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REPORT SUMMARY

Mangroves stakeholder mapping in Suriname

SURINAME

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Based on study by Haydi Berrenstein and Jochem Schneemann

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MANGROVES STAKEHOLDER MAPPING IN SURINAME

This summary of a more comprehensive study is meant to inform all stakeholders in the mangrove sector and participants in the mapping study about the results. Readers' comments and suggestions are most welcome and will help the **Government of Suriname** and the **European Union Delegation to Guyana and Suriname** to strengthen their future approaches and collaboration on mangrove management and conservation.

Since 2016 the EU has invested in two Global Climate Change Alliance (GCCA+) programmes in Suriname, with a focus on mangrove and coastal zone management:

- GCCA+ phase one: from March 2016 to August 2019 with a total cost of € 3,405,000, and
- GCCA+ phase 2: 2020- 2023 with a total cost of € 5,500,000, which is still ongoing.

A new EU mangrove programme is envisaged and will build on these two GCCA+ mangrove related programmes, the results achieved, and the identified needs.

The objective of the stakeholder mapping was to get an improved overview of the mangrove sector, its management and protection in Suriname, the different actors involved, their capacities and need for capacity building, and to analyse the potential of mangrove-dependent value chains (fish, honey, tourism, wood) to provide income and jobs in a sustainable manner.

The study was commissioned by the European Union Delegation (EUD) to Suriname and Guyana and the European Commission Directorate-General International Partnerships (INTPA), Unit Environment, Sustainable natural resources (F2). The study was carried out by the Forests for the Future Facility (F4) in the period March – May 2023. An in-country field mission took place from March 9th to 23rd, 2023 in Paramaribo and in selected mangrove districts and sites.

The findings and results of the mission have informed the formulation of the new mangrove project – with a three or four years duration and title "Mangrove forests protected and restored"- for which the EUD has earmarked 3.06 million EUR. This mangrove project is part of the EU Multi-annual Indicative Programme (MIP) 2021-2027.

The F4F team comprised of Jochem Schneemann (team leader) and Haydi Berrenstein (National Mangrove expert).

The study consisted of a review of documents, interviews with stakeholders (government, value chain actors, NGOs, researchers, etc.) and experts, visits to coastal districts, and the analysis of collected data and information. During the kickoff and debrief workshops stakeholders were informed about the mission and its approach and the results.

A total of 100 persons, of which 56 female, 44 male, were consulted during 38 interviews, bilateral meetings and the kickoff and debriefing workshops.

THE MANGROVE SECTOR IN SURINAME

Mangrove ecosystem

Mangroves can be found along almost the entire Suriname coast of 386 km and cover an area of about 97,000 hectares (UNDP, based on SBB, 2019).

Mangroves have many functions and serve as:

1. Shoreline protection:

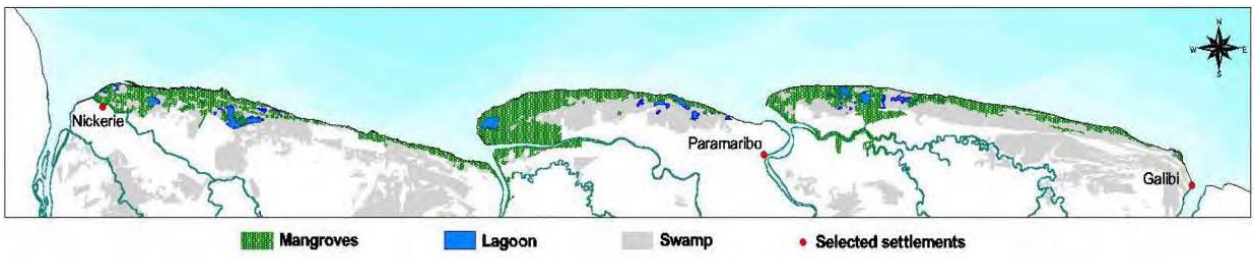
Their strong and abundant root systems help to reduce erosion and energy of waves, in trapping sediments and stabilizing shorelines.

2. Nursery ground for fishes, shrimps, crabs:
   - Feeding area, daytime refugia, spawning area and/or nursery ground for 80-90% of species, contributing to diversity, productivity and stability of fish communities
   - 'Home' to 300 fish, 20 crab and 11 shrimp species
   - Economic importance of fish sector amounting to 2.2% to GDP (2017)
3. Important habitat for migratory shorebirds, breeding waterbirds and other wildlife:
   - Feeding and/or breeding area for over 118 species of coastal birds
   - Most important wintering area in South America for migratory shorebirds - up to 4 million birds annually
   - Providing nectar to bees for honey production (so called 'parwa' honey)
4. Carbon sink:
   - Mangroves are rich in carbon (most as soil carbon) and contain on average four times that of tropical rainforests (including soils).

The problem analysis can be summarised as follows:

> Suriname's high vulnerability to climate change:
   - Most people, economic activities and the capital Paramaribo are located in the coastal belt, which lays below sea level
   - The sea level rise and local degradation of mangroves has led to more frequent and serious flooding and damage (risks)

Coastal area with mangroves in green



> Mangrove erosion and degradation:

Over the period 1988 – 2018, the total mangrove area was rather stable. However, in some areas it was increasing, in others decreasing or degrading, due to erosion. The western coast (especially Coronie) and Weg naar Zee (north of Paramaribo) are very vulnerable and are most degraded, here 24% of the mangrove was eroded and degraded from 1988 – 2018, in Commewijne 12% of the mangrove area was eroded. This is caused by a mix of natural processes (migrating mudbanks) and human interference (mangroves replaced by houses, farms, infrastructure, and affected by unsustainable wood harvesting).

The loss and degradation of the mangrove ecosystem is causing many problems. It leads to reduced resilience and coastal protection, with increased incidences and risks of flooding and saltwater intrusion, affecting infrastructure (housing, roads) and the productivity of agricultural land due to salinity. It is also linked to biodiversity loss and degradation, due to loss of habitat. Moreover, it can cause a decrease of the productivity of economic sectors that directly depend on mangroves, such as fishery, beekeeping and tourism.

Mangrove legislation and strategy

In order to improve the protection and management of the coastal ecosystems, the Government of Suriname (GoS) has developed several laws and strategies in the past two decades.

The four Multiple Use Management Areas (MUMAs), established by Ministerial Orders in the early 2000s, cover about two thirds of the total mangrove area (National Mangrove Strategy, 2019). The Ministerial Orders allow only wise use and small-scale extraction of mangrove resources (Erftemeijer et al, 2009). The Nature Protection Law of 1954 prescribes that the land area stretching 500 m on both sides of rivers and 200 m on both sides of creeks is protected and not available for lease. Moreover, certain species of fish, caymans, river otters and turtles have a protected status. The Forest Management Act (2012) defined the MUMAs as state land in which the sustainable use of natural resources is permitted upon exploitation licenses issued by the Suriname Forest Service (SBB) under the Ministry of Natural Resources (IDB, 2022). Conclusion is that the existing (above mentioned) laws only provide partial protection for mangroves or mangrove species and leave room for exploitation and interpretation.

The Coastal Area Protection Law was developed in 2015 and was recently submitted to Parliament for review, but it has not yet been adopted. Interviewees indicated that this law is still being debated, especially the proposal to totally exclude the use of mangrove resources.

The Nature Conservation Division (“Natuurbeheer”) of the ministry of Land policy and Forest Management (GBB) is responsible for the management of MUMAs and Protected Areas. However, management capacities, implementation, coordination and stakeholder engagement remain limited.

The National Mangrove Strategy (NMS) was developed with GCCA+ phase one support in 2019. It has the strategic goal of ‘Long term social, economic and environmental benefits to Suriname through primarily rehabilitation, conservation, expansion and sustainable use of mangrove ecosystems and their services’. Its five priorities for action for the short, medium and long term at national level are:

strengthening the legal framework, sustainable mangrove management and monitoring, building capacity, networking and lobbying and adapted technology transfer.

While the strategy has not been officially approved by the Council of ministries, it is referred to in various policy documents and during the mission meetings there were no signals that put the strategy into doubt. The NMS has strong plans such as prohibiting/restricting the felling of mangrove trees, designating mangroves as protected forests, and reforming the framework law for Integrated Coastal Zone Management (ICZM), to ensure an integrated approach. However, since 2019 no clear progress has been noticed.

MAIN FINDINGS OF MANGROVE SECTOR ANALYSIS

Stakeholder mapping

Many actors are involved in the management and use of mangroves in Suriname.
At government level, the Ministry of Land Policy and Forest Management (GBB) (and notably its Nature Conservation Division) has a key role as the official management authority of the MUMAs and Protected areas. It is also responsible for law enforcement, research, education/awareness, information dissemination, and coordination of the establishment of MUMA management structures. The Ministry of ROM (Spatial Planning and Environment), on the other hand, is mandated to regulate and monitor spatial planning, protection and sustainable use of ecosystems, including mangroves.

The private sector is another important stakeholder.
First of all the smallholders: the village-based fishermen, crab collectors, wood and charcoal producers, farmers, beekeepers, accommodation owners and tour operators (male and female). They depend on mangrove forests for the fish (as nursery ground), the nectar production by mangrove trees, for the recreation sites for tourists, etc. Their livelihoods and income depend on a healthy and well managed mangrove ecosystem. The level of organisation of these actors and community stakeholders seems to be low. There are a few youth or women organisations and a few producer organisations, but mostly informal networks. Some mangrove dependent actors have associations, or groups representing their sector, e.g. the fishery association in Nickerie (140-160 members). Beekeepers are not organized and farmers only partly. Organisations have trouble collecting contributions and finding leadership. These actors often need further building of their skills, capacity and incentives to participate in the protection, sustainable use and management of mangrove and the coastal zone.
The mission findings indicate that for the value chains to flourish (creating substantial jobs and income) these entrepreneurs may need support to upgrade their access to land, markets, finance, technology (to process and add value), and apply sustainable harvesting and catch techniques. However, a more specific capacity needs analysis is recommended.
A second category of private sector are large companies: notably in fishery, oil and gas exploration, insurance, which have a vested interest to maintain the mangrove ecosystem, e.g. as a coastal defence to protect their investments in infrastructure, housing, hotels and fisheries vessels and landing infrastructure. Therefore, it is logical that they contribute to a finance mechanism for the mangrove management and protection (either through taxes or another more direct financial contribution to the costs of protection and management).

Interviews, the kickoff and debrief workshops and the documentary review all indicate a lack of coordination and alignment of mandates and activities between the concerned ministries and implementing agencies. Many ministries have a role to play in the coastal protection and management of mangroves, but the mandates are not clear to all and may overlap. Not having a ministry with the responsibility for coordination (leading) was seen as a key gap by many, as well as more general issues such as the lack of access to information.

Projects and support in mangrove sector

Many projects do relate to mangrove management and protection, supported by the government, donors, and NGOs. An overview does not yet exist, but the Suriname Conservation Foundation (SCF) announced to publish a report in 2023 that will list all mangrove initiatives in Suriname.

Since 2016 the EU has invested in two Global Climate Change Alliance (GCCA+) programmes in Suriname, with a focus on mangrove and coastal zone management. Some major accomplishments of these EU programmes include: the development of the NMS, the raising of awareness, experiments with restoration drawing national and international attention, the development of the national mangrove monitoring system, and the updated management plans of three MUMAs. However, progress on (protective) legislation and inter-ministerial coordination has not yet been achieved, and value chain development and co-management still need a lot more attention, with limited progress so far.

Besides the EU supported GCCA+ projects there are many other projects, supported by the EU and other donors, such as the InterAmerican Development Bank (IDB) and the United Kingdom, and NGOs such as Conservation International, Green Heritage Foundation and SCF related to restoration, awareness-raising and education, and engaging the private sector.

Knowledge and awareness raising

Indications are that only a part of the general public and relevant stakeholders is sufficiently aware of the key functions and values of the mangrove ecosystem (and the risks and costs related to flooding) and degradation. However, during consultations, a large part of interviewed stakeholders expressed a basic level of knowledge of mangrove forest services (coastal protection, nursery function and honey production). For example, beekeepers made the link between mangrove degradation and a decrease in honey production because of a lack of nectar and higher bee mortality.

In order to correctly protect and manage the mangrove sector, all actors involved need to be sufficiently aware of the importance and value of mangroves and how to avoid degradation.

Regional alignment and exchange

There is a plan within the foreseen EU supported mangrove programme to have a Mangrove national strategy integrated in a regional approach for integrated coastal zone management, water management and coastal defense. The idea would be to coordinate mangrove protection strategies in the region between neighbouring countries, so that they could learn from each other's experiments with mangrove protection and restoration, build on existing initiatives, and share costs and investments.

There are already several projects that are aimed at exchange and collaboration. But despite them, a more structural and strategic coordination between key institutions (public and non-public) in Suriname, French Guiana, Guyana and Brazil does not exist. One of the challenges was reported to be the border conflict with Guyana or the language barriers between countries.

An idea that was suggested is to organise a three country round table at ministerial level to identify common grounds and interests, identify/confirm the added value of collaboration, and first steps on how to cooperate at practical level. The initiative

should try to build on existing initiatives, institutions and knowledge, strengthen these and bring actors together.

Analysis of Mangrove value chains

Suriname mangrove ecosystems provide several services and goods that contribute to the livelihoods of local populations. Various value chains exist and do (highly) depend on mangrove forests. These are:

- Fish (fresh or smoked/dried from freshwater, brackish or marine area), for local/national markets and export.
- Atlantic seabob (*Xiphopenaeus kroyeri*): small white shrimp, for export - MSC Sustainability certification since 2011.
- Mangrove crabs (Krabu) in dry season, from brackish water pans, for local and domestic markets.
- Honey from bees collecting pollen/nectar from mangrove trees. Especially black mangrove (Parwa) honey is appreciated by clients. Honey solely goes to the domestic market, as volumes are too small for export. The number of beekeepers is growing slowly, but limited with a total of 72 beekeepers in Suriname (registered by LVV), of which a few dozens along the coast, and about 10 large beekeepers with several hundreds of hives, and many more small/part-time beekeepers. The Inter-American Institute for Cooperation on Agriculture (IICA) with EU-GCCA+ support, has trained and is training (young) beekeepers.
- Eco-tourism: is expanding in several Multiple Use Management Areas (MUMA): notably in Bigi Pan MUMA (4-5 high segment lodges), Commewijne MUMA - Johan and Margaretha, Frederiksdorp; Braamspunt (day visitors), and Galibi Nature reserve (sea turtles).

See the table below for more details about production volumes and values, markets, the number of producers, and roles of men and women.

Key features of mangrove products value chains

PRODUCT	PRODUCTION VOLUME + YEAR	PRODUCTION VALUE + YEAR	KEY MARKETS	NO OF PRODUCERS	DOMINATED BY MEN/ WOMEN/BOTH	OBSERVATIONS
Fish fresh, smoked, dried (freshwater, brackish or marine)	30,000 tons exported	28 Million EUR (2021) export value	Local/ national and export	4,900 (2017)	Sea fishing: men Freshwater fishing and smoking: women and men	Fish catch declining since 20 years
Shrimp (*Seabob*): small white shrimp (marine)	*Unknown*	*Unknown*	Export	*Unknown*	Men	MSC Sustainability certification since 2011
Mangrove crabs (*Krabu*) (brackish)	*Unknown*	*Unknown*	Local and domestic		Both (majority men)	Mostly informal
Honey	37,400 litres (all honey in 2021)	*Unknown*	Local and domestic	72 registered beekeepers (LVV, 2021)	Men	Mostly informal; Mangrove honey is only part of the total production
Wood/ charcoal	*Unknown*	*Unknown*	Local, domestic	Unknown	Probably men	Mostly informal
Eco tourism in MUMAs, Galibi Nature reserve	*N.A.*	41 million USD in 2021 (1.1% of GDP)	Domestic and international	3,400 jobs (2021) Dozens of lodges and tour agents	Both	Expanding in MUMAs

CONCLUSIONS

Mangrove ecosystem degradation and effects

The problems caused by loss and degradation of the mangrove ecosystem vary from place to place. They include:

1. Reduced resilience and coastal protection, with increased incidence and risk of flooding and saltwater intrusion, affecting infrastructure (housing, roads) and the productivity of agricultural land due to salinity. Most economic activities, and the capital and most towns are vulnerable as they are located in the low-lying coastal zone.
2. Biodiversity loss and degradation, due to loss of habitat.
3. Decrease of livelihood and economic sectors that directly depend on mangrove, such as beekeeping, fishery, and eco-tourism.

Mangrove degradation has been noticed in some areas (Coronie, Weg naar Zee which is close to Paramaribo) more than others and is most often due to erosion caused by a mix of natural processes (migrating mudbanks) and human interference (mangroves replaced by houses, farms, infrastructure, and affected by unsustainable wood harvesting).

Underlying causes are:

- Absence of up-to-date comprehensive coastal zone management strategy and legal framework, disturbance of natural (freshwater) processes due to grey infrastructure, poor water management
- Lack of clear /detailed guidelines for economic extraction and use of mangrove resources leading to overharvesting and depletion
- Mangrove dependent value chains are little developed or organised, they lack enabling support from government, and little value adding is done.

Mangroves have a huge natural regeneration capacity and are said to grow even with the sea level rise, if they are protected, get sufficient space (3-4 km coastal buffer zone) and the right hydrological conditions (mix of fresh and salty water).

Legal framework

The legal framework relevant to mangroves and coastal zone management is fragmented and sector oriented. Legislation focusing on regulating specific activities in different sectors (mining, forestry, fisheries, marine, and agriculture), is poorly enforced and does not ensure the protection of these ecosystems. In the last two decades several laws relevant to mangroves were developed and the National Mangrove Strategy (2019) is widely recognized and referred to. However, the challenges lie in their implementation.

Regional exchange

Some stakeholders, especially in French Guiana, are eager to strengthen (scientific and strategic) collaboration and exchange with Suriname and Guyana, because countries share similar conditions and can share experience and costs. Challenges are the language barrier and the border conflict between Suriname and Guyana. Several regional projects exist, and exchange meetings have taken place, but not in a structural organized way or with a long-term vision. Therefore, the new EU programme component aiming for regional exchange and collaboration is relevant.

Coastal zone and mangrove (co)management

Generally, the level of organisation seems to be low. There are a few youth, women, and producer organisations, but most networks are informal, and have limited outreach and capacities. The new MUMA management structure with stakeholder representatives is a first step to involve stakeholders in the co-management of mangroves. There is a need to build capacities on how to function in a multistakeholder structure and how to represent your group.

Mangrove forests provide many services to the population and stakeholders (public and private) in Suriname, such as coastal protection, protection against flooding, carbon stock, nursery for (shell)fish, shrimps, and crabs, a habitat for rich array of birds and mammals (biodiversity), nectar for bees, and tourism sites. In case the mangrove degrades or disappears, it will not anymore fulfill these functions, and this would affect (business) activities of several stakeholders. Stakeholders, such as the government, private sector (SMEs, farmers), and the population of the coastal belt including Paramaribo, with 80-90 % of the total population, have a particular interest that mangrove forests are maintained, protected and restored. Therefor it can be justified to let them contribute to the costs of mangrove and coastal zone management.

Value chains

Developing value chains (which is a component in the planned EU programme) is relevant, because products such as fish, crabs and molluscs, honey, and wood /charcoal, and tourism very much depend on healthy and resilient mangrove ecosystems. The income and subsistence value contribute to the livelihoods of coastal communities, the jobs and income of men and women, and are expected to contribute also to their willingness to engage in sustainable use and protection of the mangrove ecosystem. Fish (with 28 million EUR export value in 2021) and tourism (37 million EUR contribution to GDP in 2021) are important value chains and for which some basic data are available.

Except for fish, the value chains are little developed and lack an upgrading strategy based on an analysis of the market, production potential, the actors involved, and the potential for value adding. The production, value and trade of mangrove related products are often not well recorded in the official national agricultural and trade statistics nor other statistics, except for fish which is for a substantial part traded formally. The absence of such data does not mean that the products are not important to the economy, but that records are lacking and that most value chains are characterised by high informality.

Mangrove biodiversity monitoring (GGCA+)

RECOMMENDATIONS

Awareness raising, knowledge management and regional exchange

- To raise the sense of urgency of effective coastal protection among government, other stakeholders and the general public, especially in view of rising sea levels and climate change. To mobilize stakeholders by raising awareness about the need for adaptation measures, and how each stakeholder can contribute.
- To support measures enabling integrated coastal zone management, in which mangroves are actively managed and protected. Making use of the experience in Guyana with grey and green infrastructure by Conservation International, the Government and others, who are piloting this approach.
- To draw from and bring together regional and global knowledge and expertise from French Guiana, Guyana, Suriname, and, for instance, Indonesia (which is advanced in community-based tourism in mangrove areas).
- To do a feasibility study for the establishment of a National mangrove information centre (or mangrove institute) that collects, generates, and provides easy access to quality information, tailored to specific stakeholder groups and users. Including assessing a regional function of the information centre.

Strengthen the legal framework

- To urgently improve the legal framework with dedicated laws that effectively protect the ecosystem and mangrove species and ensure integrated coastal zone management. It should be considered to legally establish a 3-4 km wide coastal buffer zone that will prevent (further) urban expansion and agricultural development or any other development activity that affects the health of the mangrove ecosystem - as was recommended in 2009 by Erftemeijer and Teunissen.
- Support alignment of mandates of ministries, which includes assignment of the coordination role in the sector to a ministry, through political dialogue between GoS, the EU and other stakeholders, and through capacity building.

Co-management, livelihoods, and value chains approach

- A dedicated capacity needs assessment among different stakeholders at local level (coastal districts) is recommended, focussed on their specific role in the use, management and/or monitoring of the MUMAs and mangrove ecosystems. Based on the outcome, develop a tailored training and coaching offer, involving the university and other professional training providers or institutes.
- Support a value chain approach including : (a) in-depth analyses of value chains based on markets, private sector and service providers, mapping all (male and female) value chain actors (including service providers) and their capacity (gaps), (b) develop a value chain upgrading strategy agreed by stakeholders, (c) value chain governance and decision-making, in particular on the distribution of revenues within the chain, and (d) capacity building of actors, especially the more vulnerable, (female and male) smallholder producers and SMEs.

- This information will also allow to select the products and value chains with the highest potential to generate substantial numbers of jobs and income, and to safeguard the conservation of the ecosystem through the application of sustainable harvesting levels.
- To support (young) entrepreneurs (female and male) in accessing capital, training, markets, and business coaching. Supporting and enabling them to identify high value innovative sustainable products and markets, value chains and upgrading strategies.
- There is a need for information and gender-disaggregated data on production, income, number of jobs, sustainability and profitability of value chains – for each operator (male/female) and stage of the value chain.

Finance strategy

- The EU mangrove programme should leverage private sector finance to contribute to the coastal and mangrove protection and management, by engaging private stakeholders.
- To generate finance for the protection and management of mangroves, it is recommended to develop a Mangrove finance strategy and explore the feasibility of a National Mangrove (Revolving) Fund. Contributions could be borne through fiscal measures, fees or levies (fishery and oil and gas sector), and collection of fees from stakeholders directly benefitting from mangrove (tour operators, fishermen, processors, beekeepers, farmers, other), carbon credits or biodiversity certificates.
- To support a feasibility study that establishes the best options for ownership, management, objectives and use of a National Mangrove Fund, if possible in the framework of the EU supported action.
- Needs that do not fit the EU programme on mangrove protection and restoration, could be supported through other EU instruments, such as the Technical Cooperation Facility.

This is the summary of a more comprehensive stakeholder mapping report produced by the Forests for the Future Facility (F4).

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