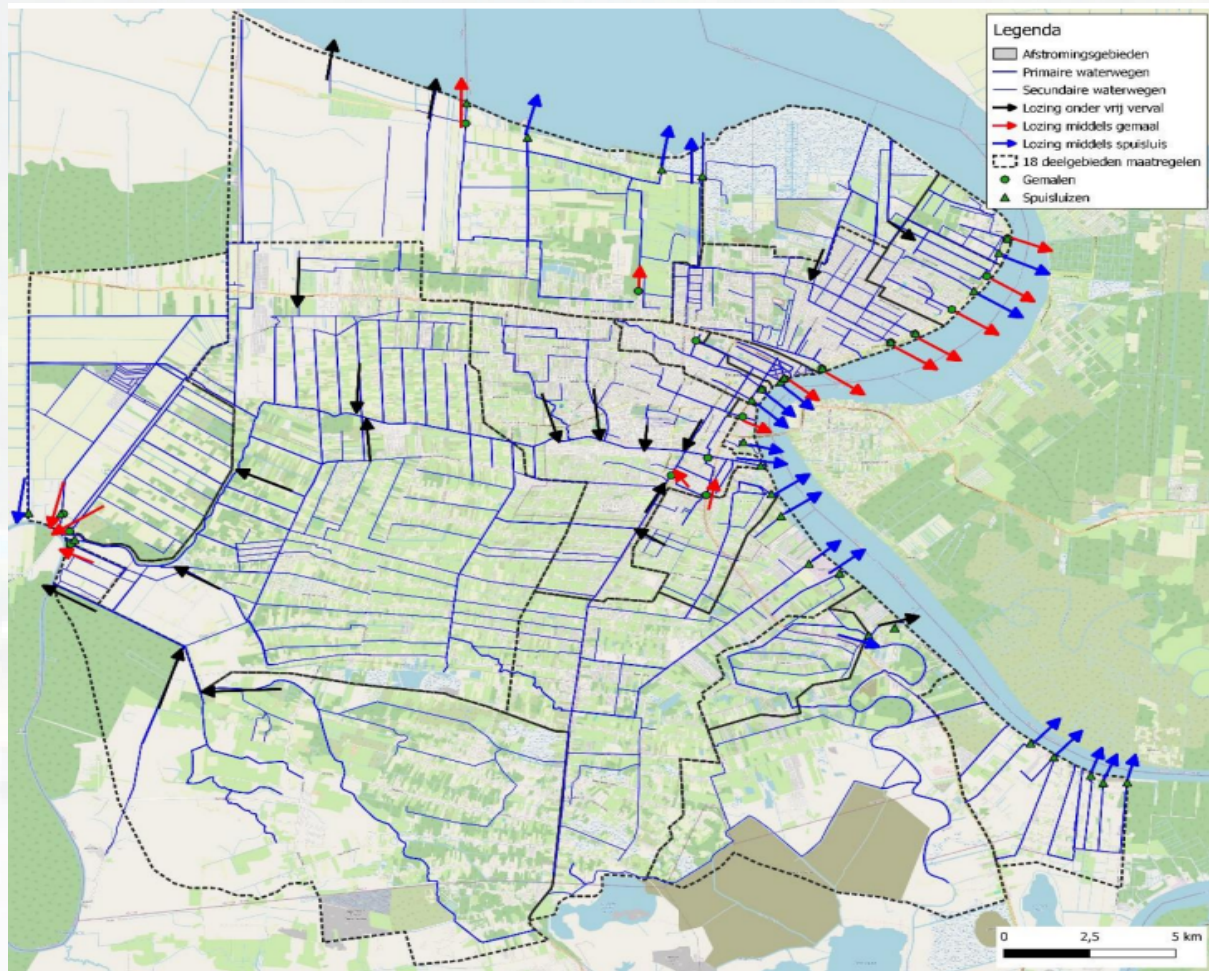


Figure 29: Drainage of Greater Paramaribo through pumps, locks, and open waterway.

Source: Masterplan ILACO

The roadmap for sustainable drainage of Greater Paramaribo will be based on a replacement and maintenance plan.





Table 7: Overview maintenance plan for primary, secondary and tertiary waterways, street gullies, pumping stations, and discharge sluices (until 2050)

	Maintenance plan	Maintenance interval	Length/ piece	Annual estimated costs in million USD
1	Dredging of all primary and secondary drainage corridors and disposal of sludge	1 * per year	833 km	\$ 6,242,625.-
2	Mowing of all primary and secondary drainage corridors	4 * per year	833 km	\$ 6,658,800.-
3	Cleaning street gullies	2 * per year	90.700 pieces	\$ 544,046.-
4	Cleaning sewers, flushing and removing sludge	1 * per 10 years	907 km	\$ 1,269,441.-
5	Replacement and maintenance pumping stations and locks	1 * per year	51 pieces	\$ 765,000.-
	Total			\$15,479,913.-

Source: Masterplan ILACO

Table 8: Overview replacement plan for primary and secondary waterways, street gullies, pumping stations, and discharge sluices by 2050

	Replacement assets	Maintenance interval	Length/ piece	Annual estimated costs in million USD
1	Drainage/sewage (riolering)	1 * per 60 year	907 km	\$23,575,342.-
2	Divers (duikers)	1 * per 60 year	42 km	\$ 1,082,055.-
3	Pumping stations (gemalen)	1 * per 25 year	19 pieces	\$ 3,263,000.-
4	Locks/sluices (sluizen)	1 * per 40 year	32 pieces	\$ 624,000.-
	Total			\$28,544,397.-

Source: Masterplan ILACO





Rehabilitation of pumping stations in Greater Paramaribo.

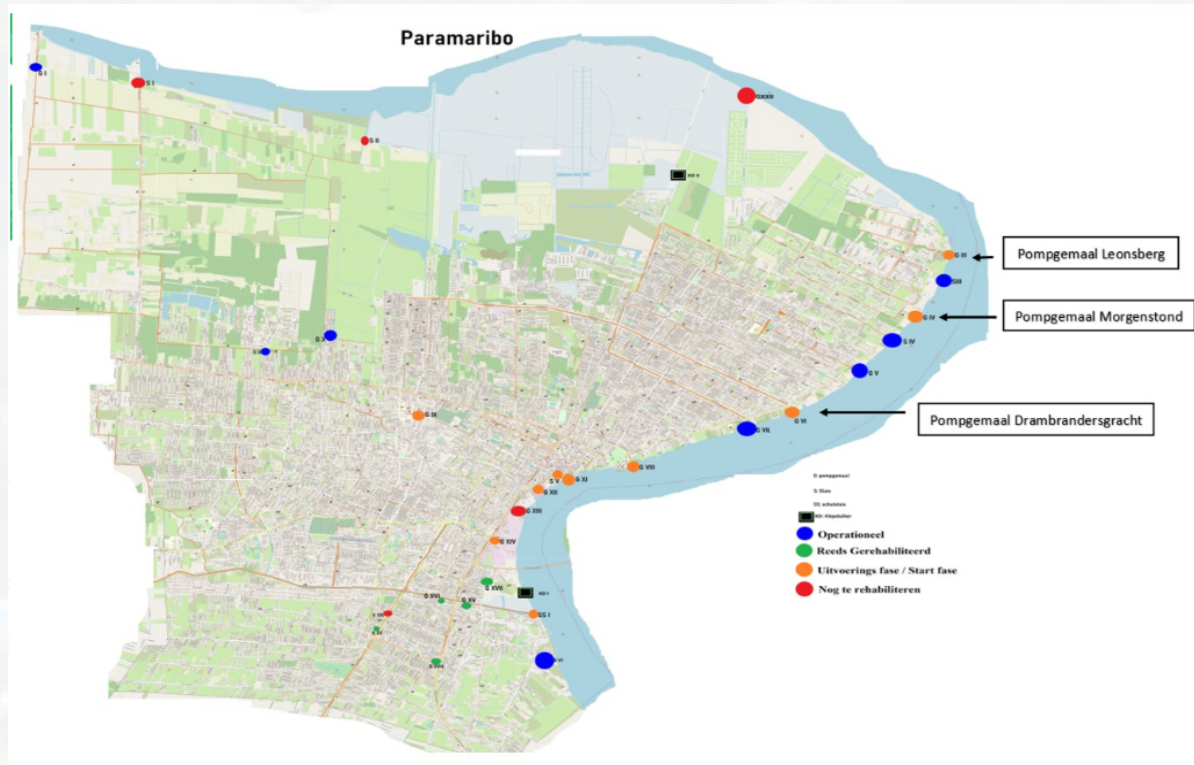


Figure 30: Pumping stations and locks in Greater Paramaribo.

Regular replacement and annual maintenance will help prevent breakdowns, reduce operational costs, and ensure optimal performance of all pumps and sluices. In total there are nineteen pumping stations in Greater Paramaribo:

- Leonsberg, Geyersvlijt, Morgenstond, Sluiskreek, Sommelsdijcksekreek, Benjaminstraat, Knuffelsgracht, Jodenbreestraat, Drambrandersgracht, Limesgracht, Nw. Haven, Walabastraat, Kemperweg, Koffiedam, Winti Wai, Ramgoelam, Tamanoa, Weg naar Zee en Santopolder.

Most of these pumping stations need to be renewed and rehabilitated. In other districts of Suriname, several pumping stations and sluices also require annual revision or rehabilitation.





Table 9: Overview of sluices and pumping station in all districts

	Paramaribo	Wanica	Saramacca	Coronie	Nickerie	Commewijne	Marowijne	Sipaliwini	Totaal
Sluizen	6	1	2	12	9	10	2		42
Gemalen	19	1	2	4	2				28
Schutsluizen	1		1	1				1	4
									74

Source: Ministry of Public Works

By 2050, most pumping stations must be equipped with the following components:

- **Automatic Float Switch**

Used in pumping stations, this switch automatically turns the pump on when the water level reaches a high point and off when it drops to a low level. It regulates pump operation based on water levels and prevents dry-running of the pump.

Estimated costs per unit: \$ 100,000.-

- **Plastic valve culvert**

A culvert with a valve that opens under pressure from one direction, and stays closed under pressure from the opposite direction. This allows for controlled drainage. It is particularly useful for dewatering locks in Suriname.

Water is drained from plots, roads, and other areas via a tertiary system of roadside ditches, street gullies, and sewers, connecting to the main system through pumping stations, manually operated sluices, and open outlets to rivers and the ocean. Many flooding issues are caused by clogged street drains, sewers, and small waterways, which block water from reaching the main system.

Proposed solution for the tertiary network:

- Replace current tertiary drains with open box (U-Model) concrete channels, and HDPE pipes, which allow for easier maintenance and cleaning.

Estimated costs: \$ 800 million





Figure 31: Open box model tertiary waterways and HDPE pipes to be replaced with culverts

Greater Paramaribo has been divided in eighteen drainage areas. Each area has specific strategic actions proposed to reduce or eliminate flooding in Greater Paramaribo.

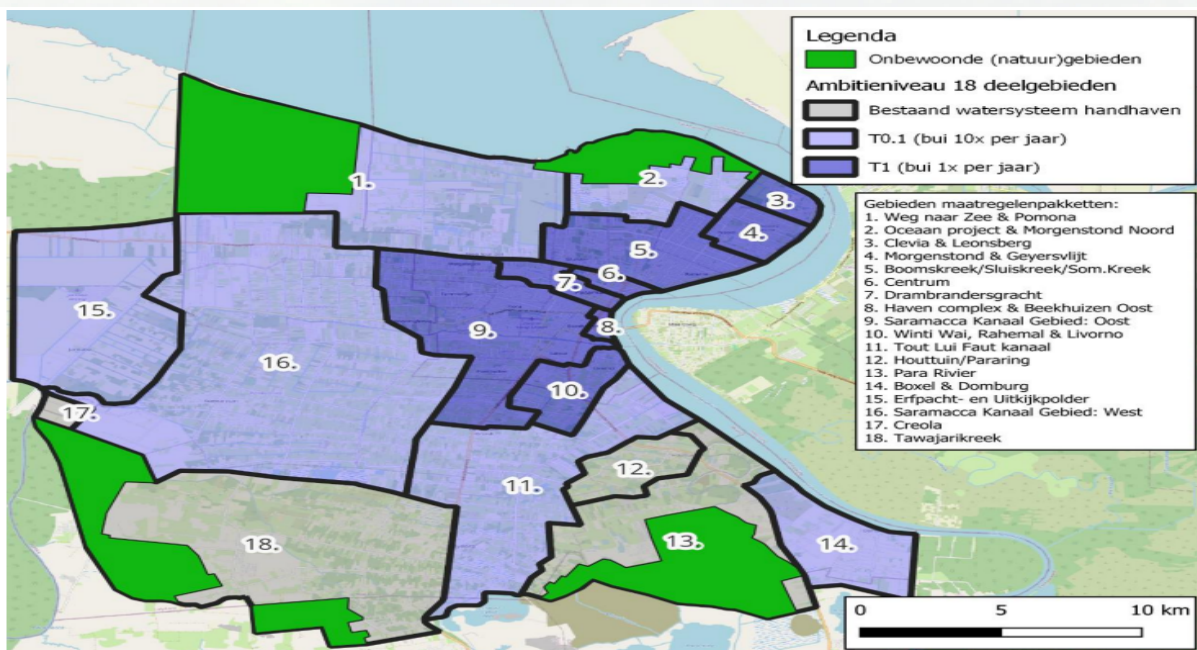


Figure 32: Protection strategies per drainage area of Greater Paramaribo





Table 10: Estimated costs of structural measures per drainage area by 2050

	Afwateringsgebieden	Investering maatregelen watersysteem	Initiële rehabilitatie watersysteem	TOTAAL
		US\$	US\$	US\$
1	Weg naar Zee & Pomona	\$ 17,420,000	\$ 1,362,719	\$ 18,782,719
2	Oceaan project & Morgenstond Noord	\$ 6,854,601	\$ 461,550	\$ 7,316,151
3	Clevia & Leonsberg	\$ 399,003	\$ 2,026,648	\$ 2,425,650
4	Morgenstond & Geyersvljt	\$ 760,500	\$ 8,899,567	\$ 9,660,067
5	Boomskreek, Sluiskreek, Sommelsdijkse Kreek	\$ 13,801,775	\$ 47,106,072	\$ 60,907,847
6	Centrum	\$ 14,865,500	\$ 5,176,822	\$ 20,042,322
7	Drambrandersgracht	\$ 13,356,600	\$ 11,262,158	\$ 24,618,758
8	Havengebied & Beekhuizen oost	\$ 123,500	\$ 2,781,777	\$ 2,905,277
9	Saramacca kanaal gebied: oost	\$ 18,453,760	\$ 42,924,941	\$ 61,378,701
10	Winti Wai, Rahemal en Livorno	\$ 32,667,250	\$ 5,753,353	\$ 38,420,603
11	Tout Lui Faut kanaal	\$ 16,568,223	\$ 3,226,195	\$ 19,794,418
12	Houttuin/Pararing	\$ -	\$ 320,113	\$ 320,113
13	Para rivier	\$ -	\$ 599,878	\$ 599,878
14	Boxel en Domburg	\$ 6,330,155	\$ 415,668	\$ 6,745,823
15	Erfpacht- en Uitkijkpolder	\$ 9,737,000	\$ 1,045,254	\$ 10,782,254
16	Saramacca kanaal gebied: west	\$ 25,066,600	\$ 4,090,741	\$ 29,157,341
17	Creola	\$ 117,000	\$ 111,180	\$ 228,180
18	Tawajari Kreek	\$ -	\$ 944,727	\$ 944,727
		\$ 176,521,466	\$ 138,509,363	\$ 315,030,829

Source: Masterplan ILACO





Case Study: The Saramacca Canal System Rehabilitation Project (SCSRP)

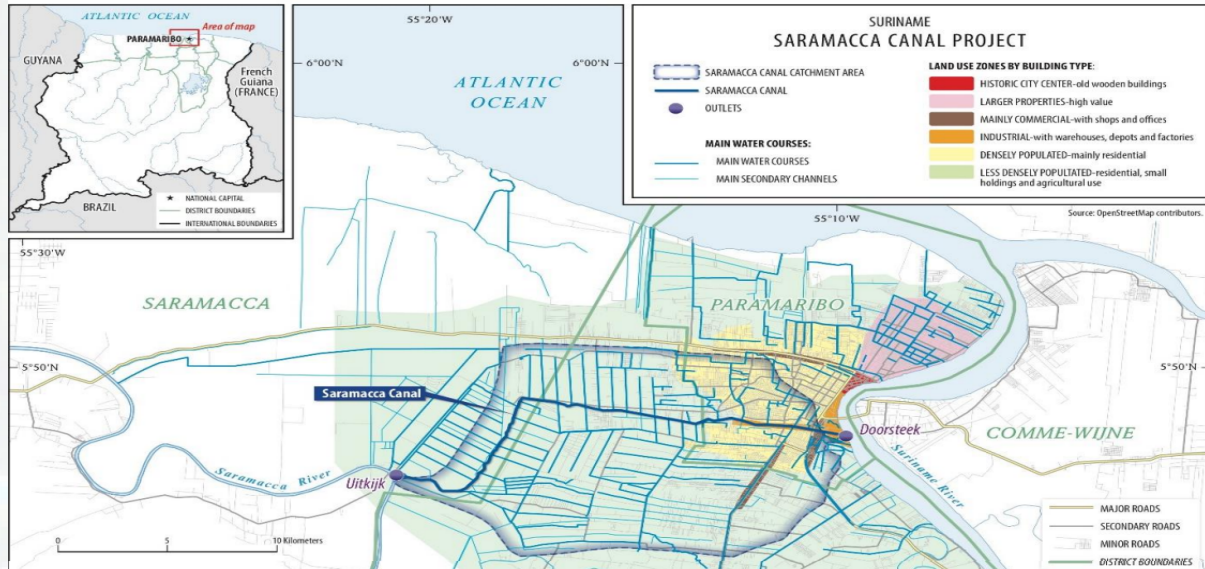


Figure 34: The Saramacca Canal System Rehabilitation Project (SCSRP).

Source: Master Plan ILACO

The canal plays a crucial role in the drainage system, helping to manage excess water during heavy rains and preventing flooding in Greater Paramaribo (including the city center, Creola, Winti Wai, Belfima, and Rahemal and the surrounding areas). The canal is a 24.5 km long canal, connecting the Suriname River with the Saramacca River and runs from Saramaccadoorsteek to Uitkijk. The waterway is 30-50 meter wide and 2–3 meters deep. Companies that are active in the timber and other sector are mainly located along the canal. The canal has not been maintained for nearly sixty years. It was overgrown with vegetation, obstructed by waste (e.g., car wrecks, appliances, logs), and difficult for boats and pontoons to navigate and to access.

Flooding in Paramaribo, Wanica, and Saramacca during heavy rainfall has been largely attributed to the canal's poor condition.

Cleaning up the canal would be a huge challenge. However, over time, the canal had become clogged with sediment, floating vegetation, and debris, reducing its capacity to





drain water efficiently. As a result, a large part of the districts of Paramaribo, Wanica, and Saramacca were facing the issue of flooding during heavy rainfall.

On November 14, 2023, the Saramacca Canal System Rehabilitation Project (SCSRP) was officially started. The activities within the project started in January 2024 and were financed by a loan of 30 million US dollars from the World Bank. The main aim of this project was the restoration of the locks at Doorsteek and Uitkijk, and protection of the canal banks where necessary, cleaning of the Saramacca Canal to sustainably tackle the drainage problem and water nuisance for the benefit of Greater Paramaribo.

During the execution of this project, floating vegetation in the canal was removed. Waste that was found during the scooping of the floating/fixed vegetation was also collected by the contractor on the pontoon and transported to a dumping site approved by the management. The vegetation present on the verges were also removed, namely from the waterline, as well as the vegetation on a verge strip of 7.5 meters.

The rehabilitation of the Saramacca Canal was, and still is, crucial to address these challenges, ensuring that the canal can continue to serve its intended main purpose of drainage of Greater Paramaribo. Furthermore, the fact that the waterway has now been cleared of all vegetation means a pleasant view for users and residents along the canal. In addition to the main goals, such as drainage and making it accessible for shipping, it also means that people may use the canal now for recreational activities such as boating, fishing, etc.

The proposed plan for this canal until 2050, is that the canal should be cleaned up annually, so that the dewatering issue of Greater Paramaribo is reduced or solved.

Annual estimated costs: \$ 1.7 million (25 years).

Between 2025 and 2050 the entire canal should be dredged and cleaned up for higher water storage for a better future drainage of Greater Paramaribo, and areas around the canal, as the population will be growing and access for large ships will be needed.

Estimated costs: \$ 5 million (one-time investment).

Table 11: Overview drainage estimated costs 2050





	Drainage investments by 2050	Estimated costs in million USD
1	Maintenance plan for primary, secondary and tertiary waterways, street gullies, pumping stations, and discharge sluices until 2050.	\$ 15,479,913.-
2	Replacement plan for primary and secondary waterways, street gullies, pumping stations, and discharge sluices until 2050.	\$ 28,544,397.-
3	Automatic Float Switch.	\$ 100,000.-
4	Replacing the tertiary networks with an open box (U-Model) made of concrete and also HDPE pipes.	\$ 800,000,000.-
5	Protection against flooding of eighteen drainage areas in Greater Paramaribo	\$ 315,030,829.-
6	The Saramacca Canal System Rehabilitation Project annual cleaning (25 years)	\$ 47,500,000.-
	Total	\$ 1,206,655,139.-

Source: Ministry of Public Works



2.6 Coastal protection

There is an urgent need for a green-grey dike or steel sheet pile construction with rock cladding or Rip Rap with rocks along the entire northern coastal side of Suriname. Due to the high costs of sea defence, the focus until 2050 will be especially on these six (6) urgent locations:

1. Weg naar Zee, Brantimakka (± 4.5 km)
2. The pilgrimage site to the cremation site (± 4 km)
3. Right and left banks of the Commewijne River (± 30 & ± 31 km)
4. Burnside-Coronie damming (22 km)
5. Galibi, Albina (± 2.7 km)
6. Albina, Marowijne (15)

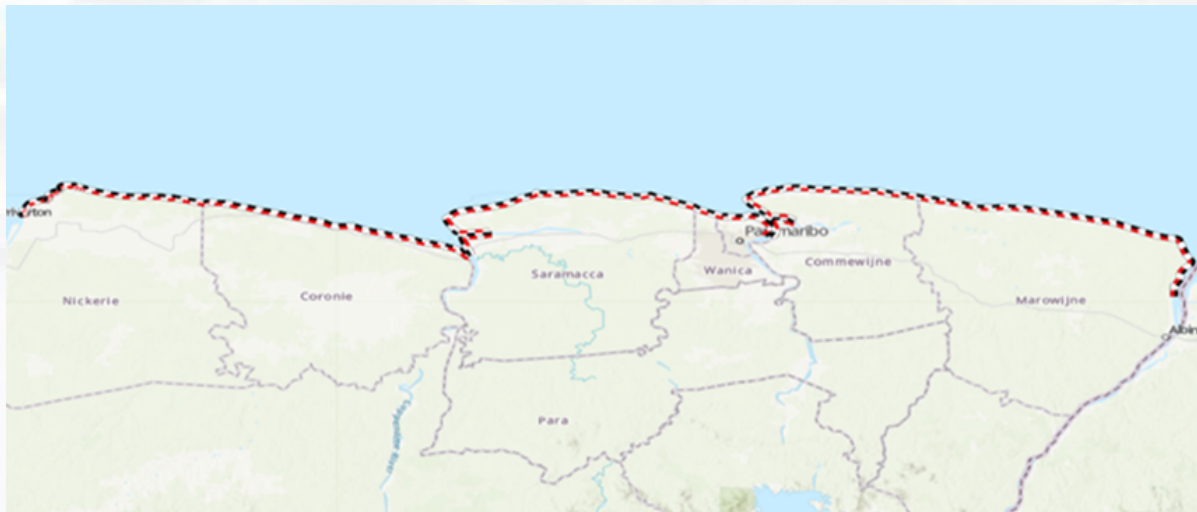


Figure 33: An entire northern coastline protection integrating green-grey infrastructure





1. Case Study: Coastal protection of the coastal strip Brantimakkaweg - Weg naar Zee.

Introduction

Paramaribo is experiencing the consequences of climate change, especially in the Weg naar Zee area. Extreme weather conditions, accelerated coastal erosion, and the threat to agriculture and fisheries have drastically changed the landscape. Recent inspections show that coastal erosion is increasing, mangrove growth is insufficient, dike breaches are occurring and the risk of flooding is increasing. The main cause of this is the constant wave impact, which affects the coastline and increases the vulnerability of the area. To structurally address these problems, effective protection measures are necessary to prevent further degradation of the coastline and ensure the safety of the area.

Project description

The project, called "Foreshore Boulder Rip Rap Dike" or "Seawall Brantimakka", is designed to provide protection against the sea and prevent flooding as a result of climate change and sea level rise. The construction is specifically intended to stabilize the coastline and minimize further damage from waves and erosion.

Location

The route runs along the Brantimakkaweg, directly along the current coastline. The existing dike route is maintained as much as possible. The dike extends over a length of 4.5 km, from the Henry Fernandes lock to the Brantimakka lock.

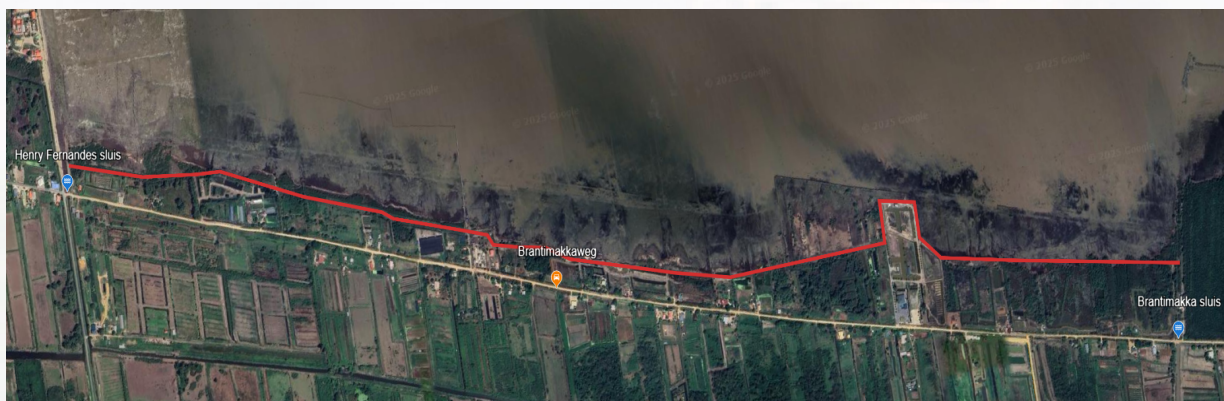


Figure 34: The sea dike route projection along the Brantimakkaweg - Weg naar Zee





Construction method

1. Dike body: The base of the dike is formed by clay, which provides a solid foundation.
2. Dike revetment: The dike body is then covered with variable large crushed stone (gravel and boulders), which reduce the impact of the waves and prevent erosion.

Construction of the Dike Revetment:

1. Seaside reinforcement: A compacted sand package is placed on the sea side, which serves as a support and foundation for the protective layers.
2. Geotextile application: A geotextile material is applied over the sand package, which provides stability and prevents the sand from being washed out.
3. Rubble protection: Finally, a base layer (gravel) and a protective layer (boulders) of crushed stone are applied, varying in grain size, to protect the dike against wave action.



Figure 35: 3D view projected river dike 4.5 km along Brantimakkaweg - Weg naar Zee

Project outcome

The completion of this seawall will strengthen and protect the coastline of Weg naar Zee from further erosion and flooding.

These measures will provide a sustainable and effective solution to limit the impact of climate change and ensure the long-term protection of the Brantimakkaweg.

Estimated costs: \$ 11.6 million





2. River dike from the Hindu temple and pilgrimage to cremation ground Weg naar Zee

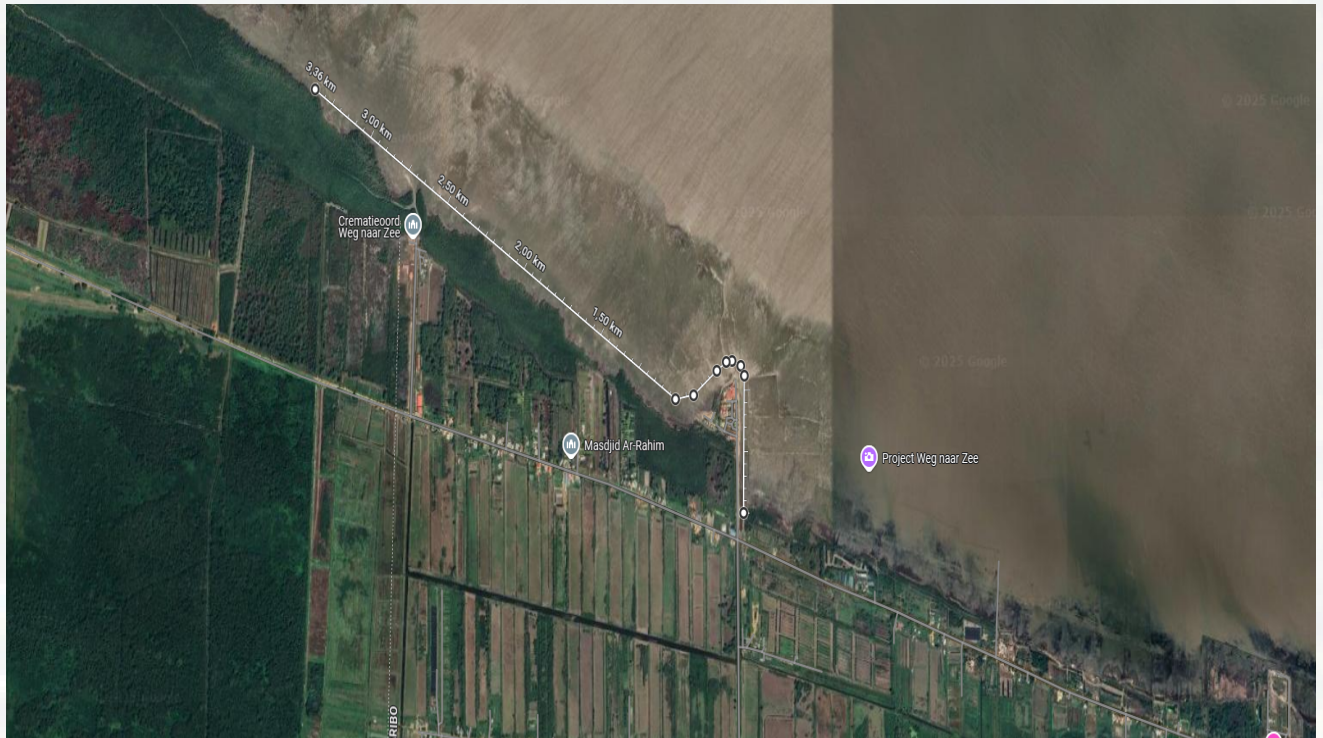


Figure 36: Projected river dike 4 km from the Hindu temple and pilgrimage to cremation ground Weg naar Zee

- This section (± 4 km) is facing the same problems as the coastline Brantimakkaweg - Weg naar Zee and requires a similar dike ("Foreshore Boulder Rip Rap Dike") to provide protection against the sea and prevent flooding, due to climate change and sea level rise.

Estimated costs: \$ 11 million





3. Green-grey coastal infrastructure protection on the right and left bank of the Commewijne River

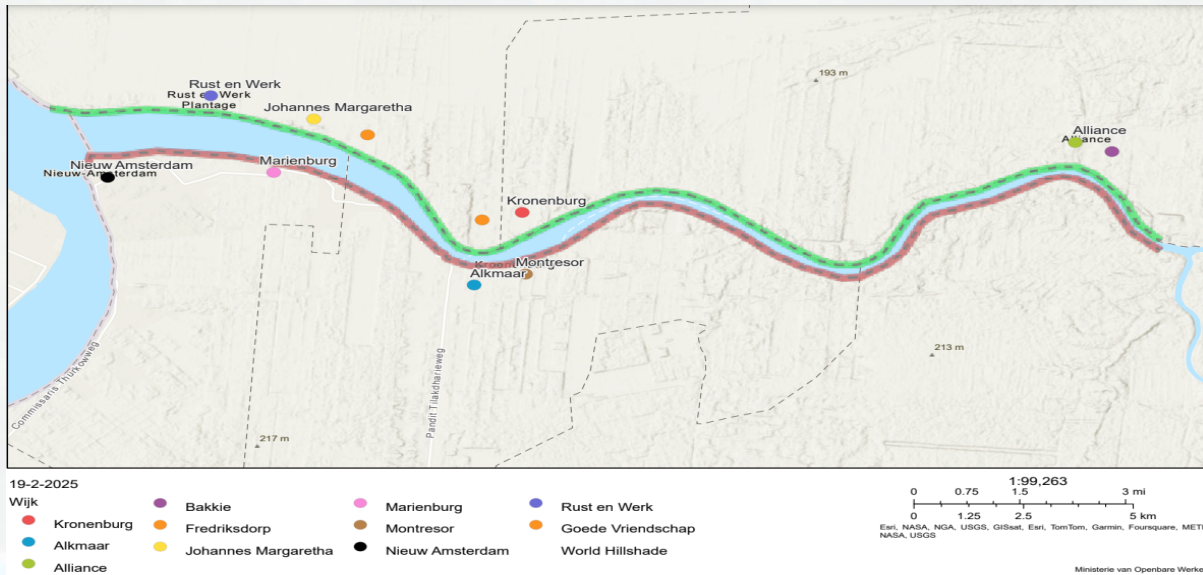


Figure 37: Proposed green-grey coastal infrastructure protection on the right and left bank of the Commewijne River

With the global sea level rise, the communities at the right and left banks of the Commewijne River are vulnerable to flooding. Without proper coastal protection, these areas face the risk of frequent flooding and saltwater intrusion, which will damage the soil, making it unsuitable for agriculture for the local communities.

For sustainable coastal protection of both sides of the Commewijne River (± 60 km), the design of a steel sheet pile construction with rock cladding is considered as an alternative for this area, or a combination of green-grey dikes (green-grey infrastructure). Green coastal protection refers to promoting *parwa* and mangrove as natural protectors of the coastline and banks at both sides of the Commewijne River.

Estimated costs: \$ 80 million



Figure 38: Proposed steel sheet pile construction with rock cladding on the right and left bank of the Commewijne River





4. Dike construction protection of Greater Paramaribo by 2050

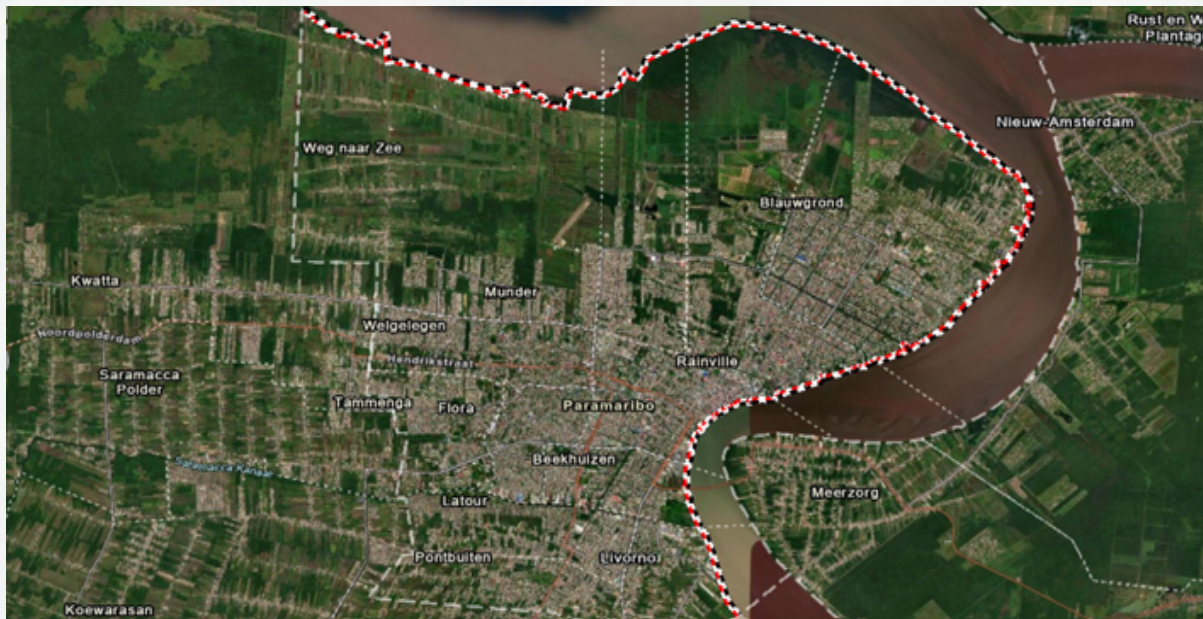


Figure 39: Steel sheet pile construction protection of Greater Paramaribo

- Coastal protection of Paramaribo North (± 30 km).

Estimated costs: \$ 80 million

5. Dike construction Albina Marowijne River



Figure 40: Protection of the land nearby Albina, Marowijne River

- Coastal protection of Albina (± 15 km).

Estimated costs: \$ 40 million





6. Rip rap dike construction with rocks to prevent coastal degradation Galibi



Figure 41: Proposed Rip Rap dike with rocks to prevent coastal degradation Galibi.

- Total length 2.7 km.
Estimated costs: \$ 10 million





7. Dike construction Coronie damming



Figure 42: Future sea dike construction line burnside to Coronie damming

- Total length 22 km.
Estimated costs: \$ 77 million

Table 12: Overview estimated costs sea defence and dike construction by 2050

	Dike constructions by 2050	Length in km	Estimated annual budget in million USD
1	Dike construction Brantimakkaweg - Weg naar Zee.	4.5	\$ 11.6
2	River dike from the Hindu temple and pilgrimage to cremation ground Weg naar Zee.	4	\$ 11
3	Green-grey coastal infrastructure protection on the right and left bank of the Commewijne River.	61	\$ 80
4	Steel sheet pile construction protection of Greater Paramaribo by 2050	30	\$ 80
5	Dike construction nearby Albina, Marowijne River.	15	\$ 40
6	Rip rap dike construction with rocks to prevent coastal degradation Galibi	2.7	\$ 10
7	Sea dike Coronie damming	22	\$ 77
	Total	139.2	\$ 310 million

Source: Ministry of Public Works.





2.7 River dredging

There will be three (3) strategic river dredging plans to be executed by 2050:

1. The Suriname River

The Suriname River is the main route for marine transportation to the Port of Paramaribo, Kuldipsingh Port Facility, the Staatsolie refinery, and the Paranam Port. Due to restricted depths in the navigation channel of this downstream river section, most vessels couldn't pass fully laden and/or have to adapt their sailing times to the phase of the tide in order to avoid the hours around low water.

Policy plans for dredging the Suriname River will focus on deepening and widening of the navigation channel annually to reach and maintain at least 9 m depth or more to boost economic trade and facilitate larger container/bulk vessels, but also cruise ships.

Annual estimated costs: \$ 70 million

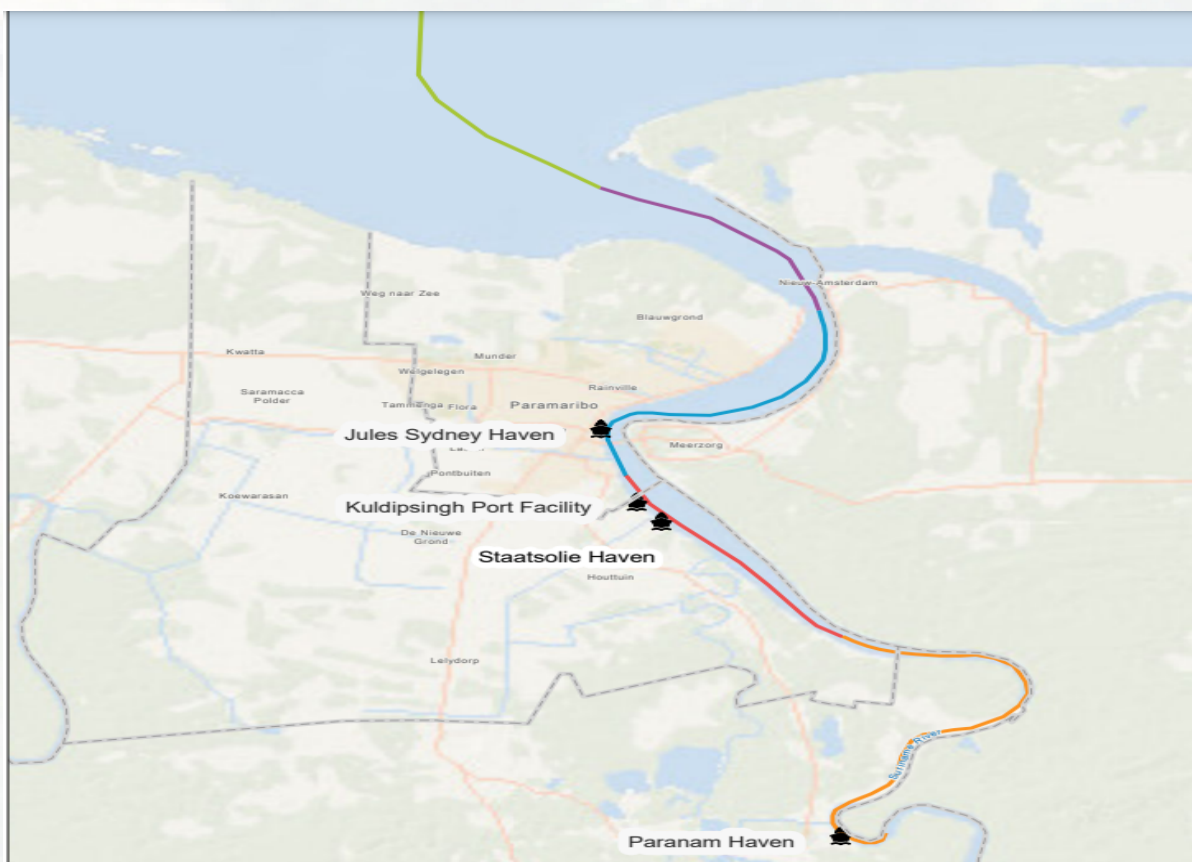


Figure 43: Dredging line Suriname River.



Location of work

1. Outer Bank Area from the open sea to the river mouth at Braamspunt (km 0–km 30).
2. Resolutie Bank Area from the river mouth at Braamspunt to the confluence of the Commewijne River and the Suriname River at Nieuw Amsterdam (km 30–km 41).
3. Jagtlust Bank Area from Nieuw Amsterdam to Paramaribo (km 41–km 56).
4. Dijkveld Bank Area from Suhoza (south of the Jules Wijdenbosch Bridge) to Domburg (km 56–km 68).
5. Upper river Area from south of Domburg to Paranam (km 68–km 88).
6. Anchorage Suzannasdaal and Simonspolder

2. The Nickerie River

With the development of the upcoming oil and gas sector, as well as agricultural and other industrial developments in Nickerie, the Nickerie River (up to the port at Stichting Machinale Landbouw (SML) - Wageningen) must be dredged to support larger vessels, boost trade, and enhance economic activities.

Annual estimated costs: \$ 50 million



Figure 44: Dredgingline Nickerie to SML Port Wageningen





3. The Corantine River to the port in Apoera

This dredging plan must be placed in the context of The West-Suriname Plan of Dr. Ir. Frank Essed, which was an economic development plan for the western part of Suriname. It includes the extraction of bauxite in the Bakhuis Mountains and other minerals, the construction of a hydro-electric power plant in the Kabalebo River, an aluminum smelter in Apoera, and the construction of a port in Apoera. As a result, further economic activities will follow. The exploitation of the Bakhuis will become a reality in the future, and dredging of the Corantine River to the port of Apoera should be priority, as this waterway will be essential for ships reaching the Apoera Port (Tjang-A-Sjin, J. (2025).

Annual estimated costs: \$ 40 million



Figure 45: Dredging line Corantine River to Apoera Port

Table 13: Overview estimated costs dredging plans by 2050

	River dredging projects	Annual estimated costs in million USD
1	Dredging line Suriname River	\$ 70
2	Dredging line Nickerie to SML Port Wageringen	\$ 50
3	Dredging line Corantine River to Apoera Port	\$ 40
	Total	\$ 160 million

Source: Ministry of Public Works





3 Urban Development

This chapter discusses access to safe and affordable housing, which is essential for human well-being, and for social and economic development. When people are well housed it contributes to health, education, work performance, safety, and inclusivity. One of the pressing issues in Suriname is the need for affordable plots and housing as our population grows. Without government support for subdivision areas, many citizens may struggle to find suitable land to build their homes. Affordable subdivision plans will allow low- and middle-income families to secure land at reasonable prices and build their own homes. For some target groups, the focus will also be on building affordable multi-story apartments, which will shape the future of housing in Suriname. Furthermore, this section also discussed the expansion and the renovation of the historical city of Paramaribo and state monumental buildings. These activities are linked to the following SDGs:

- SDG 1: No Poverty
- SDG 3: Good Health and Well-being
- SDG 9: Industry, Innovation, and Infrastructure
- SDG 10: Reduced Inequalities
- SDG 13: Climate Action

3.1 Development of subdivision plans and multi-story apartments

The Ministry of Public Works is committed to the following projects:

- 1. Develop ± 50 subdivision areas for housing construction for various target groups in Suriname by 2050.**

The plan is to deliver at least five allotments every five years, with all necessary infrastructure, drainage systems and utilities at the end of 2050. Every subdivision design must include parks, areas for relaxation, playgrounds and sport fields integrated for families.

Estimated costs: \$ 5 million every 5 years





Figure 46: Creating parks for recreation in subdivision areas

2. Invest in multi-story apartments



Figure 47: Building upward or vertical construction by 2050

The Ministry is committed to promote multi-story apartments, which will be the future trend of housing in Suriname. These multi-story buildings will be designed to facilitate more people of various target groups, making them ideal for urban environments as demand for housing continues to grow.





Table 14: Two (2) proposed multi-story apartments by 2050

	Multi-story apartment projects	Housing solutions in quantity	Estimated costs in million USD
1	Apartment in multi-story building Maystraat and Rodekruislaan, district of Paramaribo (max. of four-story apartment)	100	\$ 5
2	Apollo Hall multi-story building Lupsonstraat and Geertruidaweg (max. of four-story apartment).	100	\$ 5
3	Apartment in multi-story building in different locations in Suriname (50 loc; max. of four-story apartment; 100 rooms)	5,000	\$ 250
	Total	± 200	\$ 260 million

Source: Ministry of Public Works

These two projects will serve as examples for future designs of multi-story apartments in Suriname.

Construction requirements

- Each unit must include a kitchen, living room, bathroom + toilet, and a minimum of two bedrooms;
- The building can consist of a maximum of four floors;
- The plot must be completely fenced;
- Common areas such as a meeting room and playground must be included;
- Sufficient parking for visitors and residents;
- Good lighting, and options for sustainable energy supply and rainwater harvesting.





3.2 Historical city of Paramaribo and state monumental buildings

Historic city center of Paramaribo

The historic city center of Paramaribo was placed on the World Heritage List on June 29, 2002, due to its exceptional universal value to humanity. The uniqueness of our old city center lies in its historic architectural style, which has developed over the centuries and is not found anywhere else in the world. This is also why UNESCO listed it as a World Heritage Site. Despite influences from other styles, the historic architecture of Paramaribo retains its own distinct character.

To protect this historic city center, two buffer zones have been designated: the Combé area and the 18th-century urban expansion. These zones serve as transition areas and must function as protective buffers. When referring to the old city center of Paramaribo as a World Heritage Site, it specifically concerns a defined part of the city with its historic street pattern, city layout and the relationship and coherence between historic buildings.

The historic city center of Paramaribo was listed on the World Heritage List based on cultural criteria **2** and **4**:

- 2.** It reflects an important interaction of human values over time, contributing to developments in architecture, technology, art history, urban planning, or landscape design.

- 4.** It is an exceptional example of a type of building, architectural or technological ensemble or landscape that illustrates significant phases in human history.

Currently, there are 52 locations with historical and state monumental buildings.





Table 15: Annual renovation and restoration costs of state monumental buildings

	Maintenance and renovation of 52 locations of state monumental buildings	Annual estimated costs in million USD
1	Maintenance and renovation of the historical city of Paramaribo and state monumental buildings	\$ 2,313,758.-
2	One-time restoration of the most urgent buildings	\$ 16,066,886.-
	Total	\$ 18,380,644.-

Source: Ministry of Public Works





Historical city of Paramaribo - current situation 2025

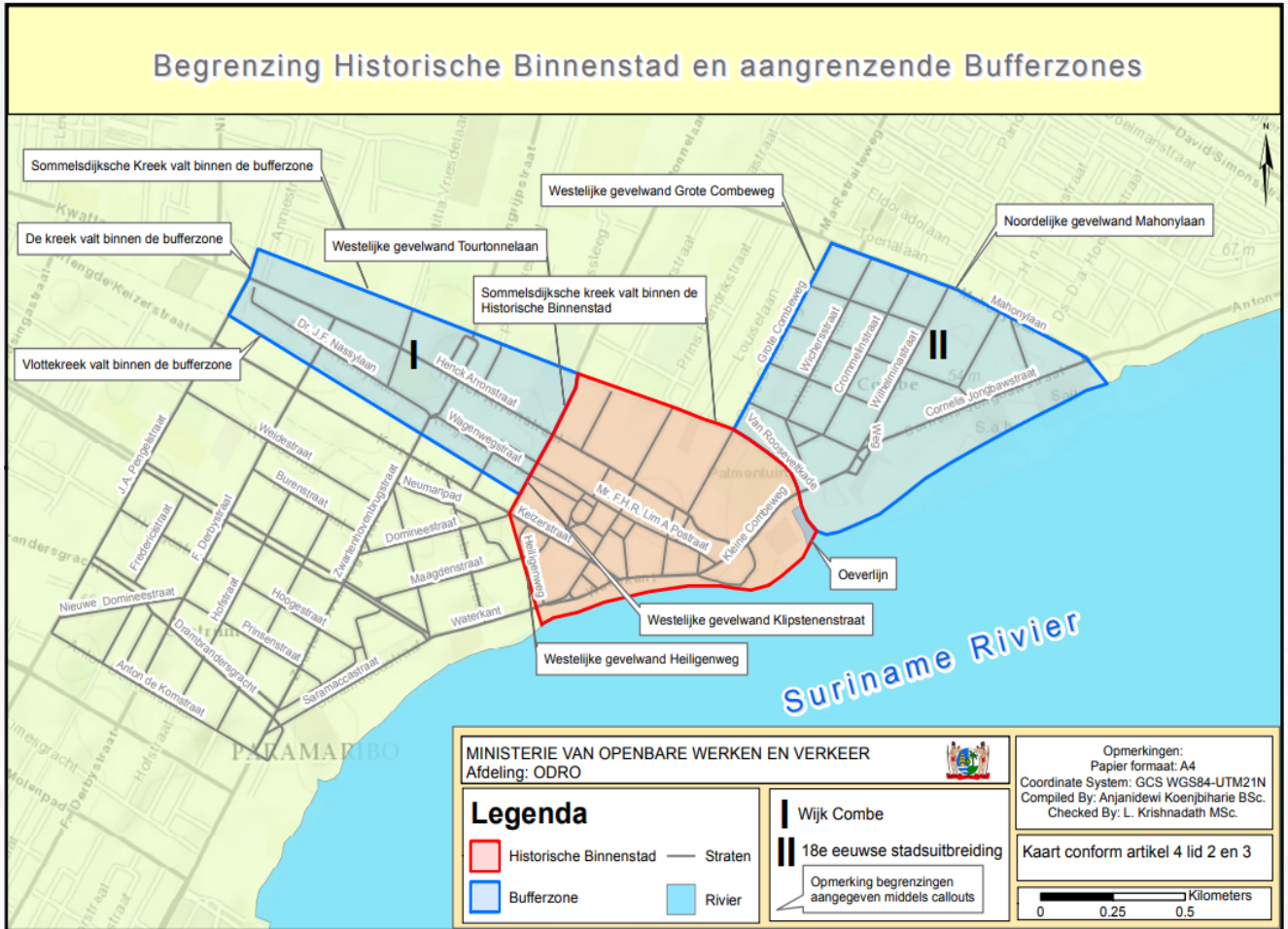


Figure 48: Current boundaries of the historic city center and buffer zones in S.B. 2001, no. 74





Proposed expanding of the bufferzone historic city of Paramaribo

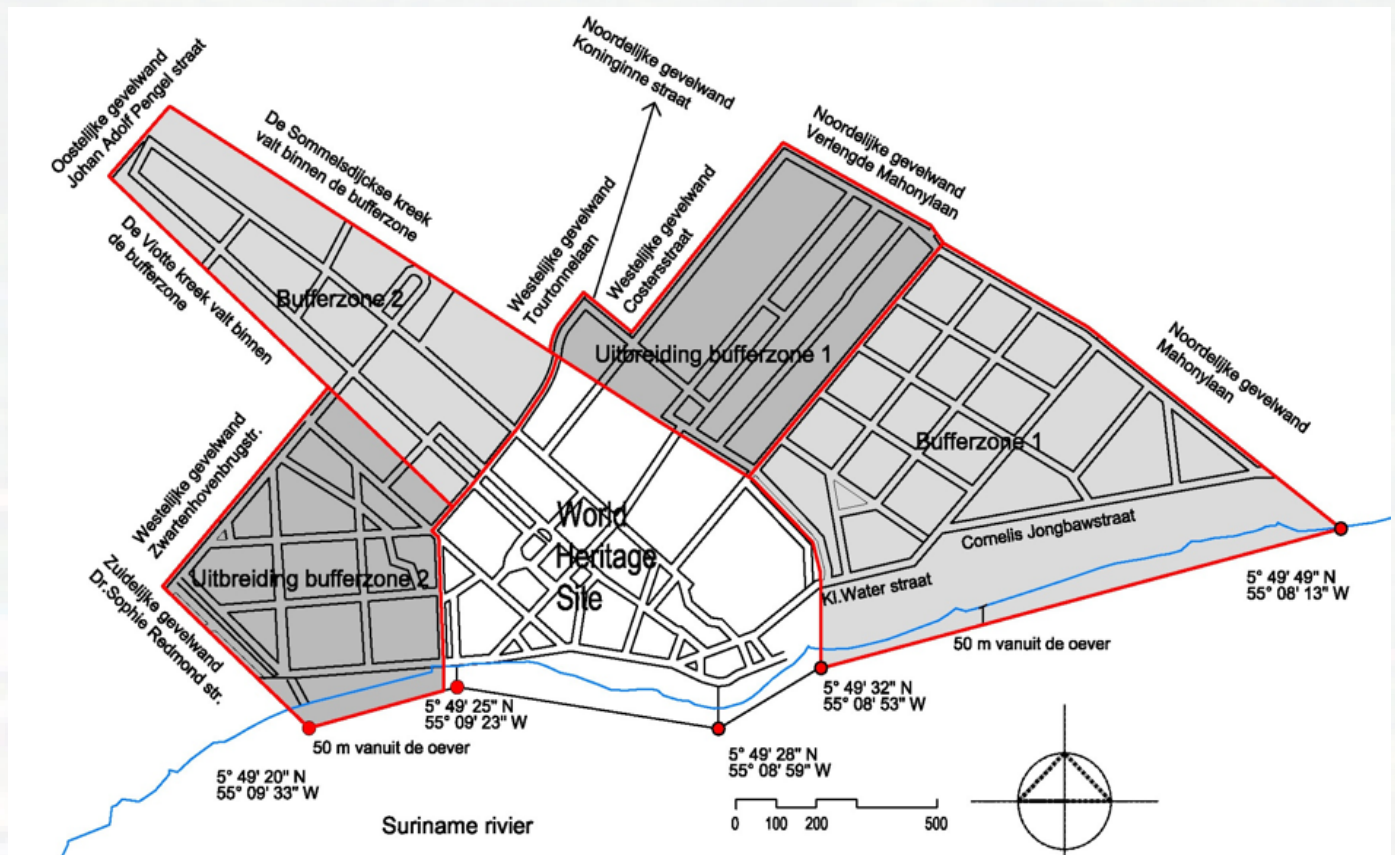


Figure 49: Proposal to expand buffer zones and core area of the historic city center

The implications of the extension of the World Heritage List are that the scope of the special building requirements will be expanded, and better protection will be provided to the World Heritage area.





4 Public green and waste management

This chapter discusses the dedication of the Directorate of Public Green and Waste Management of the Ministry of Public Works to advancing **urban greening, tree coverage, landscaping, sustainable waste management** as integral components of Suriname's climate resilience strategy. These initiatives align with global sustainability frameworks, particularly the United Nations Sustainable Development Goals (SDGs):

- SDG 3: Good Health and Well-being
- SDG 6: Clean Water and Sanitation
- SDG 8: Decent Work and Economic Growth
- SDG 11: Sustainable Cities and Communities
- SDG 12: Responsible Consumption and Production
- SDG 13: Climate Action
- SDG 14: Life Below Water
- SDG 15: Life on Land

Additionally, Suriname is reinforcing its commitment to international environmental agreements, ensuring policies are aligned with best practices for sustainability and ecological stewardship:

International Environmental Agreements Integration:

1. United Nations Framework Convention on Climate Change (UNFCCC):

- enhances climate mitigation and adaptation through urban forestry and greening projects;
- encourages carbon sequestration strategies and reductions in greenhouse gas (GHG) emissions through circular economy principles.

2. Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (1989):

- regulates hazardous waste trade to prevent environmental and human health risks;
- strengthens Suriname's infrastructure for electronic, industrial, and medical waste management.





3. Stockholm Convention on Persistent Organic Pollutants (POPs) (2001):

- mitigates environmental contamination by managing and phasing out harmful chemicals in waste streams;
- ensures safe disposal of pesticides, industrial chemicals, and e-waste.

4. Rotterdam Convention on Hazardous Chemicals (1998):

- establishes regulations on the importation and handling of hazardous chemicals and pesticides.

4. Minamata Convention on Mercury (2013):

- ensures the safe disposal of mercury-containing waste, including fluorescent lamps, batteries, and medical equipment.

5. Paris Agreement (2015) under UNFCCC:

- emphasizes climate-smart waste management strategies to reduce landfill methane emissions.

4.1 Urban greening, landscaping and green infrastructure

The goal is to establish a robust green infrastructure network through afforestation, sustainable landscaping, and urban greening, leveraging collaboration, education, and cutting-edge technologies.

Strategic urban greening objectives towards 2050:

1. "Planting One Million Trees" Program (Launched in 2024):

- Community-driven afforestation initiatives in urban and rural areas, including tree planting along roads and in parks. Planting trees will significantly create and improve green areas, strengthen the infrastructure resilience and enhance carbon absorption. Furthermore, the number of parks in residential areas will be increased. This program will continue through 2050.

Estimated costs every 5 years: \$ 13,094,510.-





Figure 50: Trees planted along road verges by 2050

2. Expansion of urban green spaces and landscaping:

- implementation of vegetation, plants, flowers, and trees along road verges and highways to reduce air pollution and mitigate urban heat islands;
- development of eco-parks, botanical gardens, and interconnected green corridors in urban centers.

Estimated costs: \$ 15 million



Figure 51: The future of our public spaces, parks, and roads by 2050





3. Public awareness and community engagement:

- integration of environmental education into school curricula and public outreach campaigns. If we educate our children with the benefits of urban and rural greening in the context of climate change mitigation from a young age, can prevent future problems.
- establishment of tax incentives and grants to promote sustainable urban projects, including recognition programs for citizen participation in urban greening efforts.

Estimated costs: \$ 2 million

Table 16: Overview costs of urban greening, afforestation, and landscaping actions (every five years)

	Implementation of urban greening, landscaping and awareness.	Annual estimated costs in USD
1	Urban greening by planting 1 million trees in nine districts of Suriname and landscaping.	\$ 13,094,510.-
2	Urban green spaces and landscaping	\$ 15,000,000.-
3	Public awareness and community engagement	\$ 2,000,000.-
	Total	\$ 26,094,510.-

Source: Ministry of Public Works

3.2 Waste management and circular economy

Suriname aspires to become a model for zero waste in the Caribbean by 2050. Through technological innovation, community engagement, and strategic global partnerships, Suriname will successfully transition into a circular economy and sustainable green society.

The goal is to establish advanced waste management systems, promote resource efficiency, and transition Suriname from a linear economy into a circular economy model by 2050.

Strategic waste management and circular economy actions towards 2050:

Mandatory waste separation at source

Implementation of separate sorting of household waste and all types of industrial waste and recycling to produce new products will support circular economy. and create green jobs, (e.g. in recycling plants, composting facilities, waste sorting, and waste-to-energy production). This will provide new employment opportunities.

Distribution of color-coded bins for effective waste classification. By recycling our materials to produce new products or for export, we create a healthier planet for ourselves and future generations.



Estimated costs: \$ 75 million per 150,000 households in Suriname



Figure 52: Color-coded bins for separate waste

1. Development of waste-to-energy and recycling facilities

- Establishment of advanced recycling plants for plastics, paper, metals, and glass.
- Introduction of waste-to-energy technology to convert non-recyclable waste into electricity.

Estimated costs: \$ 120 million

2. Promotion of the 6R circular economy model

- Adoption of Reduce, Reuse, Recycle, Recover, Rethink, and Repair principles.
- Encouragement of businesses to incorporate recycled materials into their production cycles.

Estimated costs promotion and awareness: \$ 2 million





Figure 53: The 6R model: Step by step towards circularity

3. Electronic and hazardous waste management

- Development of regulated disposal and recycling programs for e-waste, medical waste, and batteries in compliance with the Basel and Stockholm Conventions.

Estimated costs: \$ 3 million

4. Introduction of a waste fee system

- Implementation of a "Pay-As-You-Throw" (PAYT) model to reduce waste.
- Establishment of financial incentives for households and businesses adopting zero waste practices.

Estimated costs to be determined.

5. Development of an EPR (Extended Producer Responsibility) system

Implementation of an EPR system as part of the national waste management strategy. EPR assigns responsibility to manufacturers for the product from production to end-of-life. EPR involves policy measures that require lower equipment investment but include organizational, legislative, promotional, and enforcement costs.

Estimated costs: \$ 1 million





Figure 54: Supply chain in an EPR system

6. Public education and behavioral change programs

- National campaigns and awareness efforts to educate citizens on proper waste separation practices.
- School-based programs to instill environmental stewardship in students.

Estimated costs to be determined.



7. Reduction of landfill dependency

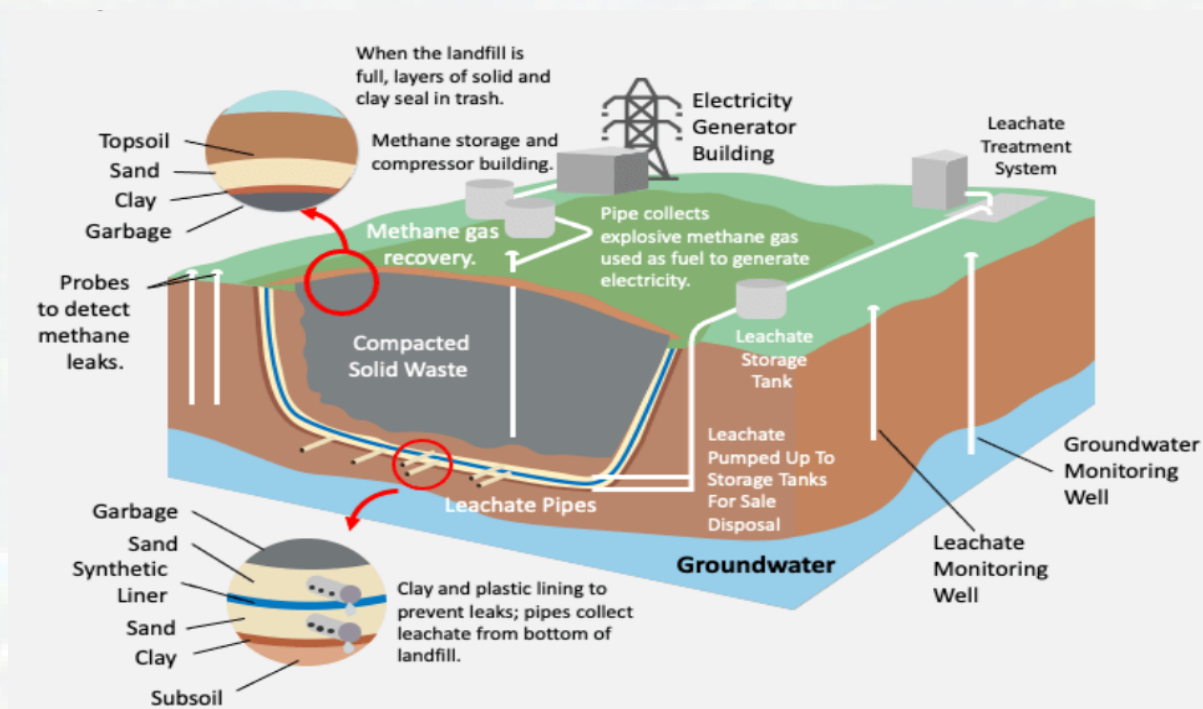


Figure 55: Sanitary Landfill

- Construction of sanitary landfills equipped with a proper base sealing layer system (geomembrane) along with treatment systems for leachate and landfill gas (methane). Most waste that cannot be reused or recycled will be transported to a sanitary landfill. A sanitary landfill is an engineered method of waste disposal that minimizes environmental and public health risks. Waste is confined in the smallest practical area, and the volume is reduced by covering it with a layer of earth to minimize air exposure.

Estimated costs: \$ 30 million





Table 17: Overview of estimated costs zero waste and circular economy by 2050

	Zero waste and circular economy	Estimated costs in million USD
1	Waste separation at source	\$ 75
2	Development of waste-to-energy and recycling facilities	\$ 120
3	Promotion of the 6R circular economy model	\$ 2
4	Electronic and hazardous waste management	\$ 3
5	Introduction of a waste fee system	To be determined.
6	Introduction of an EPR (Extended Producer Responsibility) system	\$ 1
7	Public education and behavioral change programs	To be determined.
8	Sanitary Landfill Ornamibo	\$ 30
	Total	\$ 231 million





5 Research and Services

This chapter discusses the future vision for The Meteorological Department of Suriname (MDS), the Hydraulic Research Division (WLA) and The Laboratory for Soil Mechanics and Building Materials Research (L.G.M.) all of which operate under the Directorate of Research and Service of the Ministry of Public Works. The plan is to merge MDS and WLA into a single authority, the National Meteorological and Hydrological Service (NMHS), and to invest in modern equipment, including LGM.

Table 18: Current Instruments MDS and Hydraulic Division

Instrumentarium	Aantal	Afdeling
Automatic Weather Station -AWS	18	MDS
Automatic Rain Station - ARS	19	MDS
Automatic Water Level Station- AWLS	10	WLA
ECOLOG 800	6	WLA
ECOLOG 500	9	WLA
HL 7	3	WLA
HL 4	1	WLA

5.1 Meteorological Department of Suriname (MDS)

Half a century ago, MDS was a government agency that specialized in basic meteorological data collection and forecasting. Today, it evolving into a flexible, forward-thinking organization that incorporates innovation and technology into its operations with ease. By 2050, MDS is expected to be the cornerstone of Suriname's climate resilience, whether as a (semi-) private institution or a fully commercial entity. Its transformation has been guided by a clear purpose: to empower citizens, support stakeholders, and protect the nation against the unpredictable challenges of climate change.

Globally, meteorological services enhance air navigation safety and efficiency by conducting observations and issuing forecasts. They establish national monitoring and warning systems according to the World Meteorological Organization (WMO) and the International Civil Aviation Organization (ICAO) standards. These services are responsible for collecting data from major airports (e.g. Johan Adolf Pengel, Zanderij, and Zorg en Hoop in Paramaribo), and remote airstrips used for domestic flights. Other significant beneficiaries include the shipping and construction sectors, especially contractors involved in sensitive operations, like offshore oil and gas drilling. The



objective is to strengthen MDS's capacity, expertise, technology, equipment, and infrastructure to deliver reliable meteorological data, thus optimizing public and industrial safety.

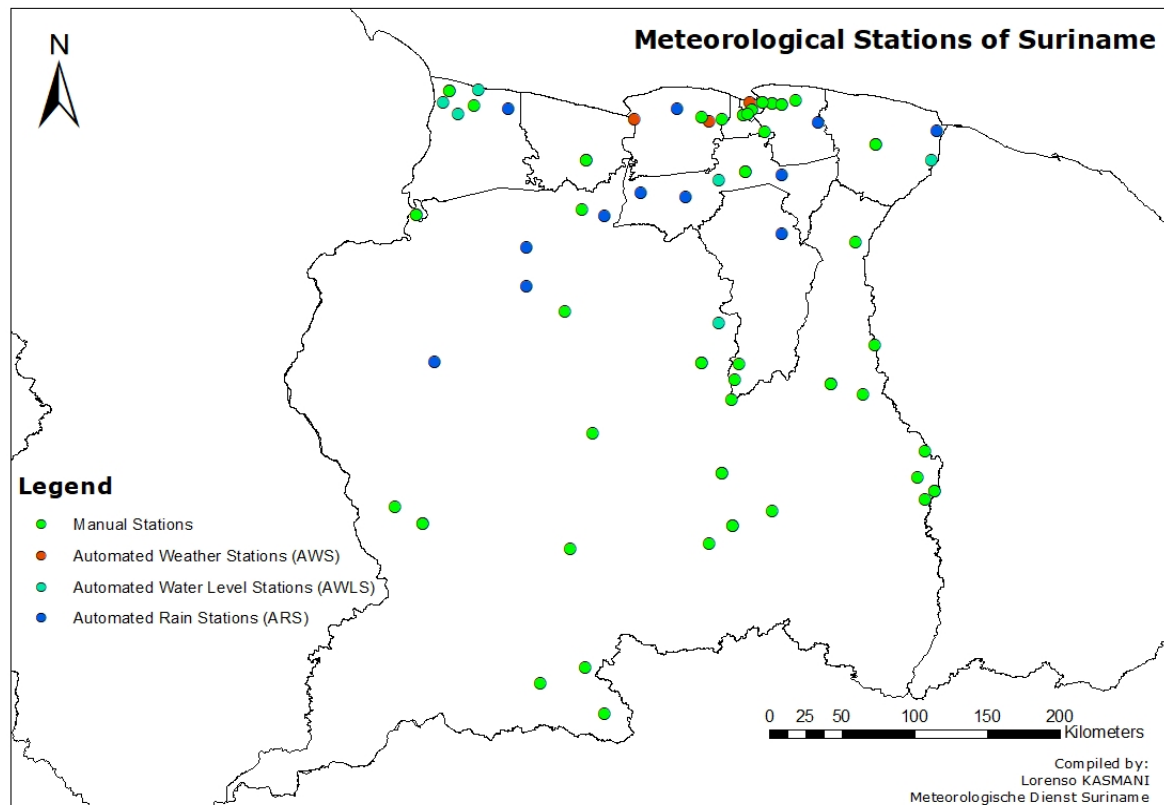


Figure 56: Overview of meteorological stations in Suriname (AWS, AWLS and ARS)

Direction of meteorological services toward science and technology in 2050

Environmental changes, societal evolution, and technological advances will transform meteorological services by 2050. Tropical cyclones and weather/climate are covered by observation and forecast technologies. The following lists the precise objectives of connected development in each field for 2050.

Weather and climate objectives by 2050

To support a range of public meteorological services, including measures to mitigate disasters, MDS should increase the accuracy of its numerical weather and climate forecasts. It should ensure public accessibility and usability of forecast data to promote socio-economic development. Given the challenge of precise and in-depth quantitative forecasting over longer forecasting periods, information on current weather conditions





and predictions with lead times of up to one-hundred years must satisfy a variety of needs in everyday life, economic activity, and disaster mitigation based on numerical forecasts.

Specific goals by 2050

Improved forecast accuracy for prompt evacuation and public safety

Expansion of the observation network over the country expanded into strategic locations, to have a better “view” of atmospheric conditions. There is a second radar, based in Kwamalasamutu, to provide the best coverage of the area. Radio-sonde and Ozone-sonde measurements are being carried out daily at both the Paramaribo and Kwamalasamutu station. All data obtained from these measurements give a clear cross-section of the atmosphere in the horizontal and vertical, allowing more precise and accurate forecasting, especially of weather hazards or extreme weather events.

Air quality stations have been placed at various locations, including agricultural and livestock areas, densely and sparsely populated areas, inner city and industrial areas. The data obtained from these stations are compared with each other in order to be able to make statements on the air quality. Accuracy of weather and temperature forecasts, combined with this data, will be improved for better use in daily life, including prevention of heatstroke.

Estimated cost range by 2050:

1) Equipment & technology

- Weather Stations & Sensors: Depending on the technology and operation size, updating weather radar systems, weather stations, and satellite receivers may cost **\$5 million** or more.
- Data Processing Systems: Systems for handling, analyzing, and visualizing meteorological data may cost **\$2 million** in software and data management.

Advanced Forecasting Models: It takes a substantial financial outlay, **estimated costs: \$1 million**, to implement sophisticated weather prediction models, including machine learning algorithms.





2) Facilities & infrastructure

Offices & Center Upgrades: Updating physical infrastructure, such as data centers and meteorological offices.

Estimated costs: \$ 2 million

- Backup Power Systems: In order to guarantee continuous operation in the event of a disaster, backup power systems (such as solar power systems or generators)

Estimated costs: \$ 500,000.

3) Staffing & training

- Training & Development: Depending on the size of the workforce and the amount of experience needed, ongoing staff training and professional development initiatives may cost approx. **\$ 500,000 per year.**

Annual estimated costs hiring experts: **\$ 1 million** on salary, may be required to hire meteorological scientists, engineers, and IT specialists in order to improve service.

4) Cooperation and partnerships

Annual estimated costs international collaboration: **\$ 500,000.-** to join, work on, or enter into agreements with international meteorological organizations in order to share expertise and data.

5) Operational & maintenance costs:

Annual estimated costs upkeep of the infrastructure, hardware, and systems: **\$ 1 million**

6) Research and innovation (R&D):

Budgeting for research and development is crucial for the ongoing advancement of observation and forecasting methods.

Annual estimated costs: \$ 0.5 million





Table 19: Operational estimated costs MDS

	MDS operations by 2050	Five-year estimated budget in million USD
1	Equipment & technology	\$ 8
2	Facilities & infrastructure	\$ 2.5
3	Staffing & training	\$ 1.5
4	Cooperation and partnerships	\$ 0.5
5	Operational & maintenance costs	\$ 1
6	Research and innovation	\$ 0.5
	Total	\$ 14 million

Source: Ministry of Public Works





5.2 De Hydraulic Research Division (HRD)

The Hydraulic Research Division (HRD) plays a crucial role in collecting and analyzing hydrological data for sustainable water resource management in Suriname. Looking ahead to 2050, the division envisions integrating advanced technologies and innovative research methodologies, and sustainable practices to secure the availability and quality of water resources. This long-term strategy will address the impacts of climate change, urban expansion, and industrial activities on our water systems.

The Role of Hydrology in Sustainable Development

Water resources are fundamental to economic growth, environmental conservation, and public well-being. The growing challenges of pollution, climate variability, and increasing water demand require a shift in how hydrological science is conducted. Traditional methods of water resource management must evolve to incorporate modern technologies and interdisciplinary research to meet the needs of future generations.

By integrating advanced technologies such as remote sensing, Internet of things (IoT) - enabled sensors, and Artificial Intelligence (AI)-driven analytics, the division will ensure real-time, high-precision hydrological and water quality data collection across vast and remote areas. A highly skilled workforce, trained in cutting-edge technologies, ICT, and artificial intelligence, will play a pivotal role in data processing, predictive modeling, and decision support, strengthening sustainable water management and climate resilience. To achieve a robust and sustainable water management system, the Hydraulic Research Division will focus on the following key objectives:

1. Cutting-Edge Hydrological Monitoring Technologies

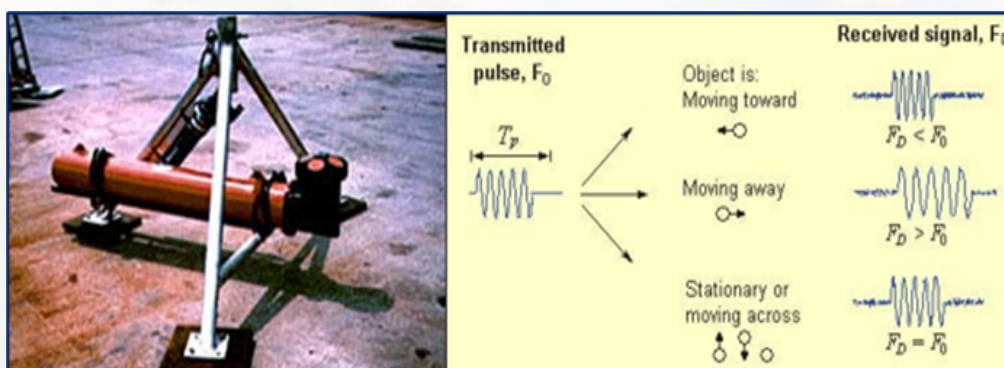


Figure 57: Acoustic Doppler Current Profilers (ADCPs)





- **High-Resolution Water Velocity Measurement:** Captures detailed velocity profiles across the entire water column, providing a comprehensive understanding of hydrodynamic behavior.
- **Real-time monitoring of river and lake dynamics:** Enables continuous assessment of flow rates and discharge, ensuring precise and timely data collection.
- **Enhanced early warning capabilities:** By generating high-frequency, real-time hydrological data, ADCPs facilitate proactive flood forecasting and risk assessment. This ensures that early warnings are effectively communicated to the public and tribal communities, allowing them sufficient time to evacuate and relocate to safe areas, mitigating loss of life and property.
- **Increasing the number of monitoring stations across key rivers, lakes, and reservoirs.**
- **Deployment of automated measurement stations across Suriname, French Guiana, Guyana, Northern Brazil, and the broader Amazon Basin to enhance the spatial and temporal resolution of hydrological and water quality data.**

By expanding the monitoring network, Suriname will have a comprehensive and precise understanding of water availability, water quality, and environmental changes.

2. Satellite and Remote Sensing Technology

- **Real-Time Hydrological Monitoring:** Continuous satellite imaging provides high-resolution, real-time data on water levels, depth, and the surface extent of rivers and lakes.
- **Rapid Data Acquisition from Remote Areas:** Advancements in satellite and remote sensing technology enable the transmission of minute-by-minute updates, ensuring comprehensive coverage, even in the most inaccessible regions.
- **AI-Driven Predictive Modeling:** Cutting-edge artificial intelligence enhances hydrological models, delivering near-realistic simulations and highly accurate flood forecasting. This improved predictive capability allows for early warnings and better public preparedness, minimizing risks and enhancing water resource management





3. Employing drone technology for hydrological assessments.

The use of drone technology in hydrology will be a game-changer, allowing researchers to gather crucial data in areas that are difficult to access. By deploying drones, the Hydraulic Research Division will be able to:

- measure water levels, stream velocity, and sediment transport with high precision;
- assess water quality through remote sensing techniques and specialized sensors;
- monitor flood-prone regions to improve early warning systems;
- map riverbanks, wetlands, and water catchment areas for better land-use planning.
- Equipped with multi-spectral and Light Detection and Ranging (LiDAR) sensors to assess water quality and hydrological changes in inaccessible regions. Key water quality parameters, such as turbidity, temperature, and pollution levels, will be analyzed in real time.

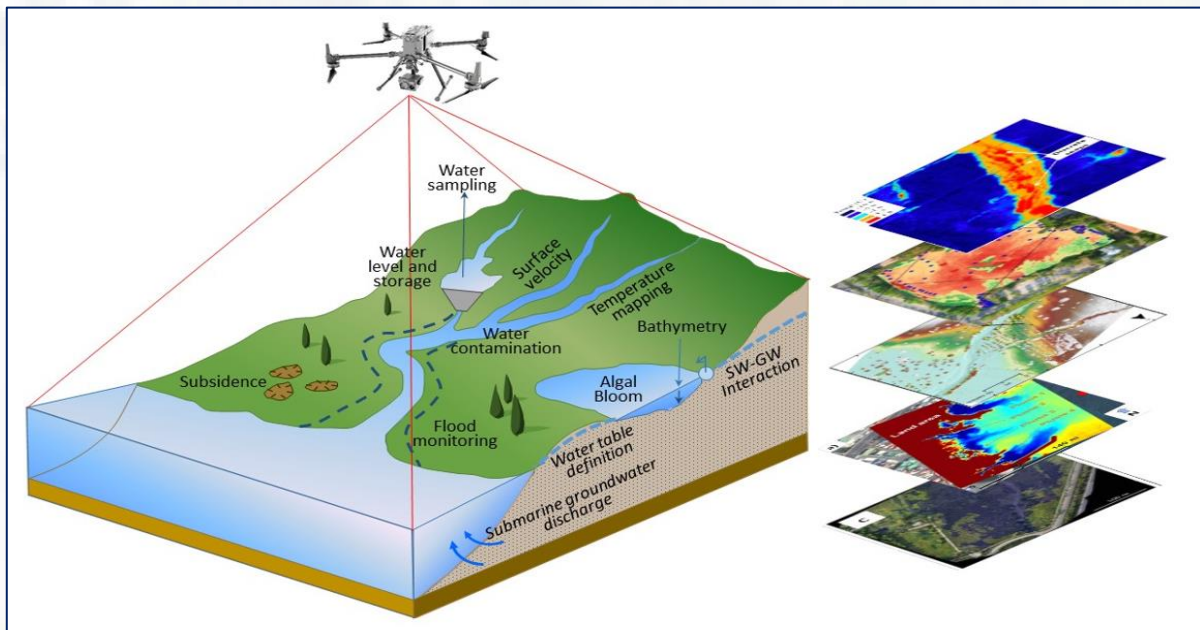


Figure 58: High-Tech Drone for Hydrological and Water quality purposes





4. Utilizing High-Tech Automatic Water Level and Water Quality Stations

Traditional water monitoring methods often rely on manual sampling and delayed data analysis, limiting the ability to respond to sudden changes in water conditions. The implementation of high-tech automatic water level and water quality stations will revolutionize hydrological data collection by:

- providing real-time data on water levels, temperature, pH, dissolved oxygen, and pollutants;
- detecting anomalies and pollution events quickly to allow for immediate intervention;
- reducing human effort and enhancing monitoring efficiency;
- improving long-term hydrological data records to support research and policy development.

These automated stations, equipped with sensors and remote transmission capabilities, will be strategically placed in critical water bodies across Suriname.





5. Strategic Collaboration: Bio-Plateaux Initiative

The Hydraulic Research Division will play a leading role in regional water resource management through its active participation in the **Bio-Plateaux Initiative**. This collaboration will be strengthened by cutting-edge hydrological monitoring technologies, AI-driven data analytics, and seamless cross-border data integration with neighboring countries. The expanded network will:

- enable Advanced Cross-Border Water Management: Real-time hydrological and water quality data will be shared across Suriname, French Guiana, Guyana, and Northern Brazil, improving coordinated responses to water-related challenges;
- enhance Climate Resilience and Ecosystem Protection: AI-enhanced predictive models will assess the impact of climate change on water resources, supporting early warning systems and sustainable conservation strategies;
- drive Innovation in Sustainable Water Management: A well-trained workforce in high-tech hydrology, ICT, and artificial intelligence will leverage big data analytics to develop innovative solutions for water governance, flood risk mitigation, and ecosystem preservation.

By integrating state-of-the-art instrumentation and fostering international cooperation, the Bio-Plateaux network in 2050 will serve as a global benchmark for sustainable and intelligent water resource management.

By expanding the monitoring network, deploying automated stations, utilizing drone technology, and integrating real-time data transmission systems, the Hydraulic Research Division will enhance water resource protection, disaster preparedness, and environmental sustainability. This forward-thinking approach ensures that future generations will have access to clean, safe, and well-managed water resources, securing a sustainable future for Suriname.





Table 20: Budget in USD: 2025 - 2050 Hydraulic Research Division (HRD / WLA)

Activity	2025–2030	2031–2035	2036–2040	2041–2045	2046–2050	Estimated costs in USD
Expansion of Monitoring Network	1,000,000	750,000	500,000	400,000	800,000	\$3,450,000
Automated Water Level & Quality Stations	2,000,000	1,000,000	1,000,000	1,500,000	1,000,000	\$6,500,000
Drone Technology Implementation	1,000,000	800,000	800,000	1,000,000	900,000	\$4,500,000
Real-Time Data Transmission Systems	1,000,000	900,000	700,000	500,000	850,000	\$3,950,000
Research & Development (AI & Big Data Analytics)	1,500,000	1,000,000	1,000,000	1,000,000	1,200,000	\$5,700,000
Capacity Building & Training	2,000,000	2,000,000	1,500,000	1,000,000	1,200,000	\$7,700,000
Public Awareness & Policy Development	1,500,000	1,000,000	900,000	900,000	800,000	\$5,100,000
Infrastructure & Maintenance	2,000,000	1,800,000	2,000,000	2,000,000	1,500,000	\$9,300,000
Total Estimated Budget	12,000,000	9,250,000	8,400,000	8,300,000	8,250,000	\$46,200,000

By 2030, the Meteorological Department and the Hydraulic Research Division will be integrated into a single Authority: **The National Meteorological and Hydrological Service (NMHS)**. This consolidation aims to enhance operational efficiency, strengthen coordination, and improve the delivery of meteorological and hydrological services to support national development and climate resilient.





5.3 Laboratory for Soil Mechanics and Building Materials Research

The Laboratory for Soil Mechanics and Building Materials Research (L.G.M.) is responsible for the suitability and quality inspection of various types of soil, building materials and asphalt. This inspection is carried out in accordance with the applicable international standards such as ASTM, NEN and ASHTOO. The lab also carries out cone penetration tests and soil auger tests to obtain qualitative data of the existing soil layers (for various housing and other construction projects).

The contribution of the LGM department within the Ministry of Public Works is of great importance due to the increasing focus on quality assurance, modernization and innovation in civil engineering. Since November 2019 till date the laboratory has obtained an ISO 9001:2015 certification, which focusses on the implementation of well-functioning quality management systems. Some of the ISO-requirements, which are annually audited by an internationally renowned certification board, are:

- periodic review of the efficiency and effectivity of internal procedures;
- conformity with international test standards;
- competency of laboratory personnel;
- accurate documentation of test results;
- calibration of used test equipment;
- traceable recordkeeping;
- customer satisfaction surveys;
- stakeholder expectation research;
- budget planning (overhead and equipment) for every upcoming year;
- annual monitoring of achieved targets;
- regular modernization of test equipment;
- continued upgrading of the service provided to clients.

With complete focus on strict adherence to quality control guidelines, the Laboratory for Soil Mechanics and Building Materials Research will have an important role to play in the implementation of the SIDPS 2050 such as:





- during both infrastructural and construction projects suitability inspection of soils, building materials and asphalt prior to use is necessary to ensure the final quality and longevity of completed structures;
- keeping future developments in mind the Laboratory for Soil Mechanics and Building Materials Research has plans to expand its research to the testing of timber and steel products. The introduction of timber quality inspection accompanied by certified test reports will open many doors for local wood-processing companies, since quality certified products are high in demand and fetch higher prices internationally. The spinoff effects of these developments will not only benefit the government but also the whole Surinamese community.

Estimated costs: \$ 1 million

- Another crucial expansion of our research is the quality testing of steel products. Steel is used in almost every infrastructural project, but its quality analysis is currently not possible locally. Implementation of mandatory testing of all used steel-products will ensure better quality and longevity.

Estimated costs: \$ 1.5 million



Figure 59: C.P.T. execution (soil quality inspection) by lab personnel

Table 21: Expansion investments LGM 2050

	Expansion LGM	Estimated investment in million USD
1	Expansion of testing of timber and steel products.	\$ 1
2	Quality testing of steel products.	\$ 1.5
	Total	\$ 2.5 million





Reference list

- Haanskorf M.,(2014, mei), *Stuwdammen en wegen in het Surinaamse binnenland, Gevolgen voor Trio en de Wayana*, Stichting Planet Trails, Eerste druk, May 2014, Caribbean Media Group, Wicherstraat 10a, Paramaribo, Suriname.
- Johan Tjang-A-Sjin, (2025, jan. 19), *Het West-Suriname ontwikkelingsplan van Dr. Ir. Frank Essed, Zal de droom van Essed nl. het opzetten van een geïntegreerde Bauxiet-, Aluinaarde- en Aluminiumindustrie, gekoppeld met het Kabalebo waterkrachtwerk toch nog verwezenlijkt worden?*
file:///C:/Users/wirish.mahabier/Downloads/Het_West-Suriname_ontwikkelingsplan_van_Dr._Ir._Frank_Essed_.pdf
- Lachman, D. (2015), *Het Tapajai waterkracht project als katalysator voor de verstedelijking van Suriname*, Anton de Kom Universiteit, Academic Journal of Suriname 2015, 6, 541 -546.
- Lothar, B. (2008b). *Tapajai Hydro Plan. Informatie over het Tapanahoni-Jaikreek omleidingsproject*. Paramaribo.
- Roach K.Q.,UNASUR & IIRSA: *A 'Strategic Opportunity' for Suriname?*, Institute of International Relations University of the West Indies, Caribbean Journal of International Relations & Diplomacy, Vol. 2, No. 1, March 2014: pp.113-122.
- *Saramacca Canal System Rehabilitation Project Lot 2 The Preparation of The Update of the Norms/Guidelines for the Drainage Management Masterplan*, Organization Water Management, Final Draft V1.0, April 12, 2024.

Websites

- *Country Report Suriname*,
https://www.iirsa.org/admin_iirsa_web/Uploads/Documents/cde5_presentacionsurinam.pdf
- *Project West Suriname - De geleerde lessen - Hoe zat het ook weer?*, November 30, 2024,<https://surinamenieuwscentrale.com/project-west-suriname-de-geleerde-lessen-hoe-zat-het-ook-weer>
- *Presentation of Suriname at the First Meeting of the Technical Executive Group of the Venezuela – Brazil – Guyana – Suriname Hub*, November 19, 2002, Manaus – Brazil,
https://www.iirsa.org/admin_iirsa_web/Uploads/Documents/ecr%20manaos02%20presentaci%C3%B3n%20suriname.pdf

