

Report of the

**NATIONAL CONSULTATION in SURINAME
CASE STUDY ON SHARED STOCKS OF THE SHRIMP AND
GROUND FISH FISHERY OF THE GUIANAS-BRAZIL SHELF**

Paramaribo, 02-03 August 2012



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FAO implemented a “Case Study on Shared Stocks of the Shrimp and Groundfish Fishery of the Guianas-Brazil Shelf” (UNGF/INT/001/OPS) between July 2011 and February 2013, with six participating countries (Brazil, French Guiana (EU/France), Suriname, Guyana, Venezuela and Trinidad and Tobago). The case study was carried out within the framework of the GEF-funded Caribbean Large Marine Ecosystem (CLME) Project. The CLME Project aims at assisting Caribbean countries to improve the management of their shared living marine resources, most of which are considered to be fully or overexploited, through an ecosystem approach. A preliminary Transboundary Diagnostic Analysis identified three priority transboundary problems that affect the CLME: unsustainable exploitation of fish and other living resources, habitat degradation and community modification, and pollution.

The purpose of the case study of the Shared Stocks of the Shrimp and Groundfish Fishery of the Guianas-Brazil Shelf was to fill knowledge gaps, contribute to the final CLME Transboundary Diagnostic Analysis and to the Strategic Action Programme (SAP), with priority actions to be undertaken to ensure the sustainability of the shrimp and groundfish fisheries. Another objective was to mainstream the Ecosystem Approach to Fisheries (EAF) in the management of shrimp and groundfish fisheries. Both objectives were addressed through assessments/studies at the national and regional levels, with the participation of stakeholders and following some of the key steps of the planning process within an EAF framework.

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PREPARATION OF THIS DOCUMENT

This is the report of the national consultation organized by the Ministry of Agriculture, Animal Husbandry and Fisheries of Suriname, in collaboration with FAO and the Caribbean Regional Fisheries Mechanism (CRFM), held in Paramaribo, Suriname on 2 and 3 August 2012. The report contains a summary of the discussions held during the national consultation, the results of a scoping exercise that was carried out by the participants, as well as the baseline report that was discussed and agreed upon by the stakeholders. The organizers are grateful to all workshop participants for their input into the report and to all resource persons for their presentations and summaries provided for this report.

CASE STUDY ON SHARED STOCKS OF THE SHRIMP AND GROUND FISH FISHERY OF THE GUIANAS-BRAZIL SHELF

Report of the National Consultation in Suriname, Paramaribo, 02-03 August 2012

CLME Case Study on Shrimp and Groundfish - Report.No. 5 -, Rome, FAO. 2013. 54 p.

ABSTRACT

This is the report of the national consultation organized by the Ministry of Agriculture, Animal Husbandry and Fisheries of Suriname, in collaboration with FAO and the Caribbean Regional Fisheries Mechanism (CRFM), held in Paramaribo, Suriname on 2 and 3 August 2012. The consultation was organized as part of the Case study of the shared stocks of the shrimp and groundfish fishery of the Guianas-Brazil Shelf of the Caribbean Large Marine Ecosystem Project. The meeting was attended by representatives of the fisheries administration, fishing processing companies, artisanal and industrial fisherfolk, NGOs, Universities and research institutes, different Ministries, CRFM, and FAO.

Participants were provided with an overview of the CLME Project and the case study on shrimp and groundfish. A general overview of the key principles of the Ecosystem Approach to Fisheries was provided. The baseline report was presented and participants provided inputs and comments. Prior to the national consultation, preliminary meetings were held in the Districts of Nickerie, Commewyne, Boskamp and Coronie, mainly with the industry, in order to highlight the main issues that the communities consider policy makers should address as a matter of priority. The outputs of these meetings were presented and discussed. A scoping and prioritization exercise was also carried out during the national consultation.

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1 BACKGROUND

The national consultation held in Suriname on 2-3 August 2012 was organized within the framework of the Caribbean Large Marine Ecosystem (CLME)¹ Project funded by the Global Environment Facility (GEF). The CLME Project assists participating countries from the Wider Caribbean Region to improve the management of their shared Living Marine Resources - most of which are considered to be fully or overexploited- through an Ecosystem-Based Management (EBM) approach.

The CLME project is part of the global Large Marine Ecosystem initiative that started in the 80s. The Caribbean LME and the North Brazil Shelf LME form the focus of the CLME project as the Wider Caribbean Region, encompassing 26 countries and 45 state entities (highest number of all LMEs) with a broad variety of ethnicity and language, size and level of wealth.

Fisheries in the area operate on different scales so governance issues are multi-scale and transboundary. Nine overlapping and nested fisheries- related organizations are involved in the governance in the region. A lot of technical work has been done but with little impact on governance. Lack of coordination causes risk of duplication and gaps.

The fisheries are predominately small-to medium scale. There are no large commercial fisheries which could fund an RFMO in the region. Tourism is one of the major users of the marine environment but awareness has not yet reached the level to get involved in oceans governance. Networking remains the feasible approach for the region. A policy- cycle- based approach is proposed for the region. The multi-level policy-cycle- based governance framework needs to be complete, connected, and reflect the diversity of policy processes.

The national consultation in Suriname aimed at providing an introduction to the main EAF principles and to provide a list of priority issues and suggested actions for the shared stocks of the shrimp and groundfish fishery in Suriname, both at the national and at the transboundary level. The consultation was attended by 52 participants, representing fisheries administrations, academic institutions, fisherfolk organizations and non-governmental organizations (see Appendix 1 for the complete list of participants).

The specific activities and objectives were to:

- Familiarize participants with the principles and practices of the EAF;
- Discuss baseline report; institutional and stakeholder analyses;
- Identify priority issues (both national and transboundary) for the sustainable management of shrimp and groundfish fisheries, based on the EAF framework; and
- Identify key actions to address identified priority issues.

The methods used at the national consultation included presentations, plenary discussions and working groups.

1.1 The case study of the shared stocks of the shrimp and groundfish fishery of the Guianas-Brazil shelf

The shrimp and groundfish fisheries case study is one of three case studies that have been identified within the framework of the CLME project. The overall objective of the case study is to fill knowledge gaps that will contribute to the final CLME Transboundary Diagnostic Analysis as a basis for preparation of the Strategic Action Programme, with priority actions for the sustainability of the shrimp and groundfish fisheries. The case study also aims at mainstreaming the Ecosystem Approach to Fisheries (EAF) in the management of shrimp and ground- fish fisheries in the six participating countries and overseas territories: Brazil, French Guiana, Suriname, Guyana, Trinidad and Tobago

¹ For more information consult <http://www.clmeproject.org/portal/default.aspx>

and Venezuela. The aim of the case study is to identify interest groups, make proposals for the improvement of decision-making processes, and ultimately the implementation of recommendations. In order to achieve this goal, working groups will be set up together with information networks working both online as well as attending workshops to identify the main management issues, needs and specific actions required to achieve sustainable management of shelf ecosystems and fisheries in line with EAF principles.

The long term goal of the CLME Project is a fully-functional policy cycle at all appropriate levels with the appropriate vertical and lateral linkages for the CLME.

1.2 Opening of the national consultation

The master of ceremonies, Henk Bhagwandin, Fisheries Officer, Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF) of Suriname welcomed the participants and introduced the Director of Fisheries of Suriname.

Rene Lieveld, Director of Fisheries, Ministry of Agriculture, Animal Husbandry and Fisheries, Suriname, gave a welcome speech. He reminded participants of the need to take a broader look at the fishery in terms of interactions with the overall ecosystem. He also recalled that the five partner countries involved in the case study on shrimp and groundfish fisheries will go through the same process of national consultations. He stressed that constructive input from all stakeholders is sought in this process as participation is necessary for successful fisheries management. The intention of the Fisheries Department is to develop thorough fisheries management plans but also to explore opportunities for aquaculture as most of the global fisheries production is now coming from aquaculture.

Tarub Bahri, Fisheries Officer, Marine and Inland Fisheries Service, FAO, Rome referred to the key challenges that fisheries are facing and how the ecosystem approach could help to address these. The full text of these opening remarks is presented in Appendix 3.

Terrence Phillips from the Caribbean Regional Fisheries Mechanism (CRFM) addressed the participants by recalling the crucial importance of the shrimp and groundfish fisheries for the region. The full text of these opening remarks is presented in Appendix 4.

The opening remarks were followed by a brief introduction of all participants and the adoption of the agenda (Appendix 2).

2 PLENARY PRESENTATIONS

2.1 Introduction to the Caribbean Large Marine Ecosystem (CLME) project and the case study of the shared stocks of the shrimp and groundfish fishery in the North Brazil-Guianas shelf

Tarub Bahri, FAO, introduced the overall CLME Project and the case study. The case study covers six countries, Brazil, France (French Guiana), Guyana, Venezuela, Suriname and Trinidad and Tobago. The project is funded by GEF and implemented by FAO in collaboration with the Caribbean Natural Resources Institute (CANARI), Centre for Resource Management and Environmental Studies (CERMES) of the University of the West Indies and the Caribbean Regional Fisheries Mechanism (CRFM). The total duration of the project is 16 months. The overall objective is to fill knowledge gaps to contribute to the final CLME Transboundary Diagnostic Analysis as a basis for preparation of the Strategic Action Programme. Secondly, the project will help to mainstream EAF in the management of the shrimp and groundfish fisheries. The road map foresees desk studies (updated assessment, stakeholder analysis, institutional analysis and communication strategy).

The expected outputs of the case study are an integrated assessment of the shrimp and groundfish fisheries of the Guianas-Brazil Shelf at the national and regional levels, a proposed mechanism for collaboration at the regional level and sub-regional declarations and plans of action.

Within the context of this case study, a regional training workshop on the Ecosystem Approach to Fisheries was held in Paramaribo, Suriname, from 17 – 21 October 2011. The training aimed at providing an introduction to the main EAF principles and overall methodology, so as to familiarize participants with the practices of the EAF. The workshop was intended for representatives of administration, research, industry and fisherfolk organizations. It was designed to allow participants go through all four steps of the EAF process, with both presentations and practical group work. The workshop was attended by 26 participants from all six countries participating in the case study, representing fisheries administrations, academic institutions, fisherfolk organizations and civil society.

The next step in the implementation of the case study on shrimp and groundfish is a series of national consultations in each of the six countries to validate priority issues and identify key actions, of which the one in Suriname is the first. Finally, there will be a regional workshop to present the outcome of the national results in October 2012.

2.2 Basic principles of the Ecosystem Approach to Fisheries

Nicole Franz, FAO, provided a general overview of the key principles of the ecosystem approach to fisheries (EAF). Poor performance of current management practices, the degradation of fishery resources and the marine environment and the recognition of a wide range of societal interests in marine ecosystems and the need to reconcile these are the main drivers behind the development of the EAF. An Ecosystem Approach to Fisheries strives to balance diverse societal objectives, by taking into account the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries. EAF, as adopted by FAO, is not considered a major departure from conventional fisheries management but rather an extension of it and with a greater emphasis on sustainability concepts. For example, in opposition to conventional approaches focusing on few objectives, EAF aims to achieve multiple objectives and takes into consideration the interaction with other sectors. Rather than being prescriptive, EAF strives to establish incentives for sustainable behavior and to involve stakeholders in fisheries management decision-making processes.

EAF adopts a four- step approach (see Figure 1) and throughout the process stakeholders are consulted and decisions are informed by the best available knowledge which In addition to scientific knowledge refers to a more extended knowledge base, including traditional knowledge.

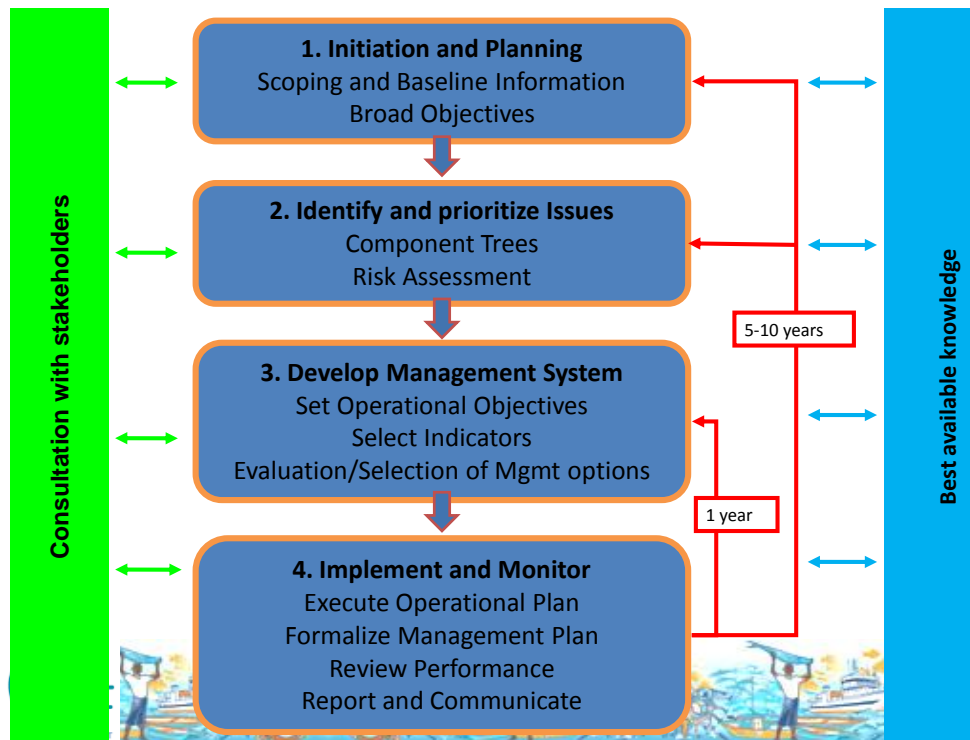


Figure 1: EAF steps

The EAF uses three main components as a basis for the analysis of a fishery: (i) ecological wellbeing of the retained species, the non-retained species and the general ecosystem, (ii) human wellbeing at the community and the national level and (iii) ability to achieve which refers to governance issues and external drivers (see Figure 2).

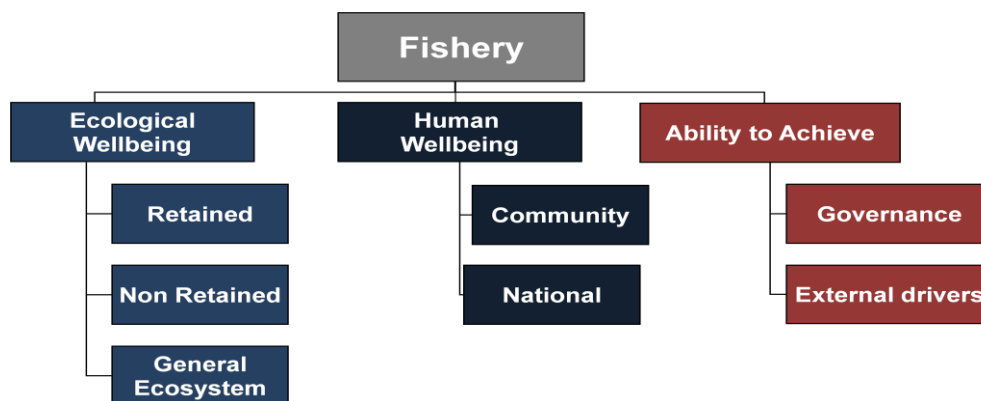


Figure 2: EAF components

In conclusion, the process of evolution from conventional management has started and is gaining momentum. Valuable experience is already available and valuable action can be readily taken. It should be noted however that the EAF implementation can only be incremental and adaptive. Guidance is provided, by FAO and other institutions, but the actual

application of EAF can only take place with the main actors on the ground taking responsibility for the needed changes and in a way relevant to the given context

2.3 Workshop objectives and expected outputs

Terrence Phillips, CRFM, introduced the workshop objectives and expected outputs. In addition to familiarizing the participants with the principles and practices of the EAF, a major objective of the workshop was to review the draft baseline report on the ecosystem approach to fisheries for Suriname prepared by the Department of Fisheries of Suriname.

Secondly, participants were requested to complement the outcomes of the Regional workshop on EAF held in Suriname in October 2012 by identifying priority issues for the sustainable management of the shrimp and groundfish fishery along the lines of the EAF framework. The workshop outputs included a list of key actions to address these identified priority issues.

2.4 Overview of the baseline report on the ecosystem approach to fisheries for suriname

Henk Bhagwandin briefly summarized the current status of the development of a fisheries management plan for Suriname. In 2000, Pierre Charlier revised an available draft management plan and in 2008, CRFM provided recommendations for further updating this plan. A management plan for seabob had been finalized in 2010 as the fishery had applied for and obtained MSC certification in 2011.

He then explained the outline of the baseline report and recalled the main issues taken up in each of the chapters. The baseline report covers the legal and institutional framework with the acts, regulations and Ministry departments governing the sector; a profile of the fisheries (e.g gear, resource status, fleet, and employment); interactions with other sectors; available information sources; economic value of the fisheries; management measures and efficiency aspects of the management system. With respect to the latter (one), it was noted that most of the resources are fully exploited and legal arrangements are outdated.

The Department of Fisheries has received a number of comments on the baseline report which had been distributed to a wide range of stakeholders. NGOs, other Ministry departments and inter-governmental organizations provided other factual clarifications (e.g. figures, interaction issues, suggestions for improving readability (e.g. adding local species names) and for additional items to be addressed (e.g. impact of seismic surveys).

During the discussion of the draft baseline report it was noted that it is important to understand the institutional set-up and that the institutions themselves need to understand their role in the EAF process. The Department of Fisheries was advised to reach out to any stakeholders that have not been included in the process so far but that emerged from the comments received in writing or during the national consultation.

There was a call to the Department of Fisheries to provide training on sustainable fishing techniques and to investigate the impact on the resources when native communities engage in commercial fisheries (rather than only for subsistence purposes). The nature of sport fishing would also need to be revisited as there seems to be a misuse of sport licences for commercial purposes, with negative impacts on the stock status.

Some discussion on the scope of the baseline report took place. It was clarified that the report should provide a brief assessment of the entire marine environment in the introduction – including on sharks – but that the report itself should concentrate on the shrimp and groundfish fishery which is the subject of the case study. However, it was clarified that the EAF by definition also looks at non-target species and that some more information on bycatch issues could be incorporated. It was stressed that the baseline report is a negotiated document that takes into account the inputs of the different

stakeholders and that it will be revised accordingly based on the outcome of the national consultations.

2.5 Summary of priority issues and suggested actions from the preparatory meetings: Ministry

In July 2012, four meetings took place in the districts of Nickerie, Commewÿne, Boskamp and Coronie, one with the industry and one with the Fisheries Department during which participants identified and prioritized issues and recommended actions for the priority issues.

In Commewÿne, the absence of a coastguard was the most important issue identified. Piracy and IUU fishing were the next important issues.

In Boskamp, the quality of drinking water was identified as the most pressing issue, caused by high levels of pollution. The dire status of the landing site was identified as the second priority issue to be addressed.

In Coronie, a sea wall is the highest priority issue, followed by access to finance and marketing issues.

In Nickerie, control of the fishery was the highest priority issue, followed by low prices of the fishery products.

The Fisheries Department identified a low level of team spirit among the staff as a priority issue, followed by low levels of salaries and insufficient human resources.

The fisheries industry identified MCS as the priority issue, followed by IUU fishing and the presence of illegal boats.

3 NATIONAL CONSULTATION OUTCOMES

The participants of the national consultation were divided into three groups to discuss three different fisheries, (i) penaeid fishery, (ii) seabob fishery and (iii) groundfish fishery. The groups were established in a way that ensured equal representation of the different stakeholders in each group (e.g. artisanal fishers, industrial fishers, NGOs, government authorities). The groups were tasked to apply Step 2 of the EAF ('Identify and prioritize issues'). More specifically, the groups were asked to:

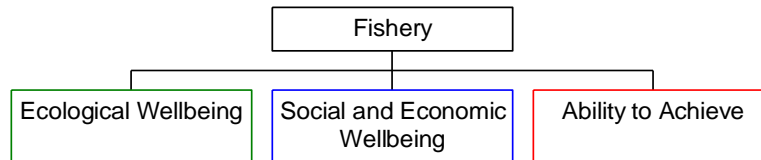
- Identify issues related to the fishery;
- Perform a risk assessment to prioritize the identified issues; and
- Define suggested actions for the established priority issues.

The groups used brainstorming as a tool to identify relevant issues. Issues were identified by individual group members and then discussed. The group work outcomes were recorded on a flip chart and excel file and one group member reported the outcomes of the discussions back to the plenary.

A brief description of the methodology for each of the steps performed by the groups is provided below. The tables with the results of the group work are available in Appendices 5-7.

3.1 Issue identification

This step of the EAF process aims to identify all the relevant issues across the three key dimensions of EAF for the fishery being examined to decide where to focus the management system to generate the best community outcomes.



The three EAF components to which the issues identified by the group refer are:

- Ecosystem Wellbeing - All ecological ‘assets’ (e.g. stocks, habitats, ecosystems) relevant to the fishery and the issues/impacts being generated by the fishery that may be affecting them.
- Human Wellbeing - The social and/or economic ‘outcomes’ currently being generated by the fishery, both the good—those outcomes the community wants to have generated (e.g. food security, economic development), and the bad—those it wants to avoid (e.g. conflicts; injuries).
- Ability to Achieve - The management and institutional ‘systems’ in place or proposed to deliver the wanted outcomes (e.g. access and tenure systems, compliance, democratic processes, conflict resolution), along with the external ‘drivers’ (not controlled by the fishery) which may be affecting performance.

3.2 Risk assessment and issue prioritization

A large number of issues can be identified in the aforementioned process. Therefore, a key part of the EAF process is to ensure that only the most important issues are addressed by direct management intervention. This requires determining their relative priority using some form of risk assessment and/or prioritisation procedure based upon the fishery trying to deliver certain agreed objectives.

To determine the priority of issues and therefore the appropriate level of management response, the process uses risk analysis methods. The method used in this national consultation can operate with minimal levels of data and can be completed within a workshop environment. Participants assigned a level of consequence (impact) (from low to severe) and likelihood (probability) of a consequence actually occurring (from remote to likely) to generate an estimate of the risk (from low to high) for each identified issue. Participants assigned the appropriate combination of impact and likelihood levels based upon the information available and the collective wisdom of the group.

Table 1: Likelihood and consequence level matrix

Likelihood		Consequence Level			
		Minor	Moderate	Major	Extreme
		1	2	3	4
Remote	1	1	2	3	4
Unlikely	2	2	4	6	8
Possible	3	3	6	9	12
Likely	4	4	8	12	16

The level of uncertainty associated with an issue was factored into determining which combination of likelihood and consequence was chosen that best reflected the level of understanding. The final score assigned to each issue was the result of the discussions of the group.

Table 2: Consequence/impact levels

Score	Level	Description
1	Minor	Minimal impacts that are highly acceptable
2	Moderate	Acceptable level of impact
3	Major	Above acceptable limit. Wide and long-term negative impacts
4	Extreme	Well above acceptable limit. Very serious, likely to require long restoration time to undo

Table 3: Likelihood of consequence/impacts

Score	Level	Description
1	Remote	Insignificant probability of the particular consequence occurring
2	Unlikely	Some evidence that the particular consequence level could occur
3	Possible	The consequence level may occur but this is still not likely
4	Likely	The particular consequence level is expected to occur

3.3 Proposed actions to address priority issues

As a last step, the groups discussed potential actions to address the priority issues identified in the previous steps.

- *Group 1. Groundfish*

The groundfish working group emphasized the need to introduce appropriate technology within the shrimp trawling industry in order to reduce the bycatch. There is a lack of information on the bycatch composition. It also mentioned that the shrimp fisheries in general catch many sciaenids. These are sold as “Tri”; salted sun-dried small fishes. The impact on fisheries of the adult population is unknown. In minimizing the impacts of fishing on the ecosystem structure it was suggested that marine protected areas be introduced. Prior to this, adequate research projects should be formulated. The governance and management aspects were also raised with respect to artisanal fishermen and poachers entering the breeding and nursery area. The Bigi Pan lagoon seems a region with high biodiversity and tourism potential that is emerging as being in need of management attention. The artisanal fishers in the area, however, are voicing concerns about the threat from larger fishing vessels. Illegal gear like monofilament nets that are not selective are commonly used. This means that these nets catch everything and are thus destructive to the ecosystem in the Bigi Pan area that plays a crucial role in maintaining the ecosystem in that area.

What needs to be discussed at stakeholder meetings like this national consultation are management strategies that need to include a series (suite) of potential management measures. However, the choice of the final tool will also depend on the cost and other factors that determine its appropriateness.

Lack of control and surveillance together with inadequate policemen were issues that needed urgent attention. The fact that the fish stocks are depleted in Guyana with the consequence that fishermen are heading towards Suriname also requires action on surveillance and mutual cooperation between Guyana and Suriname to ban illegal fishing.

Transparency on the issue of licenses is also required. A major threat to the fisheries industry arises from pollution. The sources of pollution originate from chemicals used in rice and banana cultivation, engine oil spilled off into waterways; and the incineration of rice hulls also leads to environmental

problems. The complete lists of issues will be brought to the attention of the Minister of Agriculture, Animal Husbandry and Fisheries by the stakeholders. It is also suggested that the local population should benefit from the resources.

- **Group 2. Seabob**

With regard to seabob trawling the group finds it important to carry out research projects which will determine the level of interaction between penaeus and seabob trawling. This is required for adoption of a proper management plan for both types of shrimp trawling. The group also finds it necessary to determine the level of habitat destruction due to trawling. The urgent need to reduce bycatch during shrimp trawling operations was also mentioned. Data collection should also be focused on the amount of bycatch. In order to reduce the impact on habitat destruction attention should be focused on the weight of the trawling (vessels) panels so as to reduce the pressure on the seafloor during trawling activities.

The artisanal seabob catches have declined over the last few years and this is mainly due to the introduction of seabob trawling. The artisanal seabob fishery is a seasonal activity which is determined by the volume of the catches. This means that these fishermen should look for alternative income-generating activities. The causes of other problems within the seabob fisheries are:

- 1 No research is being carried out in general.
- 2 The study of feeding and reproduction areas is required.
- 3 Research on the ecology of the seabob is essential.
- 4 Interaction between species is required as well as research on the feed chain.
- 5 The impact of climate change should be investigated.
- 6 The introduction of a closed season in order to allow the seabob room for reproduction. However the data indicates that it will be difficult to determine closed seasons for seabob. The proposed action is to identify closed areas and to reduce the total effort.
- 7 In order to eliminate illegal seabob trawling it is important to establish a coastguard with effective functions or responsibilities and to ensure its permanence. This issue is of utmost urgency and importance.

- **Group 3. Penaeus**

Due to fact that there is no closure of the fishing season for penaeus shrimp the recovery of the shrimp stocks ranges from very slow to no recovery. Furthermore there is a zoning problem which has a negative impact on the spawning grounds and gives rise to excessive bycatch. The seabob trawling starts at 10 fathom depth and the stakeholders from the penaeus industry claim that this significantly affects the breeding and nursery areas of the penaeus stock. Action should be taken to reduce the bycatch within the shrimp trawling industry by implementing effective bycatch policies. Furthermore, new fishing techniques should be introduced and no fishing / penaeus trawling zones in the red snapper areas should be established. To eliminate illegal fishing it is necessary to introduce monitoring and surveillance at sea. Ensuring sustainable exploitation in the longer term will firstly require a recovery of the penaeus shrimp stock. This will need the formulation and implementation of a management plan for the penaeus stock.

Offshore and onshore mining will have / has a negative effect on public health. It also leads to environmental pollution and contamination of fish. Illegal fishing occurs because of an ineffective coastguard with the consequence that it exerts extra pressure on the fishing grounds. The licensing system is poorly structured.

The general issue regarding fisheries is that this resource is extremely important for Suriname and far more important than aquaculture. The major challenge is to ensure the sustainable exploitation of the resources.. A major responsibility in this regard also rests with the Ministry of Agriculture, Animal Husbandry and Fisheries and its Fisheries Department. Therefore it is important for young fisheries officers to be recruited by the Fisheries Department. But the current situation is that at the Anton de Kom University of Suriname lectures tend to focus on only one topic in the field of fisheries. It is proposed that the Ministry of Animal Husbandry and Fisheries should enter into a partnership with the University for the exchange of experienced fisheries officers who can lecture at the university. This will lead to a generation of young professionals from the university and who can eventually be employed at the Fisheries Department.

3.4 Plenary discussion

In the plenary, comments on a number of issues emerged and are summarized below.

- *Monitoring, control and surveillance (MCS)*

A budget for MCS activities for four months has been approved and there is an annual allocation of 80 million Surinamese Dollars (approximately 20 million USD) for the coastguard. . This allocation is a first step towards an effective coastguard but the commitment is considered to be still insufficient.

- *Seabob fishery management*

The seabob fishery obtained MSC certification in 2011 but the certification has been approved subject to compliance with a number of management issues that are still to be addressed. One of them is improved research. Part of the response to address this is ongoing work by a Belgian PhD student that looks at seabed impacts of fishing. The issue of competition over space was raised in relation to the seabob fisheries. Seabob occurs between 10 and 20 fathom in the east and between 10 and 18 fathom in the west. However, other fisheries are operating in the same area. Any zoning arrangement needs to respect this natural condition if the fishery is to be operational in the long run. The Department of Fisheries has to find ways to identify solutions for these multi-species and multi-gear fisheries. Currently, there are 32 licences available but only 17 are operating. This was justified by the fact that the need for licences by a company may change over time (e.g. company boats not operating at the moment but expect to be back in the water at a later stage). Management plans have to account for all of these complex issues. There is the recognition that it may not be within the area of responsibility of the Department of Fisheries to address all the issues, but the Department needs to be aware of them to facilitate action by authorities and stakeholders involved.

- *Penaeid shrimp fishery*

The penaeid shrimp fishery produces approximately 7kg of bycatch per kilo of shrimp, at least. During long fishing trips bycatch will not be kept on board as fish has to be frozen at -30°C but if it is kept with shrimp these temperatures may not be reached. Seabob boats that stay out fewer days make take fish bycatch on board. In the past there were two big shrimp companies producing about 2000 tons of shrimp, now they only produce about 500 tons and the fleet has been drastically reduced. Catch per (trip) level however is now starting to increase, even though recovery times may be long.

- *Regional coordination*

The participants were reminded that the resources subject of the case study on shrimp and groundfish fisheries are shared, though at different levels. Many management measures are still focused at the national level. But if not all countries invest in improving their management the success of individual countries' attempts is unlikely and a regional decision-making body for fisheries management is essential to coordinate these efforts. One of the outputs of the case study is hoped to be the

identification of such a regional decision-making mechanism for sustainable management of the shared resources.

4 CLOSING REMARKS

Henk Bhagwandin thanked the participants and assured them that all relevant materials will be made available to the participants.

Tarub Bahri thanked participants on behalf of FAO. She informed the participants that the outcomes of the issue identification and prioritization of the national consultation will be complementary to the same exercise that was carried out during the regional EAF training workshop in October 2011.

In his closing remarks, the Director of Fisheries of Suriname, Rene Lieveld, emphasised the importance of the extension service which should also reach out to any other relevant stakeholder in the field and, most importantly, the direct involvement of stakeholders in any fisheries management - related processes in the future.

5 NEXT STEPS

The participants agreed on the following suggested next steps for action at the national and regional levels.

- *National level*

- Stakeholders should provide any additional comments and relevant information, including stakeholder and institutional analysis for the revision of the baseline report to LVV by mid-August.
- LVV should complete the revision of baseline report by the end of August and circulate it to all stakeholders and FAO.
- LVV should consider further consulting with the various stakeholders to refine the issue identification, prioritization and definition of possible management actions to deal with identified high risk issues.
- LVV should review the draft existing fisheries management plan with a view to mainstreaming EAF, including within inland and brackish water fisheries which generate high catches, provide important livelihoods and contribute to food security.

- Regional level

- In preparation for the regional workshop in Trinidad and Tobago on 16-18 October 2012 the LVV will prepare a report on the national consultation process and results, stressing the importance of follow-up funding to implement transboundary and national actions identified through the project. It is crucial that regional and national measures should be implemented as they are complementary and the success of one depends on the successful implementation of the other.
 - LVV will provide FAO with a summary of this report and a power point presentation by mid-September 2012.
 - LVV will report back to stakeholders about the regional consultation.
- The feedback from the six national consultations will inform the development of the Regional Strategic Action Programme which has to be finalized by the end of 2012 by the Caribbean Large Marine Ecosystem Project Coordination Unit.

- The final SAP report has to be approved by the Ministries of all the participating countries by April 2013. This approval is critical for resource mobilization to facilitate implementation.

Appendix 1 - List of participants

No	Name	Organization	E-mail	Phone (Office)
1	H. Sharman	SAIL	sail@sr.net	421202
2	L. van 't Kruys	DC Paramaribo S-W	lesleysr@yahoo.com	8595326
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52	N. Franz	FAO	Nicole.Franz@fao.org	

Appendix 2 - Agenda

Thursday, 2 August 2012

Opening remarks by the Department of Fisheries of Suriname, FAO and CRFM

Introduction of participants

Adoption of the agenda

Introduction to the Caribbean Large Marine Ecosystem (CLME) project and the Shrimp and Groundfish case study

Ecosystem Approach to Fisheries (EAF) principles

Workshop objectives and expected outputs

Overview of the baseline report and comments received so far

Summary of priority issues and suggested actions from the Preparatory meetings

Definition of working groups

Group work: Identification of EAF issues

Reporting to plenary

Friday, 3 August 2012

Group work: Risk assessment and issue prioritization

Reporting to plenary

Group work: Actions to address priority issues

Reporting to plenary

Conclusions and way forward

Closing of the workshop

Appendix 3 - Opening remarks by Tarub Bahri, FAO

Mr Rene Lieveld, Director of Fisheries, Ministry of Agriculture, Animal Husbandry and Fisheries of Suriname;

Distinguished guests and colleagues,

I am delighted to be here today on the occasion of this national consultation organized within or as part of the case study on the shrimp and groundfish fisheries within the framework of the Caribbean Large Marine Ecosystem programme. FAO is closely collaborating with national and regional institutions in this region under this programme.

Given the threats impacting the fisheries, such as overcapacity of fishing fleets, destructive fishing practices, effluents from land-based activities containing pollutants, the cutting of forests and resulting increase in siltation, habitat modification that results from coastal development and climate change, there is a strong need for bold political action in order to ensure that fisheries become less vulnerable.

In this context the Ecosystem Approach to Fisheries – EAF- is being promoted internationally and by FAO as the way to address the key sustainability issues. The EAF is not to be mistaken by the first impression that the name usually evokes, that the approach is mainly focused on ecosystem conservation requiring increasing scientific understanding, advanced research and modelling.

The ecosystem approach is much more than that. It aims at a comprehensive identification of key sustainability issues from within and outside the sector, on the basis of wise consultation of stakeholders in order to empower them to actively participate in decision making.

The EAF can only be implemented successfully if it is supported by strong political will and motivation by the stakeholders and society at large to embrace the values and principles of sustainability.

Finally I wish to thank the Ministry of Agriculture, Animal Husbandry and Fisheries of Suriname for organizing this consultation, which is the first in the series of six consultations to be held in the six countries of the Northern Brazil-Guiana shelf participating in the case study on Shrimp and Groundfish fisheries.

I do hope that you will all find this consultation useful and constructive.

Appendix 4 - Opening remarks by Terrence Phillips, CRFM

Chairman, Henk Bhagwandin, Fisheries Officer, Ministry of Agriculture, Animal Husbandry and Fisheries, Rene Lieveld, Director of Fisheries, other representatives of the Fisheries Department, Industrial and Small-scale Fishers Organisations and other agencies (public, private, NGOs), Ladies and Gentlemen.

Chairman, I would like to take this opportunity to express the Caribbean Regional Fisheries Mechanism (CRFM) Secretariat's appreciation to the Ministry of Agriculture, Animal Husbandry and Fisheries and the FAO for inviting us to participate in this National Stakeholder Consultation.

The shrimp resources in the Guianas–Brazil area support one of the most important export- oriented shrimp fisheries in the world while the groundfish resources are important for commercial and social reasons. The fisheries are multigear, multispecies and multinational, using fishing methods that can be classified as industrial or artisanal depending on the level of mechanization.

In general, all the penaeid shrimp species in the region are subjected to increasing trends in fishing mortality and the fisheries are generally overcapitalized. In the case of the seabob shrimp fisheries of Suriname and Guyana, analyses have indicated that there is no evidence from the catch and effort data that the stock is overfished and/or that overfishing is occurring.

With regards to the groundfish, despite relatively stable catches, overexploitation was found to be severe, with their being evidence that some of the fisheries in this area may be fully or overexploited.

As such, we are glad to be involved in this partnership with the FAO (as lead), UWI-CERMES and CANARI which is collaborating with the countries of the Guianas – Brazil Shelf Area or North Brazil Shelf Large Marine Ecosystem in the implementation of this Case Study. More especially as this Study is seeking to promote the incorporation of the ecosystem approach to fisheries (EAF) into the shrimp and groundfish fisheries of this continental shelf ecosystem.

Such an approach calls for such things as an agreement on policy, goals, and management objectives for the goods and services provided by the ecosystem; identification and involvement of all stakeholder groups; development and implementation of national and regional EAF fisheries management plans; review of the fisheries administrative and management institutional framework and the implementation of the necessary changes to support the institutional requirements for the delivery of EAF; a decentralised regional approach to fisheries management in the ecosystem; application of adaptive management and the precautionary approach given the degree of uncertainty and dynamics of the ecosystem; and the development of an effective monitoring, control and surveillance capability.

Implementing EAF would require robust, participatory decision-making mechanisms at all levels, which would lead to more effective adoption of management advice. However, it should be pointed out that the EAF will not be an instant replacement for traditional fisheries management and should be seen as an evolution of the existing fisheries management systems.

This National Stakeholder Consultation, which is the first in the series to be held in all six countries, to validate priority issues and identify key actions should be seen as critical to the involvement of the stakeholders in the implementation of EAF in the continental shelf ecosystem of the Guianas – Brazil area.

The component of the strategic action programme for the shrimp and groundfish fisheries of continental shelf ecosystem which is being developed under the CLME will benefit from the outcome of this Consultation.

Thank you

Appendix 5 - Issues identified by the working group on *Penaeid*

Key EAF components	Category	Component/issue	Threats - Impacts	C	L	R level	Suggested action
Ecological wellbeing							
Retained Species	Target Species	Penaeid shrimp species. There is no season for penaeid fisheries	No recovery of shrimps stock	3	4	12	
		Zoning problem between penaeid fisheries and seabob	Seabob fisheries at 10 fathom depth has a negative impact on penaeid spawning grounds	3	3	9	Seabob zone should be pushed to 13 fathoms
	Bycatch Species/Groups	Too much bycatch	Penaeid industry has a negative impact on other fish resources, sea turtle, dolphins	4	4	16	
Discarded species		Sea turtles in bycatch					
General ecosystem	Impacts of fishing on ecosystem Structure	Health of resource	Penaeid catches done by trawling, which will have negative impact on the habitat	4	4	16	
Social and economic wellbeing							
Community Wellbeing	Social	Contamination of fish	Environmental pollution due to mining and other man -made pollution which will affect the public health	4	3	12	
National wellbeing	Social	Contamination of fish	Environmental pollution due to mining and other man -made pollution which will affect the public health	4	3	12	
Ability to achieve							
Governance	Management	Illegal fishing & poor control	Ineffective functioning coast- guard & extra pressure on fishing grounds (depletion of stock)	4	4	16	
		Licensing is not structured properly	Too many seabob permits are provided	2	2	4	
		No season for penaeid shrimp fishery	No Recovery of shrimps stock	4	4	16	
		Zoning problem between seabob and penaeid fisheries	Seabob at 10 fathom depth, interaction with the breeding area of penaeid	4	3	12	Seabob zone should be pushed to 13 fathoms
		Penaeid needs management plan with	To monitor the fishing stock in relation to sustainability	4	4	16	

Key EAF components	Category	Component/issue	Threats - Impacts	C	L	R level	Suggested action
		reporting obligations like seabob					
		Permits need to be adjusted to existing effort	Only 17 boats but 32 permits issued	4	4	16	
		Health of resources	If the condition of the ecosystem is damaged this will have an impact on the natural resources and public health	4	4	16	
	Consultation	No awareness of sustainable management of fish stocks	Stakeholders should be aware of the latest developments in sustainable management of the fishery industry	4	4	16	

Appendix 6 – Issues identified by the Working group on seabob

Key EAF components	Category	Component/issue	Threats - Impacts	C	L	R level	Suggested action
Ecological wellbeing							
Retained Species	Target Species	Interference with Penaeid shrimps	Destruction of breeding ground and catch of juvenile penaeid as bycatch of seabob	4	4	16	Research on actual impact to improve management
Discarded species	Direct capture	Bycatch: types, numbers, application of BRD, survival of bycatch	Negative impacts on bycatch species.	3	4	12	Data should be collected on the types, numbers, and survival rates of the bycatch. Application of BRDs should be evaluated and possibly improved.
General ecosystem	Impacts of fishing on ecosystem Structure	Destruction of the bottom due to trawling	The seabob trawling is bottom trawling and thus destroying the bottom habitat	3	4	12	Improvement of the trap doors to decrease the impact on the sea floor
Social and economic wellbeing							
Community Wellbeing	Local dependent communities	Loss of employment of people working in the industrial Penaeid fisheries	As a result of the Penaeid fisheries crash the employees lost their jobs (and the company was auctioned)	3	3	9	
		Loss of employment in the artisanal Seabob fisheries	Due to increased catches in the industrial fisheries the catches for the artisanal fisheries decreased	3	4	12	Conduct research on actual impact and provide alternative livelihoods or alternative target species for the artisanal fishermen
		Seasonal unemployment of contractors	Employment security: when catches are low contractors are no longer hired for their services, thus temporarily impacting their livelihoods.	3	4	12	Provide decreased (half) of their payment without actual work being done. Suggest alternative livelihoods for that season
Ability to achieve							
Governance	Management	Conflict between types of fisheries (zoning)	The nets of the SK fishermen may be dragged into the fishing grounds of the Seabob trawlers with the current, thus risking destruction of nets by the trawlers	2	3	6	
		Lack of ecological research (will have to feed into the management plan)	Due to a lack of research the management plan is the result of assumptions and experience.	3	4	12	Thorough research on different components is essential for proper management of the resources. Research should focus on: harvesting, feeding-

Key EAF components	Category	Component/issue	Threats - Impacts	C	L	R level	Suggested action
							and reproduction areas, impacts on bycatch and habitats, ecology of the target species, interaction between species, stock assessments, impact of climate change. (Important)
		No closed season	A closed season would better allow the seabob populations to regenerate / there is less assurance of regeneration without the closed season	3	4	12	With the given data it is difficult to define the closed season. Alternatives to a closed season should be considered such as a shifting closed area or limiting fishing effort based on above research
		No trawling zone	The 10 fathom line is not based on scientific research and should thus be evaluated	2	4	8	
		Observers on board (more frequent)	There is already an observer system from LVV, but the frequency is not optimal to ensure proper control	2	3	6	
		Coastguard	The absence of a coastguard limits control (illegal fishing practices) and security of vessels (piracy).	4	4	16	Establishment and surveillance operations of the coastguard (Important and Urgent)
		Illegal fishing (IUU)	There are a number of illegal fishermen who actively compete with legal (licensed) fishermen	4	4	16	Effective surveillance should be carried out by the coastguard
External drivers	Environmental	Disposal of untreated waste water (e.g. municipal, industrial, agricultural, mining)	Disposal of untreated wastewater pollutes the habitat and may have consequences for the shrimp species itself (growth rate, health) and the consumers (humans and predatory species) of the shrimp	2	4	8	

Appendix 7 – Issues identified by the Working group on groundfish

Key EAF components	Category	Component/issue	Threats - Impacts	C	L	R level	Suggested action	
Ecological wellbeing								
Retained Species	Target Species	All target species	Declining stocks and catches	3	4	12	Establish a seasonal fisheries calendar	
	Bycatch Species/Groups	Lack of information on bycatch: (Biology of species, juvenile fishing)	Bycatch in shrimp fisheries are juvenile groundfish (sold as tri = salted dry fish)	3	4	12	Appropriate technology needed → TED, bycatch reduction devices (subsidies?) Awareness, training Research on bycatch	
General ecosystem	Impacts of fishing on ecosystem Structure	Use of illegal gear (monofilament in Bigi Pan area)	Monofilament nets catch everything, destructive to ecosystem, MUMA	4	4	16	Do not allow monofilament nets, fish with oldnets	
Social and economic wellbeing								
Community Wellbeing	Local dependent communities	Fishing is a seasonal activity	Variable income	2	4	8	Supply from freshwater fisheries takes into account lower catches in certain months	
		Major expenditure = fuel (up to 50%)	Fuel most important component of fishing costs, high fuel costs cannot be included in fish prices	4	4	16	Need for more efficient fishing method Subsidy?	
Ability to achieve								
Governance	Management	80% come from Coronie Bank to Boskamp (zoning issue?)	Catches of artisanal fisheries (BV + SK) mainly in restricted area off Coronae, in shallow water, some conflict of interest with industrial trawlers in deep water	4	3	12	National institutional stakeholders meetings MAP	
		Too many poachers (IUU)		4	4	16	Control	
		No fish in Guyana → Guyanese fishermen come to Suriname	No fish in Guyana coastal waters, Guyanese fishermen fish illegally in Surinamese waters	3	4	12	Control, Regional cooperation	
		Lack of control, surveillance and enforcement		4	4	16	Fines on trawlers	
		Transparency of licensing system for artisanal fisheries	More permits available than actually used → trade of licenses + rented 1000 USD/year; Falsification of licenses = control problem					
		Subsidy/incentives vs. good	Management needs improvement	4	4	16	National institutional	

Key EAF components	Category	Component/issue	Threats - Impacts	C	L	R level	Suggested action
		management					stakeholders' meetings Subsidy/incentives for developing fisheries (e.g .pelagic)
External drivers	Environmental	Pollution from rice fields 3 times a year	Agricultural and small-scale gold mining pollution are transboundary problems for Guiana Shield and Brazil (Guiana Current)	4	4	16	Control Regional cooperation
		Pollution: sea and land; mercury pollution	See above				
	Economic/Social	Piracy =	Transboundary issue, need to collect data on this; = control problem	4	4	16	Increase political engagement to address this issue with neighboring countries

Appendix 8 – Summary of the meetings held in preparation of the national consultation.

Total number of preliminary meetings: 6, held in July 2012.

Number one issues are marked with most scores in red; the number two issues are subsequently marked with most scores in blue. The priority actions are associated with no.1 and no.2 issues respectively.

1. District of Commewijne

Facilitators:

1. Mario Yspol
2. Henk Bhagwandin
3. Zojindra Arjune

Position

Fisheries Department; Head Division Statistics and Research
 Fisheries Department; Fisheries and Aquaculture Officer
 Fisheries Department; Fisheries Officer

List of stakeholders:

	Position	Tel. nr.
1. Z. Lall	Boat owner / licensed fisherman	00597 -8599802
2. A. Dindi	Boat owner / licensed fisherman	00597 - 8813893
3. B. Sukhoo	Boat owner / licensed fisherman	00597 - 8112409
4. W. Mohamed Hoesein	Boat owner / licensed fisherman	00597 - 8943882
5. P. Veiro	Boat owner / licensed fisherman	00597 - 7129480
6. R. Presad	Boat owner / licensed fisherman	-
7. S. Samaroo	Boat owner / licensed fisherman	00597 - 7133852
8. B Parsan	Boat owner / licensed fisherman	00597 - 8777594
9. C. Sookhai	Boat owner / licensed fisherman	00597 - 322310
10. A.P. Rooplall	Boat owner / licensed fisherman	00597 - 8537634
11. R. Dealal	Boat owner / licensed fisherman	-

Issue identification (District of Commewijne)

1. Coastguard ●●●●
2. Annually fishing licenses are issued too late. Guarantee required in obtaining fishing license (by holder of license) ●●●
3. IUU fishing ●●●
4. Piracy ●●●
5. Fykenet fishermen in the estuarine area / pose danger to other fishermen / high risk factor. ●●
6. Trawlers: seabob, deep -sea shrimp trawlers, fish (stern) trawlers are affecting artisanal catches. Catches have gone down. ●
7. Inputs are lacking
8. Prices offered for the fish (to fishermen) are too low.
9. Requirement of fuel subsidy. ●
10. Fishing boats at the landing site are damaged by transport / container ships which are heading towards port of Paramaribo. ●
11. High cost at the landing sites for fishermen
12. Shortage / lack of fishermen
13. "Njawarie" fishing type problem; Juvenile fishes are caught; High undersized mortality

Priority actions (District of Commewijne)

1. Coastguard. – Establishment. Stations: Paramaribo; Boskamp; Nickerie. Surveillance on regular basis.
2. IUU fishing / Licenses – IUU. Identification cart for fishermen; Establishment of coastguard; Inspection of nets.
Licenses – a. Inspection on boats to be carried out at determined period: December - January. Problem with licenses which arises annually: boats have to come from Guyana for inspection is the main cause of delay in inspection.
b. Guarantee is needed for obtaining licenses
c. Important to consult fisherfolk organizations in screening of the list of license applications.

2. District of Saramacca / Boskamp

Facilitators:

- | | |
|--------------------|---|
| 1. Mario Yspol | Fisheries Department; Head Division Statistics and Research |
| 2. Henk Bhagwandin | Fisheries Department; Fisheries and Aquaculture Officer |
| 3. Romario Mamatoe | Student; Anton de Kom University of Suriname |

List of stakeholders:

Position	
1. K. Brandon	Boat owner / licensed fisherman
2. J. Irokarso	Boat owner / licensed fisherman
3. T. Mohamed	Boat owner / licensed fisherman
4. C. Arupa	Boat owner / licensed fisherman
5. T.K. Chatram	Boat owner / licensed fisherman
6. N. Ituaru	Boat owner / licensed fisherman
7. S. Singh	Boat owner / licensed fisherman
8. D. Alli	Boat owner / licensed fisherman
9. R. Deuw	Boat owner / licensed fisherman
10. A. Persaud	Boat owner / licensed fisherman
11. D. Singh	Boat owner / licensed fisherman
12. Y. Bhomoo	Boat owner / licensed fisherman
13. D. Bhatram	Boat owner / licensed fisherman
14. A. Nazim	Boat owner / licensed fisherman
15. R. Kartonidjojo	Boat owner / licensed fisherman
16. K Gajadien	Data collector Boskamp

Issues Identification (District of Saramacca / Boskamp)

1. Jetty / landing site is completely demolished. ●●●●●●●●●●●●●●●●
2. No potable water available from tap water system ●●●●●●●●●●●●●●●●
3. No first aid station / post or polyclinic present
4. No schools ●●
5. Pollution ●●
6. Finance, availability of credit
7. Wooden poles for attaching seine nets are required
8. Control; surveillance of licence conditions
9. Piracy
10. Low profit / earnings
11. Legal residency of fishermen
12. Provision of ice
13. Expansion of the village
14. Poor facilities in general
15. Provision of fuel

Priority actions (District of Saramacca / Boskamp)

1. Potable water – a. Government should take action on this; repairing the water source at Boskamp. The water source is situated 1 km from Boskamp. Installation of a water filter system on the source is required.
2. Jetty / landing site. A. Concrete jetty. B. Raising the level of the path that functions as a dam in the village and thus preventing flooding at high tide in the village.

3. District of Coronie

Facilitators:

- | | |
|--------------------|---|
| 1. Mario Yspol | Fisheries Department; Head Division Statistics and Research |
| 2. Henk Bhagwandin | Fisheries Department; Fisheries and Aquaculture officer |
| 3. Romario Mamatoe | Student; Anton de Kom University, Suriname |

List of stakeholders:

	Position
1. Mrs. Rozenblad	Data collector district of Coronie
2. Morad, D.	Boat owner / licensed fisherman
3. Ethnel, S.	Boat owner / licensed fisherman
4. Gonzalvez, O.	Boat owner / licensed fisherman
5. Maduban, L.	Boat owner / licensed fisherman
6. Molly, W.	Boat owner / licensed fisherman
7. William, S.	Boat owner / licensed fisherman
8. Velter, J.	Boat owner / licensed fisherman
9. Kemper, I.	Government Representative
10. Wilson, G.	Boat owner / licensed fisherman
11. Tomasari, H.	Boat owner / licensed fisherman
12. Ritfeld, E.	Processor
13. Hoop, M.	Ministry of Agriculture
14. Donald, I.	Boat owner / licensed fisherman
15. Pawirodikromo, J.	Boat owner / licensed fisherman
16. Sion, B.	Boat owner / licensed fisherman
17. Trustfull, E.	Retired data collector district Coronie
18. Mr. Donald Iris	Boat owner / licensed fisherman

Issues (District of Coronie)

1. Dyke, ocean wall construction and possible closing off of the Totness freshwater channel. ● ● ● ● ● ● ● ●
2. Poor market possibilities in district of Coronie ● ● ● ● ● ●
3. Financing and availability of credits for investments. ● ● ● ● ● ● ●
4. Ice factory in very poor condition. ● ●
5. Inputs ● ●
6. No control / surveillance ●
7. Piracy ●
8. Closing off the freshwater channel by State Oil Company Suriname N.V.
9. IUU fishing
10. Fishery type “Njawarie” problem; worse than monofilament nets.
11. Shooting of / hunting of Red Ibis birds in the coastal areas
12. Depletion of the (mud) crab population since construction of the sea wall.
13. Seabob trawling activities
14. Insurance for fishermen / social services
15. Poor organization factor
16. Lack of workers within the fisheries
17. Faster processing and issuing of fishing licenses

Priority actions (District of Coronie)

1. Sea wall construction – a. Organize a meeting with key stakeholders: Fishermen; Ministry of Regional Development; District commissioners; Ministry of Public Works; Ministry of Agriculture; Ministry of Physical Planning, Land and Forestry, Ministry of Labour, Technological Development and Environment. Construction companies: Sunecon; NIMOS, National Institute for Environmental Development Suriname; Contractors; European Development Fund (EDF), IDB.
2. Finance and poor market opportunities for fishermen. Develop a policy on financing; facilitating the fisher community; Getting organized: establishment of a fisher folk organization required.

4. District of Nickerie

Facilitators:

1. Mario Yspol Fisheries Department; Head Division Statistics and Research
2. Henk Bhagwandin Fisheries Department; Fisheries and Aquaculture Officer
3. Romario Mamatoe Student; Anton de Kom University, Suriname

List of stakeholders:

1. .Alimoersid, S. Data collector Fisheries Department District Nickerie
2. Akbarkhan F. Boat owner / licensed fisherman
3. Ramdin J. Boat owner / licensed fisherman
4. Ferozshaw. Boat owner / licensed fisherman
5. Manilall R. Boat owner / licensed fisherman
6. Ramda J. worker
7. Bhawan R. Boat owner / licensed fisherman
8. Kunjohn J. Worker
9. Star A. Boat owner / licensed fisherman
10. Boyke M. Boat owner / licensed fisherman
11. Djosetro R. Boat owner / licensed fisherman
12. Kartosentiko S. Data collector Fisheries Department District Nickerie
13. Soediredjo L. Boat owner / licensed fisherman

Issues (District of Nickerie)

1. Low purchase / buying up / Market price for fish. ●●●●●
2. Control and surveillance. ●●●●
3. SKB - Fishery type: Illegal boats fishing with nets with small mesh size. ●●
4. Pollution: Oil discharged into the Nickerie River; Litter dumped in the river and in channels.
5. Piracy
6. High fuel prices
7. Input problem: nets; ropes; engines; etc.
8. Credit facilities especially for fishermen / with flexible terms. ●
9. Driftnets / SK boats destroying the construction? of fishermen. SK licenses are rented to fishermen from Guyana; No landings in district of Nickerie.
10. Supply of poles for construction (Fykenet). ●
11. Wood type: Greenheart needed for boat construction.
12. Coastal erosion in district of Nickerie
13. Pin Seine, "Njawarie" problem (absolutely not sustainable type of fishery)
14. Seabob trawling activities – Bycatch: lower catches when trawling activities take place in fishing area of artisanal fishermen.
15. Rehabilitation / improvement of landing site: light and watchman

Priority actions (District of Nickerie)

1. Control / Surveillance – A. Involvement of artisanal fishermen (fish and shrimp) in control activities; Installation of a complaints centre. B. Ministry needs a boat for control and surveillance activities at sea. C. Control and surveillance activities with relevant authorities three times a week. D. Extensive control: once a month; E. Watch -post at the landing site.
2. Low market price for fish. A. The government needs to determine the market price for fish to be exported. B. Create export possibilities for district of Nickerie via port of Nickerie in order to increase sales.

6. Fisheries Department

Facilitators

- Mario Yspol Fisheries Department; Head Statistics and Research
- Zojindra Arjune Fisheries Officer

Position

Staff

- | | |
|--------------------------|------------------------------|
| 1. R. Asraf | Policy employee |
| 2. C Schet | Head Personnel Division |
| 3. K. Rattan | Vessel Monitoring System |
| 4. S. Kalicharan-Polar | Vessel Monitoring System |
| 5. S. Randjietsing | Statistics and Research |
| 6. P. Amritpersad | Monitoring and Inspection |
| 7. A. Chotkan | Head Aquaculture |
| 8. M. Amritpersad-Cordua | Library |
| 9. M. Wirjodirjo | Coastal and inland Fisheries |

Issues (Fisheries Department)

1. Poor remuneration system. ●●●●
2. Low team spirit. ●●●●
3. Personnel: Lack of personnel at the higher level / having a university degree ●●
4. Poor communication between personnel
5. No possibilities for career development. ●
6. No implementation of policy
7. No decentralization of decision making
8. No incentives for) motivating work attitude. ●
9. Deception at personnel policy making level. ●●
10. No transparency. ●
11. No respect from the fisheries sector for personnel / Fisheries Department. ●
12. Bad working environment. ●
13. Too much bureaucracy. ●
14. Indistinct, vague structures present

Priority actions (Fisheries Department)

1. Low team spirit
A. Develop team building activities
B. Develop clear mission and vision
C. Impart communicative skills to personnel
D. Tackle problems collectively
2. Poor Remuneration system
A. Evaluation of current personnel remuneration system and making adjustments to it.
B. Introduction of incentives
C. Better appreciation of the work done

Appendix 9 - Baseline Report

Prepared by Henk Bhagwandin
Ministry of Agriculture, Animal Husbandry and Fisheries
Fisheries Department
Paramaribo - Suriname

Background

Suriname is located in the north-eastern part of South America with the following geographic coordinates: 4°00'N 56°00'W; Guyana is on its western border and French Guiana is on the east; the Atlantic Ocean is to the north and Brazil is to the south. It is mostly covered by tropical rain forest, containing a great diversity of flora and fauna. Most of its population live along the coast. Suriname has a coastline of 380 km and a population of 593,910 (Mid-Year Population 2011, Bureau of Statistics). The territorial waters and the Economic Zone (Act of 14 April 1978 regarding extension of the territorial waters of the Republic of Suriname and the establishment of the bordering Economic Zone (SB 1978 no. 26)) cover 8,999 km² and 119,050 km² respectively. Suriname became independent in 1975 and is a member of the Caribbean Community (CARICOM) and also of the Union of South American Nations (UNASUR).

The country has seven (7) major rivers which form four (4) major estuaries: from west to east they are the Corantijn River (on the border with Guyana) and the Nickerie River (which enter the Atlantic Ocean in close proximity to form the Corantijn - Nickerie estuary); the Coppename River and the Saramacca River (which enter in close proximity to form the Coppename - Saramacca estuary); the Suriname River and the Commewijne River (which enter in close proximity to form the Suriname-Commewijne estuary) and the Marowijne River (on the border with French Guiana which forms the Marowijne estuary where it joins the Atlantic Ocean).

On average, annually two rainy seasons can be observed, one from December to February and the other from May to August. During the rainy season the fresh water reaches far offshore, causing the marine fauna to withdraw to the outer shelf, while the coastal zone is invaded by fresh water fauna and the brackish-water fauna is displaced offshore, at least to (but often beyond) a depth of 20m. During the dry season this phenomenon is reversed and the marine fauna moves towards the estuaries. (Cervigón *et al.*, 1993).

The shelf is characterized by 3 types of habitat:

- 1 A belt of mud that extends from the coastline to various depths depending on the zone. For Suriname this belt may reach a depth of 30 m and 40 km offshore.
- 2 A belt of muddy sand or sand
- 3 A belt of relatively hard substrate consisting of sand or shell debris.

Description of the Fisheries

In terms of scale, the fishing fleet of Suriname may be divided into industrial and artisanal. In terms of fishing grounds, the fishing industry of Suriname may be divided into marine (the Atlantic Ocean) and riverine.

The fishing fleet consists of industrial boats (with long trips lasting several weeks) and commercial small-scale vessels with fishing trips varying between 1-12 days. It is estimated that the small-scale fleet accounts for about 70% of the total landings, while the remaining 30% is attributed to the industrial vessels.

The Fleet

All the industrial fishing vessels in Suriname operate in the marine fishery, while the artisanal fleet operates both in the coastal and inland waters.

The fleet consists of trawlers, snapper boats, open or decked wooden vessels and canoes (see Table 1); they are multi-species and multi-gear. Trawl net operators include shrimp trawlers and different types of finfish trawlers. Large stern trawlers using high opening trawls were introduced in 1993; part of their catch consists of finfish species (small sandy-bottom demersal fish) that had been little exploited by other vessels; the other part includes soft-bottom demersal fish that had been historically exploited; this fleet catches both demersal and pelagic species. There are differences in trip length: an average trip is two weeks. Licenses are given to these boats to operate outside the 15 fathom line over the entire Economic Zone. In 2002, three stern trawlers started to exploit small pelagic fish, which led to bycatch of large coastal pelagic and some demersal species. These vessels are still in operation.

With regard to basic statistics directly relating to resource exploitation, the two most significant systems are the two statistical monitoring systems, for industrial and small-scale fisheries respectively, currently operated by the Fisheries Department.

There is a licensing scheme in force covering both fleets. It is known that all industrial vessels have a fishing license which allows them to operate. The license also obliges the company to regularly submit landing declaration forms at the end of each trip. These forms are rather limited in scope but they do include quantities of landings by species and effective fishing effort.

Most of the small-scale boats operate under license but another (smaller) proportion of them do not. Small-scale fisheries are more difficult to monitor statistically due to their number (1000-1250 boats) and their dispersion.

1. Is there a Management Plan for the Fishery?

In 2000, a draft Fisheries Management Plan was updated by Pierre Charlier (2000) based on a draft from 1998. The draft from 1998 was based on an earlier version prepared in 1993 and on information gathered until mid- 1998. The draft Fisheries Management Plan from 2000 was based on new data analyses and results from the regional ad hoc working group on shrimp and ground- fish fisheries in the Guiana – Brazil continental shelf from 1998 to 2000. In 2003, the draft Fisheries Management Plan was reviewed by the Caribbean Regional Fisheries Mechanism (CRFM) but was unfortunately never updated by the Fisheries Department of Suriname. The current fisheries legislation in force dates back to 1980 and does not require an effective fisheries management plan. However, the draft updated fisheries legislation; a new law on fisheries (which still has to be passed by the National Assembly) provides the general framework for the management of fisheries in Suriname.

In November 2011, Suriname became the first tropical shrimp fishery of Atlantic Seabob (*Xyphopenaeus kroyeri*) in the world to be certified by the Marine Stewardship Council (MSC). Therefore Suriname has also had its first ever fishery-specific management plan for the Atlantic seabob implemented for the period 2010 – 2015. The seabob management plan will be evaluated at least on a yearly basis by the Fisheries Department in consultation with the key stakeholders. The Ministry of Agriculture, Animal Husbandry and Fisheries will be able to accept proposed changes in the management plan on the basis of scientific research or on its own initiative regarding the evaluation.

2. Where there is no management plan for the fishery are there stated or de facto objectives for the fishery?

In general, the fisheries sub-sector has always played a major role in domestic food supply and foreign exchange earnings. Traditionally it has been dominated by shrimp exports ranked as the number one export earner within the agricultural sector. The dominance of this shrimp export market is now making way for the finfish industry which has increased some 70 percent over the last six years. The Ministry is committed to making the necessary interventions so as to increase the contribution of the fisheries sub-sector. These include the following:

- 1 The formulation of a Fisheries Management Plan, and
- 2 The updating of fishery legislation and the strengthening of the institutional capacity of the Fisheries Department.
- 3 Promotion of and support for new fishing techniques to increase production on a sustainable level. The exploitation of the non-traditional species such as small and large pelagic fish species is promoted as well as value-added products.
- 4 The government policy is ecologically focusing on “green” production.
- 5 Special attention will be paid to establishing a coastguard to protect the resources, the fishermen and to prevent illegal practices at sea.

The national fisheries policy and management objectives where in general there is no management plan can be expressed as follows:

- a) Assurance of reasonable animal proteins (fish production) for the local population. Food security and safety are leading themes of the policy.
- b) Provision of jobs. Creation of more qualitative job opportunities and reasonable incomes. Diversity of the sector is also important.
- c) Contribution to the GDP of the country.
- d) Contribution to the national budget and income tax.

Global objectives that are pursued by fishery management as a whole in Suriname:

- 1 Long- term conservation of the resources with reference to currently exploited potential resources and maintaining the biodiversity.
- 2 Maximization of long-term production of fish, contribution of the protein supply to local market; production of affordable protein. These objectives can be seen as different expressions of achieving Maximum Sustainable Yield (MSY). Worth mentioning is to consider the feasibility of implementation of ecologically sound management practices of the natural resources as published by Holt and Talbot (1978) in *New principles for conservation of wild living resources*.
- 3 Maximization of the long -term Economic Yield (MEY)
- 4 Contribution to employment; maximization of the number of households making a living out of the fishery, directly or indirectly maintaining or improving living standards of the communities that depend on fishing and related activities.
- 5 Contribution to trade balance; generation of foreign currency and maximization of export.

3. What is the legal framework within which the fishery is operating?

The legislation governing fisheries in Suriname are:

- a) The Fish Stock Protection Act: Effective in 1961. It was last revised in 2001. This Act contains the procedures for obtaining fishing licenses in the inland waters of Suriname.
- b) The Sea Fisheries Act (SB 1980 no. 144). Effective in 1980 and was last revised in 2001. This Act contains the procedure for fishing in the Territorial Waters and the Economic Zone. Points of particular interest are: the Council of Fishery Advisory Board; the Fish Stock Protection Act, 1961 (GB 1961 no. 44).
- c) The fish license conditions decree which is published annually. In this decree, as a result of the Sea Fisheries Act, conditions are determined for the Industrial and Coastal fishery.
- d) The Fish Inspection Act. Effective in 2000. This Act contains the guidelines for exporting fish and fish products to the European Union, Canada and the United States of America.
- e) The Fish Inspection Decree. Effective in 2002, this Decree is intended to implement some of the articles of the fish inspection act.
- f) Regulations regarding the Vessel Monitoring System (VMS).
- g) Regulations to prevent Illegal, Unreported and Unregulated (IUU) fishing.

The proposed new fisheries legislation will include provisions for the establishment of a Fisheries Advisory Board and the elaboration by the Fisheries Department of a Fisheries Management Plan to discuss management issues in detail and propose regulations on such matters as the classification of vessels and gear; the delimitation of fishing grounds, the implementation of closed seasons and/or areas, fishing rights, etc. which are already part of the current fisheries legislation.

On January 7th 2005 the Board of Deliberation for Coastal and Marine Fisheries was inaugurated at the Ministry of Agriculture, Animal Husbandry and Fisheries, according to Article 26 of the Sea Fisheries Act. The main duty of this board is to advise the Minister on fisheries matters such as licenses and fishing regulations. The sitting period of the board is 3 years, and since the termination of the sitting period in 2010 no new board has been installed or appointed.

Note: A draft legislation regarding coastal and inland navigation for specific regulations on the classification of vessels including fishing vessels has been formulated. This draft legislation is for screening purposes at the Ministry of Transport, Communication and Tourism.

4. What are the institutional and administrative frameworks for fisheries management in the country?

- a) The institutional and administrative frameworks for fisheries management include the Fisheries Department of the Ministry of Agriculture, Animal Husbandry and Fisheries (LVV), which manages the fisheries resources through its policy guidelines. Furthermore, this department is responsible for updating the Fisheries Law, issues licenses to fishermen annually and is also responsible for the license conditions or regulations. It also has responsibility for Monitoring, Control and Surveillance (MCS) making use of the Vessel Monitoring System (VMS), issuing catch certificates, and regular inspections e.g. fykenet.
- b) The Maritime Authority Suriname (MAS) which registers all fishing vessels, including fishing vessels flying the Surinamese flag in the central fishing register and also has responsibility for the annual inspection of the fishing vessels.
- c) The Suriname Navy under the Ministry of Defense, the Ministry of Justice and Police and the Ministry of Nature Conservation assist in Monitoring, Control and Surveillance for the Fisheries Department of the Ministry of Agriculture, Animal Husbandry and Fisheries. Furthermore, it is responsible for the enforcement of the provisions of the Fisheries law and regulations: I) The Fish Stock Protection Act, and II) The Sea Fisheries Act. The Fish Quality

Institute is responsible for the provisions incorporated into the Fish Inspection Act and Decree.

- d) The Ministry of Labor, Technological Development and Environment, and its National Institute for Environmental Development in Suriname for safeguarding the environment in general.
- e) The Ministry of Physical Planning, Land and Forestry which deals with the Fish Stock Protection Act; the law on Hunting; including protection of Sea Turtles, Mangrove forests (in the Coastal area) and also acts as the focal point for the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in Suriname. The Nature Conservation division which is responsible for control activities. Working partners are also some key stakeholders, WWF, Conservation International (CI) and Suriname Conservation Foundation (SCF) on ecosystem and fisheries- related matters.
- f) The Ministry of Foreign Affairs of Suriname works in close collaboration with the Fisheries Department of the Ministry of Agriculture, Animal Husbandry and Fisheries regarding fishing agreements between other countries and Suriname.

There is some interaction in the fisheries operations between Venezuela and Suriname. The fisheries treaty between Venezuela and the Republic of Suriname was signed in Caracas in 1986 and renewed with some modifications in 1990. By then Suriname authorized the operation of 100 Venezuelan snapper-fishing vessels in its EEZ. In 2010 the number of licenses issued for the snapper fleet was 65. The latest agreement was signed in 2007 and ratified in 2009. This agreement is legally valid only when ratified by Parliament. The duration of the agreement is two years.

5. Overview of the Fishery and the resources exploited.

5.1. Details of fishing gear used and areas fished.

The details of the fishing gear used and the areas fished have been derived from the license conditions. An overview has been given regarding the categories of fisheries. In Table 1 a summary has been given of the fishing gear and fishing area for the category of shrimp trawling: deep sea shrimp trawling and the Atlantic Seabob. In Table 2 a summary is provided for the fishing gear and fishing area for the category of fish trawling. In table 3 the fishing gear and fishing grounds is summarized for the category of line fishery.

A. Shrimp trawling

A1. Deep Sea Shrimp Bottom Trawling Category

Trawling areas: From line nominal to 45 fathom depth in Suriname waters.

Fishing Gear: Bottom Trawlers,

Characteristics: Body stretched : minimum 57 mm
 Wing Area stretched : minimum 57 mm
 Corner area stretched : minimum 57 mm
 Bag/sac stretched : minimum 45 mm

Nets should be equipped with an approved Turtle Excluder Device (TED).

Requirements: installation of a Vessel Monitoring System (VMS) on board.

Maximum engine power: 500 HP

A2. Deep Sea Shrimp Bottom Trawling

Trawling areas: from the line nominal to 15 fathom depth in Suriname waters.

Fishing gear, characteristics, requirements and maximum engine power are the same as the e category (a) Deep- Sea Shrimp Bottom Trawling with trawling areas of nominal 45 fathom depth.

A3. Trawling of Sea bob Shrimp (Xyphopenaeus kroyeri), with bycatch.

Fishing area is defined as follows: western fishing grounds: minimum 10 fathom depth to maximum 15 fathom depth. Eastern fishing grounds: minimum 10 fathom depth to 18 fathom depth.

Fishing gear, fishing net characteristics, requirements and maximum engine power are the same as (a) and (b).

The “Harvest Control Rule” is introduced for the Seabob shrimp trawling, where the number of fishing days is determined in the Seabob management plan.

B. Bottom Trawling Fishery Category

Trawling of demersal / ground -fishes.

Fishing gear: Bottom trawl, stern trawlers.

Net characteristics, allowable mesh sizes: Body: min. 12mm, wing: min. 160mm, corner: min.100mm, bag: min. 80mm.

Engine power: maximum 500HP.

Allowable number of days at sea: 200.

Fishing Area: from 15 fathom line minimum.

C. Large Pelagic Line Fishery Category.

Fishing gear: Lines

Allowable: Maximum 2000 horizontal lines, hook no. 5.

Maximum allowable engine power: 1000HP.

Fishing area: from the line minimum to 28 fathom depth.

D. Line Fishery Category

D1. Red Snapper Fishery

Allowable fishing gear: horizontal long lines and vertical hand lines.

Maximum allowable hooks: 2000 on horizontal long lines and 20 on vertical hand lines.

Hook size: 6, 7 and 8.

Maximum allowable engine power: 400 HP

Maximum length of vessel: 30 meters

Maximum allowable storage capacity: 40 tons, including ice and catch.

Fishing area: from the line equal to 15 fathom depth.

Requirement: Vessel Monitoring System

D2. Mackerel Fishery

Allowable fishing gear: horizontal long lines and hand lines

Maximum number of vertical hand lines: 14

Maximum number of hooks: 2000 on the horizontal long lines and 20 on the vertical hand lines.

Allowable hook size: 3,4,5,6 and 7

Maximum allowable engine power: 400 HP

Maximum vessel length: 30 meters

Maximum allowable storage capacity: 40 tons including fish and ice

Fishing area: from the line nominal to 10 fathom depth

Requirement: Vessel Monitoring System

E. Coast – and Sea Fisheries Category

E1. Fishing according to the trap principle (Dutch: schutbank)

Fishing gear: nets, locks (construction of traps)

Mesh size: minimum 5 cm or 2 inches stretched

Fishing area: area in agreement with the Fisheries Department between the coastline and the isobaths of 9 fathom depth.

Maximum allowable vertical hand lines: 14

Exception (closed): In the area of the Turtle Season and river mouths

Fishing season: Fishing allowed except in the Turtle season from 01 March – 31 July in the Turtle area: north of Galibi, 15 km west of Elanti with a width of 15 km.

E2. Fishing with drift nets.

Fishing gear: drift nets

Mesh size: minimum 8 inches stretched. 30% can consist of 5 inches or 6 inches stretched.

Total length of the net: max 2000m.

Fishing area: identical to E1.

Fishing season: identical to E1.

Not allowed: Monofilament nets.

*E3. Fishing of “Bangamary”, *Macrodon ancylodon*.*

Fishing gear: drift nets

Mesh size: Minimum 3 inches; length max. 2000 m

Fishing area: area as agreed with the Fisheries Department. Area between 3 and 5 fathom depth. Except in the Turtle area of the Turtle Season and river mouths.

Fishing season: Identical to E1.

Table 1. Summary of r fishing gear and fishing area for the shrimp trawling category

Shrimp Trawling			
	Deep- Sea Shrimp Trawling	Deep -Sea shrimp Trawling	Atlantic Sea Bob (<i>Xyphopenaeus kroyeri</i>)
Fishing area	From 45 fathom line, Suriname waters, Western Atlantic	From 15 fathom line, Suriname waters, Western Atlantic	West: Min. 10 fathom, max. 15 fathom East: Min.10 fathom, max. 18 fathom Suriname, Western Atlantic
Fishing Gear			
Type	Bottom trawler,	Bottom trawler	Twin rig otter trawl, Florida Type
Net characteristics:			
Body stretched	Minimum 57 mm	Minimum 57mm	Minimum 57mm
Wing area stretched	Minimum 57 mm	Minimum 57 mm	Minimum 57mm
Corner area stretched	Minimum 57 mm	Minimum 57 mm	Minimum 57mm
Bag/sac stretched	Minimum 45 mm	Minimum 45 mm	Minimum 45 mm
Net equipment	Approved TED	Approved TED	Approved TED
Installation on board	VMS	VMS	VMS
Maximum engine power	500 HP	500HP	500HP
Harvest Control Rule	-	-	According to Management Plan

Table 2. Summary of fishing gear and fishing area for fish trawling category

Fish Trawling	
	Ground- Fish Bottom Trawling
Fishing area	Fishing area: From 15 fathom line, Suriname waters, Western Atlantic
Fishing Gear	
Type	Bottom trawler, Stern Trawler
Net characteristics:	
Body stretched	Minimum 120 mm
Wing area stretched	Minimum 160 mm
Corner area stretched	Minimum 100 mm
Bag/sac stretched	Minimum 80 mm
Net equipment	
Installation on board	VMS
Maximum engine power	500 HP
Allowable number of days at sea	200

Table 3. Summary of the fishing gear and fishing grounds for the line fishery category

Line Fishery	Large Pelagic Line Fishery	Red Snapper Fishery	Mackerel Fishery
Fishing area	Fishing area: From 28 fathom line, Suriname waters, Western Atlantic	From 15 fathom line, Suriname waters, Western Atlantic	From 10 fathom line, Suriname waters, Western Atlantic
Fishing Gear		Venezuelan Boats	Venezuelan?
Type	Lines	Horizontal long lines and vertical hand lines	Horizontal long lines and vertical hand lines
Line characteristics:			
Allowable	Maximum 2000 horizontal lines		
Max. allowable vertical hand lines	-	14	14
Minimum allowable hooks	-	2000 on horizontal long lines 20 on vertical hand lines	2000 on horizontal long lines 20 on vertical hand lines
Hook size no.	5	6,7 and 8	3,4,5,6 and 7
Installation on board	VMS	VMS	VMS
Maximum engine power	1000 HP	400HP	400HP
Maximum vessel length	-	30 meters	30 meters
Maximum allowable storage cap.	-	40 tons including ice and fish	40 tons including ice and fish

5.2. Give brief information on the resources exploited

Information on the resources exploited is summarised below in Table 4. The resources can be categorised into 14 units on the basis of similar characteristics of fishing grounds, ecology, and exploitation strategy (Charlier, 2000).

Table 4. Classification of fishery resources into units.

CATEGORY / UNIT		MAIN SPECIES	OTHER SPECIES
01	Large demersal fish	<i>Cynoscion acoupa</i> (Bang bang) <i>Cynoscion steindachneri</i> (Weti weti) <i>Arius parkeri</i> , <i>Arius proops</i>	<i>Megalops atlanticus</i> (Trapoen) <i>Epinephelus itajara</i> (Gran morgoe) <i>Lobotes surinamensis</i>
02	Small soft-bottom demersal fish	<i>Macrodon ancylodon</i> (Dagoetifi), <i>Cynoscion virescens</i> (Kandratiki), <i>Nebris microps</i> (botervis), <i>Micropogon furnieri</i> (Croaker)	<i>Larimus breviceps</i> <i>Arius</i> spp. (Catfish) <i>Bagre</i> spp.
03	Small sandy-bottom demersal fish	<i>Lutjanus synagris</i> (Lane snapper)	<i>Haemulon</i> spp. (Grunt) <i>Calamus</i> spp. (Spari).
04	Red snapper & deep sea fish	<i>Lutjanus purpureus</i> (Red snapper)	<i>Rhomboplites aurorubens</i> (Red snapper) (Serranidae)
05	Large pelagic fish	<i>Scombridae</i>	<i>Sphyrnaeidae</i> , <i>Caranx ippos</i> (Crevalle jack)
06	Small pelagic fish	<i>Engraulidae</i> , <i>Clupeidae</i>	<i>Carangidae</i>
07	Brackish water fish	<i>Mugilidae</i> , <i>Centropomidae</i> <i>Tilapia mossambica</i>	<i>Arius passany</i> (Pani pani), <i>Arius couma</i> (Kuma kuma), <i>Elops saurus</i> (Dagoe boi)
08	River fish	<i>Plagioscion surinamensis</i> (Koebi)	
09	Freshwater fish	<i>Callichthyidae</i> , <i>Erithrinidae</i>	<i>Aequidens</i> spp.
10	Estuarine shrimp	<i>Xyphopeneus kroyeri</i> (Seabob)	<i>Nematopalaemon schmitti</i>
11	Penaeid shrimp	<i>Penaeus subtilis</i> (Southern brown shrimp), <i>Penaeus brasiliensis</i> (Red spotted shrimp)	<i>Penaeus schmitti</i> (Southern white shrimp) <i>Penaeus notialis</i> (Southern pink shrimp). By catch: Snappers, Croakers, grunt, crabs
12	Deep- sea shrimp	<i>Solenacera</i> sp, Scarlet shrimp, <i>Pleoticus robustus</i> (Roya red shrimp).	By catch: Snappers, Croakers, grunt, crabs and Jacks
13	Crabs	<i>Ucides cordatus</i> (Mud crab)	Other crabs
14	Cephalopods		

5.3. Number of fishers and land-based workers by sector (indicate full -time and part-time)

In the industrial fishery the number of people in direct and indirect employment in this fishery is 1659. The direct fishers or crew going to sea are estimated to be about 659. The people in indirect employment in this fishery are mainly the processors, administrative, financial and maintenance staff. The number in direct employment within the artisanal fishery is 9039 which includes fishermen, artisanal processors, markets and fish shops. The total share of the artisanal sector in employment within the fisheries is the highest, at 84.5%.

Table5. Employment statistics within the fisheries (data from Fisheries Department)

Industrial fisheries	Licenses 2011	Crew. Boat	Total employment Ft: Full- time Pt: Part- time
Shrimp trawlers	26	7	182 (Ft)
Seabob trawlers	19	7	133 (Ft)
Fish trawlers	21	8	168 (Ft)
Fish trawlers L pelagic	17	8	136 (Ft)
Snapper & Mackerel	40	7	280 (Ft)
Total industrial fleet			899
Artisanal			
SK (O.G. + G.G.+Bangamary)	317	5	1585 (Ft)
Fyke/seinenet	340	4	1360 (Ft)
Line	15	2	30 (Ft)
Drifting gill net	80	5	400 (Ft)
Sport (BV;sport)	362	4	1448 (Ft)
Fixed gill net (Spannet)	14	2	28 (Ft)
Dragnet (Sleepnet)	-	-	-
Riverseine (BV) (Zeegnet)	20	5	100 (Ft)
Fixed gill net (Kieuwnet)	86	3	258 (Ft)
Processing companies	16		1000 (Ft, Lb)
Markets			300 (Ft, Lb)
Fish shops			25 (Ft, Lb)
Artisanal processors			1000 (Ft, Lb)
Fishers hinterland			1000 (Pt)
Total sector			9433
Fishers, on board / offshore	7108		
Land- based workers	2325		

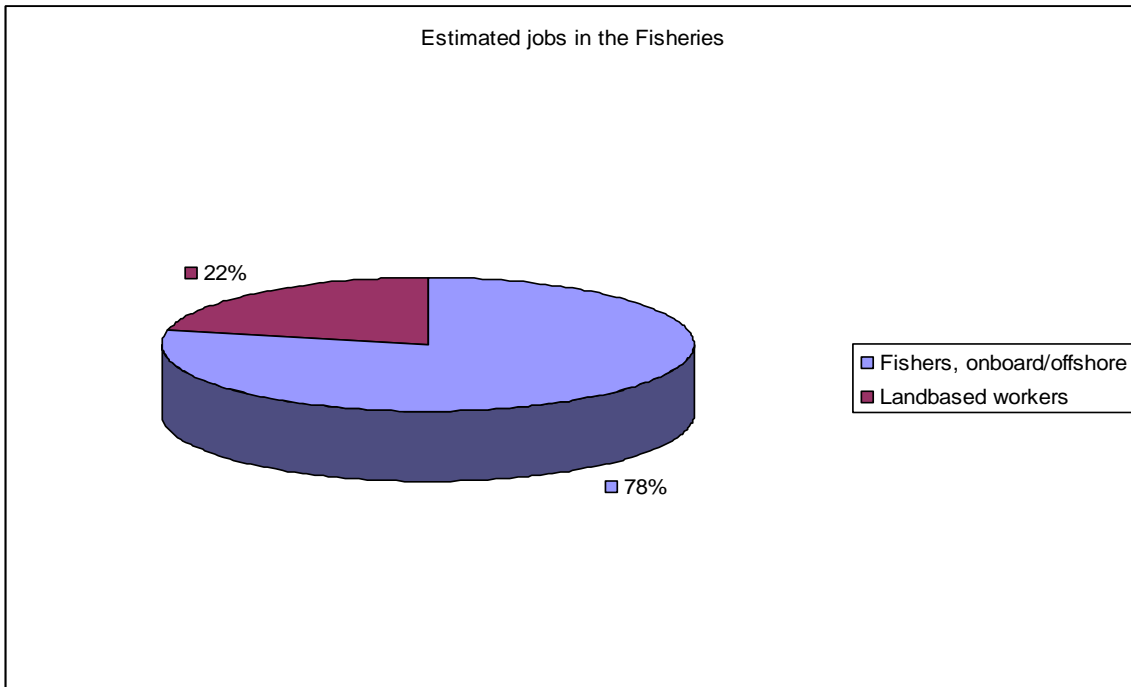


Figure 1. Percentage of number of fishers to land- based workers.

5.4. Provide information on direct interactions with other fisheries e.g. competing for same target species, target species taken as by-catch in another fishery, by-catch in this fishery affecting another fishery

Within the shrimp fisheries the following interactions can occur:

- a) The interaction between the fish trawl of the “ small pelagic trawl fishery category” and the shrimp trawl operating fleet at the same depth from 15 fathom, affected each other’s stock. Previously, shrimp trawling companies accused the fish trawling fleet of fishing illegally in shallow waters, thus creating a high rate of fish mortality and catching under-sized fishes; furthermore, they use very high engine power. This had a negative impact on the nursery grounds and recruitment of the shrimp populations. With the introduction of the Vessel Monitoring System (VMS) which is mandatory by law, the Fisheries Department can take stringent measures against those not fishing or operating in accordance with the license conditions.
- b) The deep- sea *Penaeus* spp. trawlers believe that the current poor catches of large marine shrimps are the result of the introduction of the seabob (*Xyphopenaeus kroyeri*) trawling fleet. Therefore scientific research regarding the interaction between the deep- sea shrimp trawling and the seabob trawling is required.
- c) Artisanal fishermen of the Suriname River are complaining about lower catches and thus declining stocks due to the introduction of fish and shrimp trawlers.
- d) As we might have noticed the trawling industry is not a selective one. When investigating the bycatch composition of the trawlers a significant amount of juvenile fishes are caught in the nets and are discarded (Chin-A-Lin, 1999; Power, 2010). Research on the Bycatch Reduction Device for the trawling fleet in Suriname should be classified as a high priority.
- e) Damage also appears on fishing nets e.g. gill nets of the artisanal fishermen caused by shrimp and fish trawlers.
- f) The Sport fishing category where a licence is required indicates the ability to fish with nets. This category seriously conflicts with the inland fisheries where native villages get their main

source of income and protein. However, the licence conditions do not allow fishing within a radius of 500m.

- g) Furthermore, it is stated that the trap fishery type (schutbank), fykenet / seine net fishery is also in conflict with hatchery and nursery grounds (to a minor level) due to the fact that mangrove trees are cut for their angle position in the river rein? or river mouth area (personal comm. with the Ministry of Physical Planning, Land and Forestry). The artisanal fisheries use the near shore, estuaries and lagoon as their fishing area. These areas are known to be the breeding and nursery grounds for the target species of the industrial fishing and shrimp fisheries (Lowe-McConnell, 1987). The juveniles or the recruiting stages of the target species are continuously harvested by the artisanal fishermen and these affect the recruitments in the fisheries.

6. Available scientific and traditional knowledge on the resources

6.1 Brief biology of the major fish species

The biology of the species is extensively described in the following FAO species identification guide for fishery purposes:

- a) The living marine resources of the Western Central Atlantic, Volume 1, 2 and 3 (Carpenter, 2002).
- b) Field guide to the commercial Marine and Brackish-water resources of the northern coast of South America (Cervigón *et al.*, 1993).
- c) Japan Fishery Resource Research Center: Crustaceans and Mollusks trawled off Suriname and French Guiana (Takeda *et al.*, 1983).
- d) Japan Fishery Resource Research Center: Fishes trawled off Suriname and French Guiana (Uyeno *et al.*, 1983).
- e) Ecological studies in tropical fish communities (Lowe-McConnell, 1987).

The *Xyphopeneus kroyeri* (seabob) and the *Palaemonid Nematopalaemon schmitti* (witi-bere) are distributed in shallow marine waters (5-20 meters) and enter the estuaries during the spawning season (Cervigón *et al.*, 1993; Carpenter, 2002).

The two main *Penaeus* species exploited are *Penaeus subtilis* (Brown shrimp) and *Penaeus brasiliensis* (Hopper). Two other species make up a minor part of the catch (*P. notialis* and *P. schmitti*). Their biological cycle involves spawning at sea, migration of the larvae towards the shoreline, development of post-larvae to juveniles in brackish water, and migration of juveniles back to deeper marine areas. Only the brown shrimp seems to complete its entire cycle in Suriname. Brackish lagoons serve as nurseries. (P. Chalier 2000). The *Penaeus brasiliensis* inhabits shelf areas from the coastline to depths of about 65 m, most abundant between 45 and 65 m on moderately firm bottoms of mud mixed with sand; juveniles and sub-adults may be found on soft mud bottoms. Adults and juveniles are caught at night (Carpenter, 2002).

Red snapper is distributed mainly between the depths of 40 and 100 metres, on hard (rocky) bottoms, often around ancient (drowned) coral reefs. Juveniles are found at lesser depths, from 20 metres (Cervigón *et al.*, 1993).

6.2 Geographical distribution of the species

In general, 4 types of communities can be recognized according to Lowe-McConnell (1987):

1.) Zone I: The “Brown Fish” zone; dominated by yellow or yellow-brown species. This zone hosts permanently estuarine species, juveniles of marine species coming to feed in those nutrient- rich waters. The most important commercial species occurring in this shallow zone include large catfishes of the family Ariidae, mainly *Arius parkeri*, *A. comma* and *A. passany*. The white shrimp, *Peanaeus schmitti* is also present.

2.) Zone II: The “Golden Fish” zone, which occupies the belt of hard or semi-hard sand and shell substrate. This zone hosts a large variety of species belonging to the family Serranidae (groupers), Haemulidae (grunts), Lutjanidae (snappers), Mullidae (mullets), Scorpaenidae (rockfishes) and others like Spanish Mackerel (*Scomberomorus brasiliensis*) and Jacks (Carangidae). In Suriname this zone begins at depths between 20 and 25 meters. Shrimp species in this zone: *Penaeus subtilis*, *P. brasiliensis* and *P. notialis*.

3.) Zone III: The “Silver Fish” (continental slope) zone, with rocky or coralline substrate hosts species of great commercial importance: the Red snapper (*Lutjanus purpureus*), the yellow edge grouper *Epinephelus flavolimbatus*, Vermillion snapper *Rhomboplites aurorubens*.

4.) Zone IV: The “Red Fish” (Coastal upwelling) zone, intensively exploited by artisanal and industrial fishers: Red spotted shrimp (*Peanaeus brasiliensis*) and *Lutjanus synagris* (snappers).

6.3 Estimated status of the stocks (especially over the last 5 years).

Data on MSY is summarized in the Table below as indicator for the status of the stocks

Table 7. MSY estimates available for some of the fishery resources in Suriname

Management unit included	Inshore demersals		Pelagics		Deep- sea demersals	
	Large 01	Small 02 + 03	Large 06	Small 07	Red snapper 04	Other 03 + 04
Depth zone (m)	0-30	0-50	0-50	0-50	50-100	50-100
Area (km ²)	20,900	39,000	39,000	39,000	17,800	17,800
MSY estimates from surveys (tons)						
Bonito (1980-81)	10-23,000					
Fridtjof Nansen (1988)	16,000 (12,6-21,000)		10,000	200,000	3,200	1,200
MSY estimates from densities comparisons (MSY / km²)						
Snappers & groupers :	0.1 T/km ² (1) 0.2 T/km ² (2) 0.4 T/km ² (3)				1,780 3,560 7,120	
All demersal food fish 0-50 m	1.2 T/km ² (4)		46,800			
All fish, 0-15 m	8.0 T/km ² (5)		80,000			
Proposed MSY	5,000	11,000	10,000	200,000	3,000	1,000

Source: Charlier, 2000. The overall status of the resources indicates a fully exploited situation except for the Atlantic seabob fishery where the latest stock assessment showed a stable status for the stock.

Table 8. Status of the selected fishery resource (Charlier, 2000)

Category	Resource status
Large demersal fish	Production already close to or above MSY in 1991-1993; In 1998, declining catch rates indicate that resource is overfished.
Small soft-bottom demersal fish	Close to full exploitation
Small sandy-bottom demersal fish	Fishing effort considerable due to the introduction of stern trawlers, beyond MSY level: fully exploited
Red snapper and deep sea demersals	Fully – overexploited
Large pelagic fish	Fully exploited
Small pelagic fish	Fully exploited
Sea bob	Stable (MSY 10.000MT, current yield 7584 MT) (CRFM, 2011)
Penaeus shrimp	Overexploited
Deep sea shrimp	Overexploited

6.4 Provide information on any direct interactions with the ecosystem (impact on sea bottom, pollution caused by the fishery, effects of coastal zone development or land-based pollution, etc)

The recent interactions of interest are summarized in Table 9.

Table 9. Interactions with the ecosystem

Interaction factor	Impact
Fish/shrimp trawlers and artisanal fishermen	Activities can have severe impact on sea bottom, but also water pollution and pollution at the landing sites (Dellapenna <i>et al.</i> , 2006; Goni, 1998; Gillet, 2008; Power, 2010).
Artisanal fishermen	Cutting of mangrove trees. Personal comm. Fishermen, district commissioner, Ministry of RGB.
Industrial and artisanal processors	Causes water pollution; severe impact on ecosystem.
Coastal zone development (Coronie dyke construction)	Impact on natural habitat development in coastal area; impact on ecosystem, feeding and breeding grounds of birds, spawning – and nursery grounds of fishes.
Land -based pollution	Mining. Land, water, atmosphere and ecosystem pollution with mercury, in the inland, sea / coastal areas and also Paramaribo (Ouboter <i>et al.</i> , 2012).
(Eco)tourism	Pollution, impact on the ecosystem (Gaul, 2003).

6.5 Summarize the traditional knowledge about the fishery and the resources exploited

Traditional knowledge about the fishery and resources exploited is mostly within the indigenous Indians and other artisanal fishermen in Suriname. They have knowledge about the fishing grounds, appropriate fishing techniques for each category of species, their seasons, their biology, proper management and how to maintain the resources at a sustainable level.

7. Annual catches from earliest time available (by species or lowest available taxonomic group where landings are multispecies).

The shrimp and fish production data were partly extracted from FAO yearbooks, Fishery Statistics from 1971 – 2010; data was also obtained from the Statistics and Research division of the Fisheries Department. The highest *Penaeus* production was recorded in the late 1970s, amounting to 6000 MT. Literature indicates that Suriname had by then obtained permission to fish in the waters of French Guiana and Brazil. Seabob trawling started in Suriname in 1996 with the highest production of 12000 MT obtained from 24 licenses.

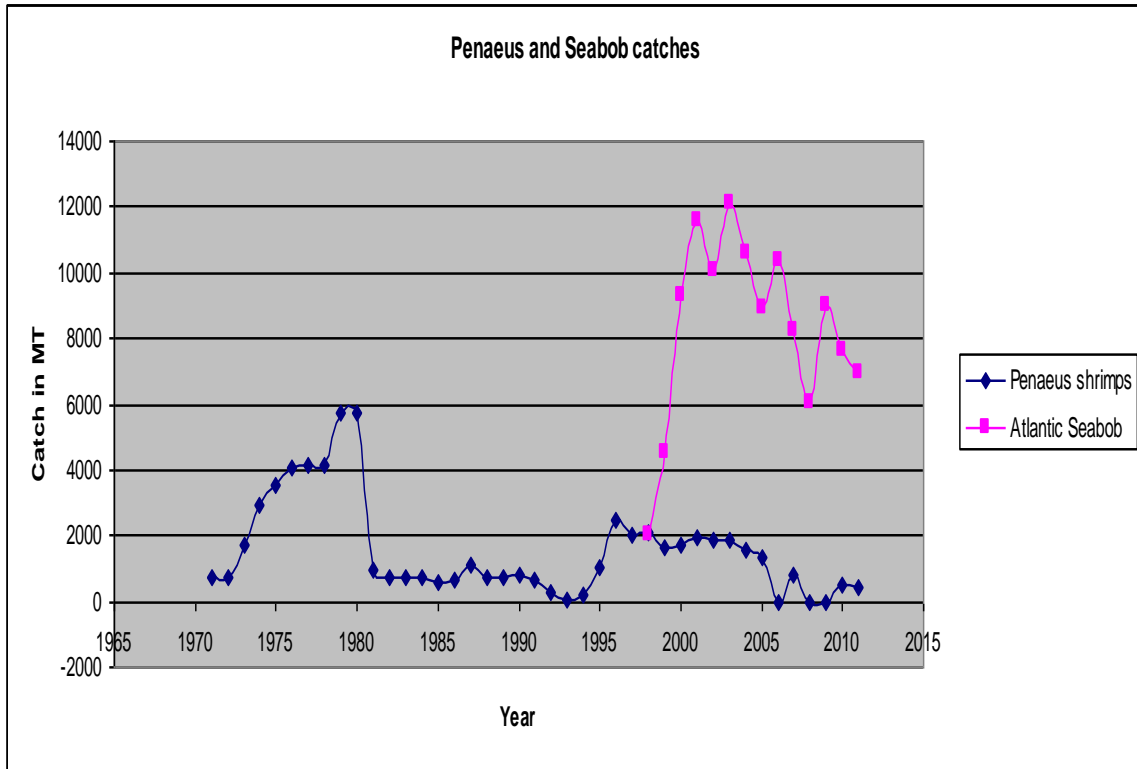


Figure 2. Penaeus and seabob production

Data on licenses is available from 1994 onwards.

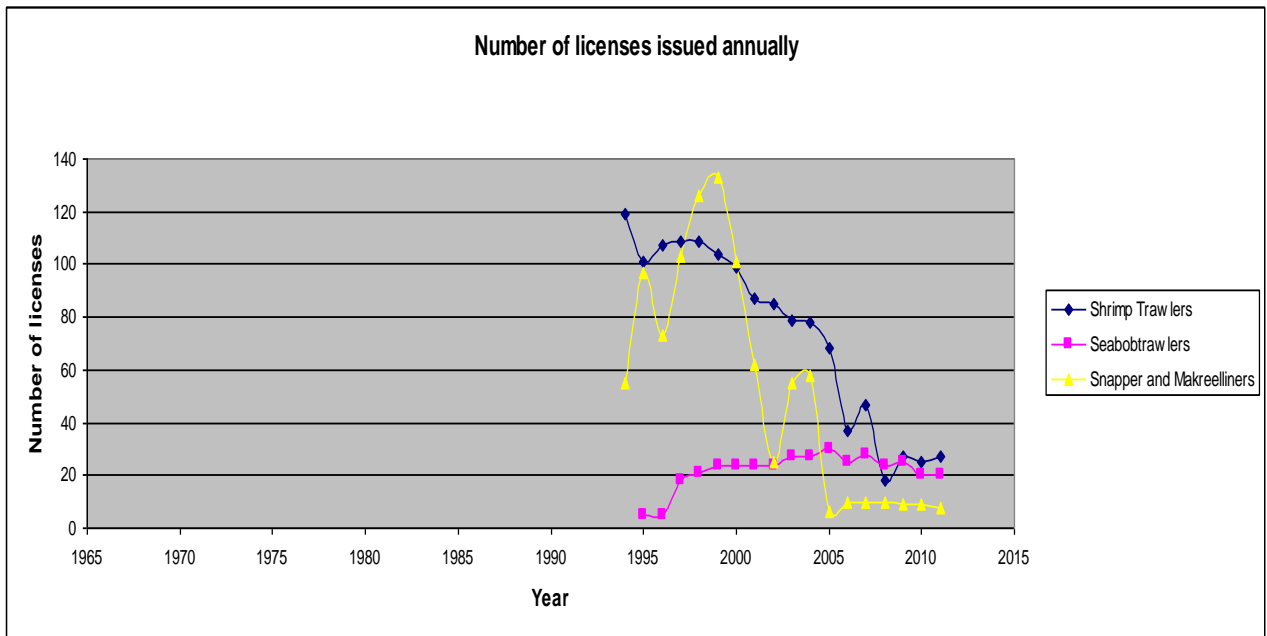


Figure 3. Licenses issued annually (data Fisheries Dept.)

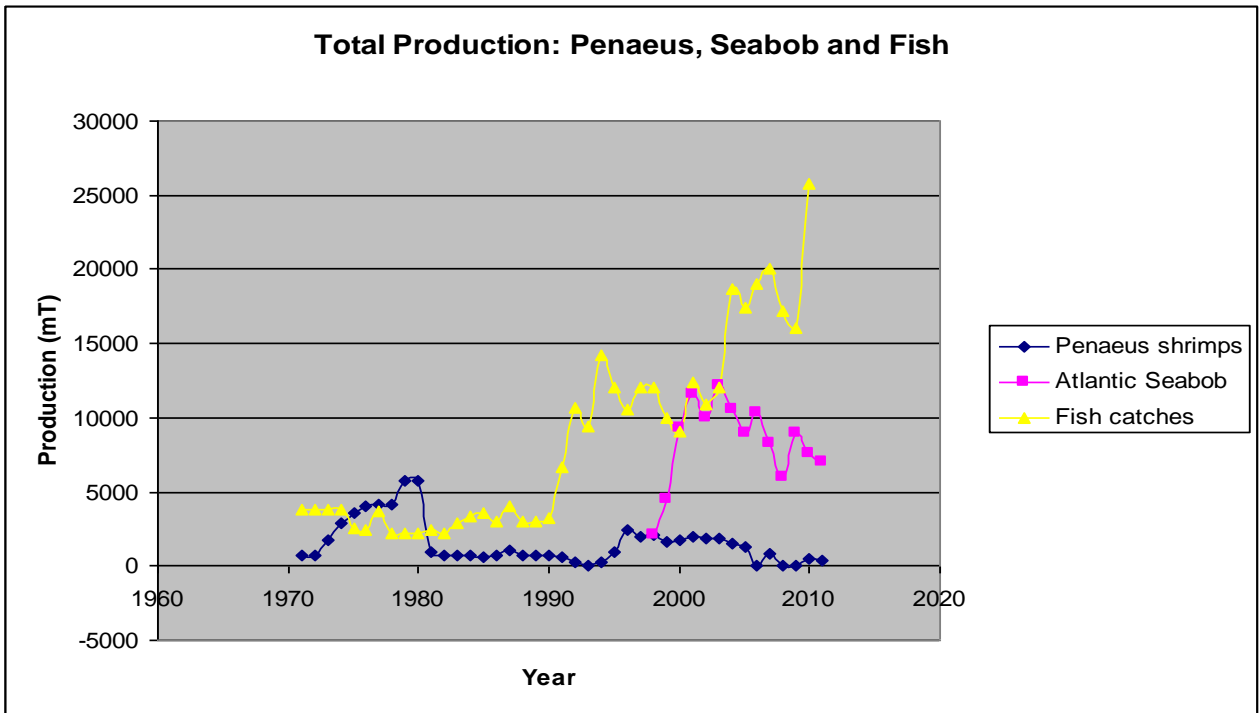


Figure 4. Total production of Penaeus, seabob and fish

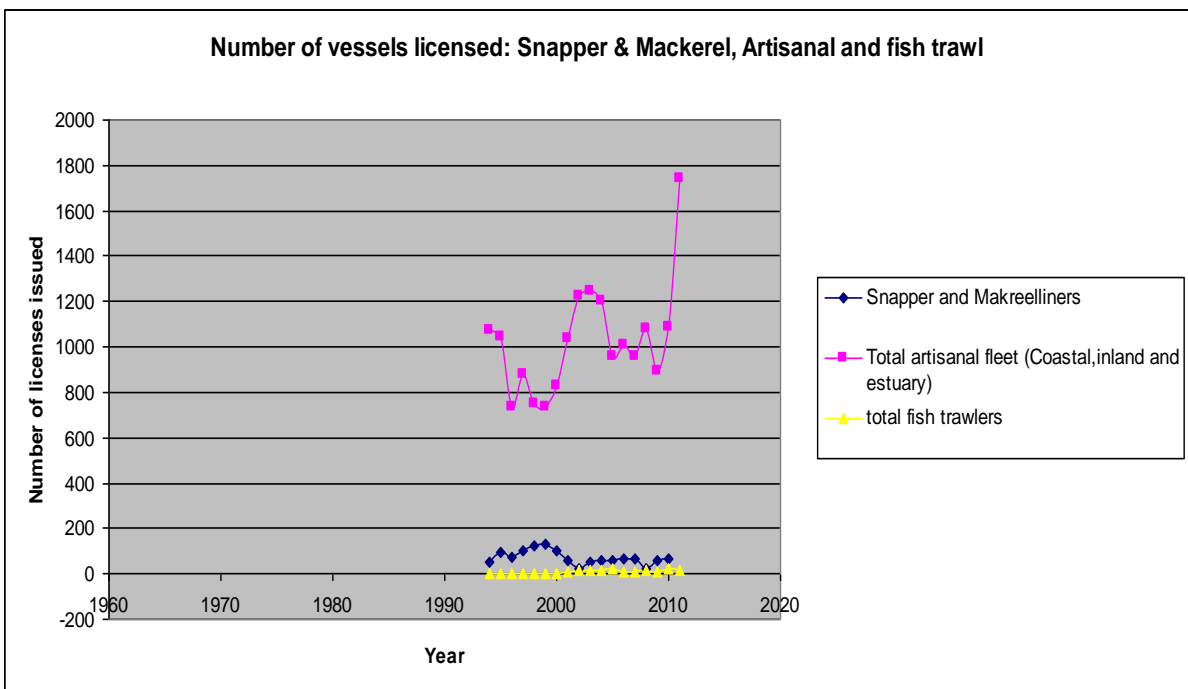


Figure 5. Number of vessels licensed

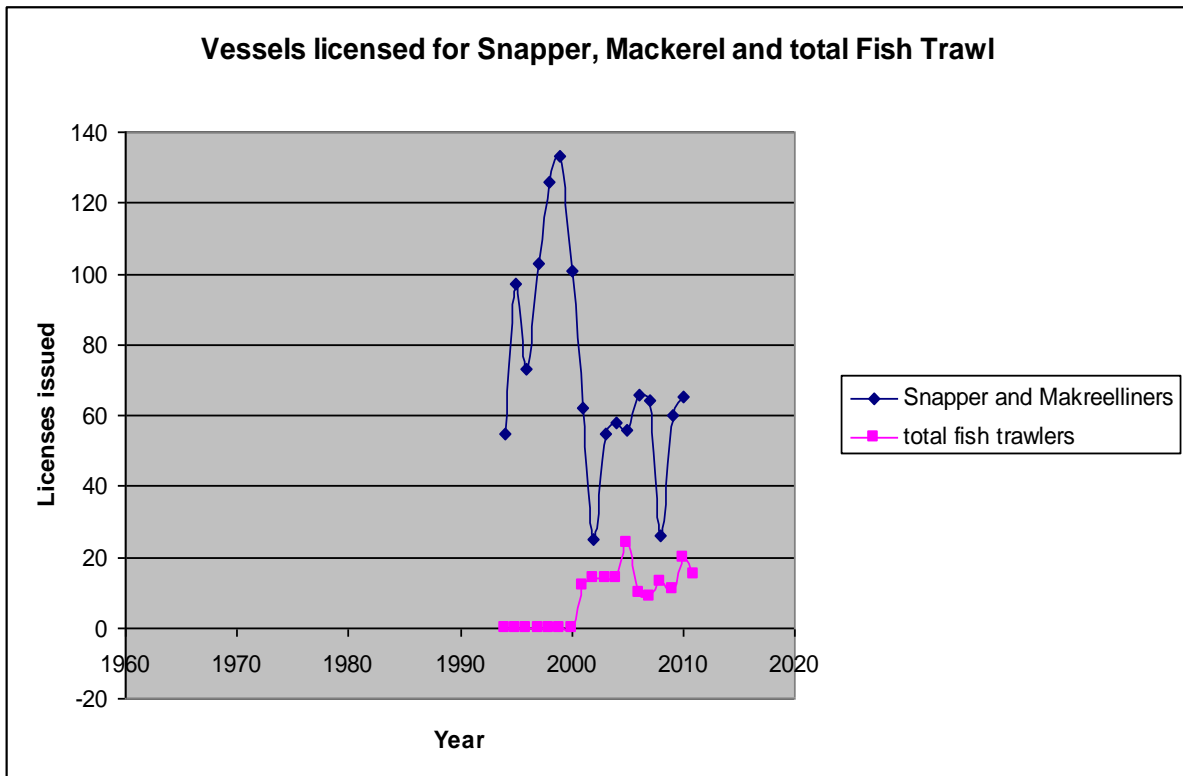


Figure 6. Vessels licensed for line fishery and fish trawl

8. Assessment of the importance of the fishery in the national economy.

8.1 Value of the catches from the fishery per year for the last five years (by species or lowest available taxonomic group where landings are multi species). Also add time series of market prices for landings.

The value of the total fishery catches is about 31 million US \$ annually. An overview of the total value of the catches exported over the last 10 years is given in Table 10. There is no data collection on market prices for landings.

Table10. Value of the catches in the last 10 years (ASYCUDA, 2011)

Year	Export volume (MT)	Export value US \$
2000	12.208,69	32.698.532,00
2001	12.959,73	32.317.679,00
2002	17.134,75	38.564.985,00
2003	16.710,65	37.210.251,00
2004	15.923,59	35.661.764,00
2005	17.194,33	30.479.398,00
2006	19.054,47	32.655.770,00
2007	18.828,31	32.655.770,00
2008	12.033,92	25.914.649,00
2009	13.261,26	27.736.813,00
2010	27.911,79	31.005.592,00

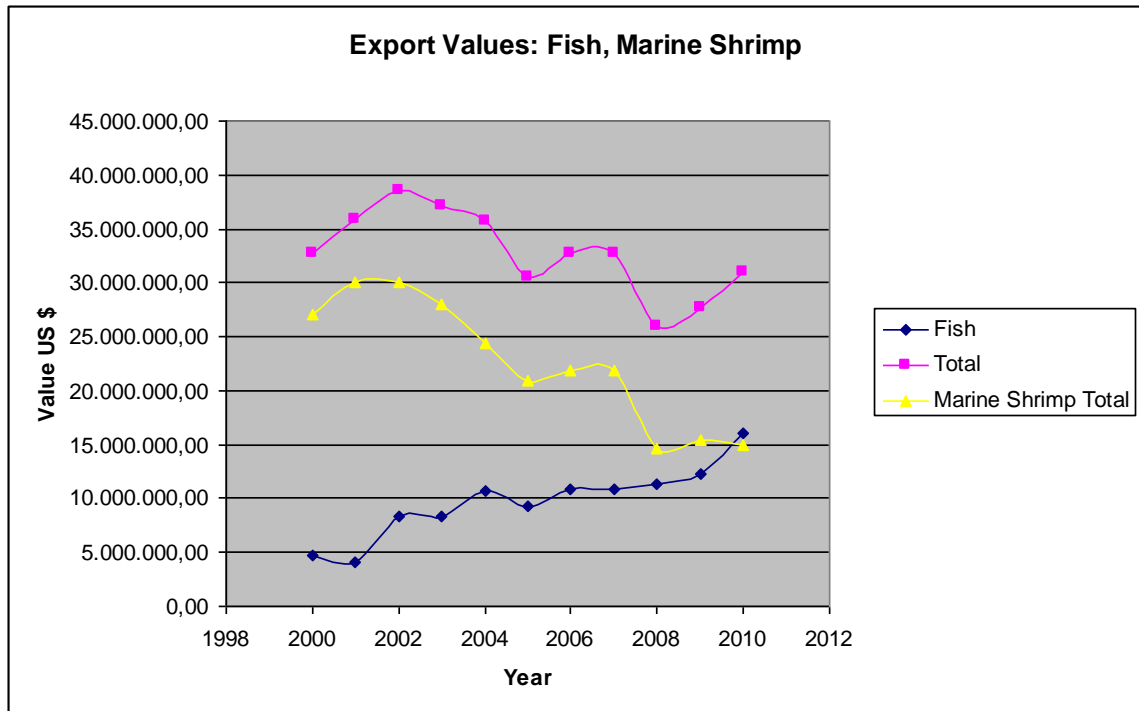


Figure 7. Export values in US \$

8.2 *Products, markets and quantitative assessment of the value and employment of activities in value addition and linked to the sector.*

The fish products exported range from fresh on ice to dried or salted. At the moment there is still an export ban on smoked fishery products to the EU. Fish products are exported to the EU, US, CARICOM, Japan, Canada, China, Korea, Turkey and Thailand.

Table 11. Fish exports in tons (ASYCUDA, 2011)

Fish exports Products	Quantity in tons					
	2006	2007	2008	2009	2010	2011
Fresh on ice and fish parts	3 369	4 083	4 130	4 459	4 657	7 609
Frozen fish and fish parts	8 062	9 274	10 735	12 830	13 524	11 024
Fish filets (fresh, frozen, dried)	817	1 587	1 637	2 929	2 894	3 294
Fish: smoked, dried or salted	1 687	363	202	138	160	128
Frozen shrimps	5 550	5 137	4 022	3 306	6 674	3 605
Others (e.g. crabs)	70	74	151	26	18	33
Total	19 555	20 518	20 877	23 688	27 927	25 693

Table12. Value of fish products exported in US \$ * 1000 (ASYCUDA, 2011)

Fish exports	Value in US \$ * 1000					
	2006	2007	2008	2009	2010	2011
Products						
Fresh on ice and fish parts	1686 .7	2029 .8	2032 .7	2239 .6	2184 .5	3601 .2
Frozen fish and fish parts	4612 .6	5394 .9	6084 .2	7970 .5	7392 .8	6369 .5
Fish filets (fresh, frozen, dried)	1520 .1	2851 .8	3188 .1	6280 .6	6074 .5	7042 .1
Smoked, dried and salted	3266 .9	707 .2	411 .5	290 .3	324 .5	264 .5
Frozen shrimps	21871 .9	22984 .5	14134 .9	12561 .1	14991 .4	15745 .9
Others (e.g. crabs)	303 .6	217 .6	473 .7	130 .6	101 .1	170 .1
Total	33261 .9	34185 .9	26325 .2	29472 .7	31068 .7	33193 .4

9. Management measures / primary management tools currently being used in the fishery sector and status of implementation (track record of the management option)

In Suriname the management measures include:

- 1 The Fish Stock Protection Act: effective in 1961 and was last revised in 1981. This Act contains the procedure for obtaining fishing licenses in the inland waterways of Suriname.
- 2 The Sea Fisheries Act: effective in 1980 and was last revised in 2001 (SB 2001 no 120). This Act contains the procedures for fishing in the Territorial Waters and the Economic Zone.
- 3 The Fish Inspection Act: effective in 2000. This Act contains the guidelines for exporting fish and fish products to the European Union, Canada and the United States of America.
- 4 The Fish Inspection Decree: effective in 2002. This Decree is intended to implement some of the articles of the Fish Inspection Act.
- 5 Furthermore, regulations regarding License conditions as mentioned under item 5 and the Vessel Monitoring System which was effective in 2008.
- 6 And regulations on Illegal, Unreported and Unregulated (IUU) fishing.
- 7 Additional order on license conditions which is published annually in the bulletin of orders, acts and decrees of the Republic of Suriname.
- 8 Annual restriction on the number of licenses to be issued based on production data.

The implementation of these measures includes, but not limited to:

- Routine inspection of all fishing vessels that land at any port or jetty in the Country to ensure compliance with the provisions of the Sea Fisheries Act,
- Annual pre-licensing inspection of fishing vessels to ensure compliance with the relevant provisions of the Sea Fisheries Act and Maritime Laws before renewal of annual fishing licenses. Maritime Laws relate to MAS while fishing gear regulations are the responsibility of the Fisheries/ Department.
- Regular stakeholders' meeting within the sea- bob working group as well as meetings held with the fisheries director.

Control of fishing effort

Since licensing is compulsory for all fishing units, fishing effort can be limited by restricting the number of fishing licenses. This is feasible for the part of the fleet delivering the catch in Suriname. Control at sea is, of course, required to prevent illegal fishing. A maximum number of licenses are granted every year for the types of fisheries exploiting stocks which are believed to reach or exceed the Maximum Sustainable Yield (MSY).

Monitoring

Monitoring systems include the reporting of catch and effort by the fishermen, the registering of the landings by enumerators, the recording of data by observers on board, logbooks, etc.

Table 13. Types of effective management tools

Type of management tool	Tick	Comments (e.g. when introduced, effectiveness, compliance, etc.)
Spatial (area) restrictions and closures such as:		
o Marine protected areas where fishing is prohibited	√	During the Turtle season from 01 March-31 July, fishing is prohibited by "schutbank" and driftnet fishers in the Turtle area
o Nursery area closures	X	
o No-take zones	X	All forms of exploitation are prohibited and human activities greatly limited
o Marine reserves where fishing is sometimes allowed	√	No marine reserves
o Other temporary areas closures for specific purpose (e.g. spawning aggregations)	√	Temporary closure of Turtle area during turtle season
Temporal restrictions such as:		
o Defined fishing season(s)	√	Fishing allowed outside turtle season by schutbank and driftnet fishery
o Defined number of fishing days	√	1. Category bottom trawl fishery (demersal fishes): maximum 200 days at sea. 2. Sea bob fishery: number of days at sea according to the harvest control rule.
o Defined number of hours per fishing day	X	
o Defined number of fishing hours	X	
Gear restrictions such as:		
o Engine size restrictions	√	Engine restrictions: Shrimp deep sea bottom trawl 45, 15 fathom depth, sea-bob, bottom trawl fishery, :minimum 500 HP. Large pelagic line fishery: min. 1000 HP Red snapper, Mackerel line fishery min. 400 HP
o Gear size restrictions	√	For all fisheries there is a gear size restriction under licence conditions.
o Gear type restrictions	√	For all fisheries there is a gear type restriction under licence conditions.
Size/age restrictions (i.e., minimum or maximum sizes)		
Participatory restrictions such as:		
o Licences	√	Restrictions: licences are coupled with licence conditions which are regulated.
o Limited entry	√	Limited entry: annually, for each category of the fishery a fixed maximum number of licences to be issued is determined.
Catch restrictions such as:		
o Total allowable catch (TAC) limits	√	A Harvest Control Rule for the Sea-bob fishery is implemented as part of the Sea-bob management plan
o Vessel catch limits	√	Per trip: Red snapper and Mackerel: maximum allowable storage capacity including ice is 40 tons
o Individual vessel quotas	√	Per trip: Red snapper and Mackerel: maximum allowable storage capacity including ice is 40 tons
Rights/incentive-adjusting regulations such as:		
o Individual effort quotas	√	As set under the licence regulations
o Individual fishing quotas	√	For Sea-bob the MSY is calculated to be 10,000 tons
o Individual transferable quotas	X	
o Individual transferable share quotas	X	
o Group fishing rights (including community development quotas)	√	Native Indians (Galibi Village) have special community fishing rights.
o Territorial use rights	√	As set out in the UNCLOS
o Stock use rights	√	Tribal rights, indigenous Indians

10. From the Table below, assess the effectiveness of the current management measures in relation to the fishery itself, including effectiveness in ensuring sustainable utilization. “Effectiveness” may be in terms of better status of the stocks (increasing CPUE), decreasing conflicts, increasing value, level of compliance, etc. It is important to note that in the State of World Fisheries and Aquaculture (SOFIA) FAO defines fisheries governance as “the sum total of the legal, social, economic and political arrangements used to manage fisheries”.

Regarding the FAO definition on fisheries governance which is: “The sum total of the legal, social, economic and political arrangements used to manage fisheries” (FAO, 2012) it becomes clear that current management measures are not adequate enough in ensuring sustainable utilization of the resources. Although annually new license regulations and conditions are issued a thorough review of the fisheries production in association with actual effort data is lacking. The key to successful fisheries governance in Suriname is not complete due to the fact that the legal arrangements to manage the fisheries are outdated. The current legislation makes no provision for the elaboration by the Ministry of Agriculture, Animal Husbandry and Fisheries / Fisheries Department of a management plan. Furthermore, the “Fishery Advisory Committee” is not functional which was the key partner of the Ministry for discussing management issues in detail, proposing regulations on classification of vessels and gear, the delimitation of fishing grounds, the implementation of closed seasons and/or areas, fishing rights, formulation of research projects on fisheries and related matters.

In summary it can be concluded that the effectiveness of current management measures is not decisive enough in relation to the fishery and in ensuring the sustainable utilization of the resources. This pattern can be observed in Table 8 where most of the resources are fully exploited. Instead there is enough room for improvement of effectiveness of current management measures. It should also be mentioned that steps are being taken in that direction e.g. a commission has been set up to prepare the framework for MCS.

11. Any compliance or enforcement problems being experienced in the fishery, and any complaints or dissatisfaction amongst fishers/rights holders You need to consider scientific monitoring (e.g. of catches against permitted exploitation) as well as MCS (monitoring, control and surveillance).

In Suriname there are restrictions regarding the red snapper and mackerel fisheries. The storage capacity should not exceed 40 tons including fish and ice. Enforcement is not applied as regards catch against permitted exploitation.

Complaints and dissatisfaction occurred within the deep- sea shrimp bottom trawling due to the introduction of seabob trawling in Suriname in 1996.

Indigenous Indians at the Galibi village complain about the schutbank or trap fisheries. Nature conservation foundations complain about fishermen entering fishing grounds in the turtle nesting area and turtles getting entangled in the drift nets.

Compliance and enforcement problems as regards Monitoring Control and Surveillance (MCS) are quite obvious.

- 1 Lack of surveillance boats. Illegal fishing and piracy within Suriname waters seems to be a big problem.
- 2 Acts and new regulations should be formulated in order that the Ministry of Defence, the Ministry of Justice, the Maritime Authority Suriname and the Ministry of Agriculture, Animal Husbandry and Fisheries can work together to carry out surveillance operations at sea to prevent illegal practices.

- 3 A commission for MCS was set up recently in Suriname and the government is determined to purchase surveillance vessels. Onshore monitoring and vessel inspection at landing sites does not ensure sufficient and effective monitoring and compliance with provisions of the law and its current regulations.
- 4 Lack of communication equipment.
- 5 Manpower shortage at the higher level.
- 6 Capacity building.

12. Is there a national or regional forum for discussions on management of this or other resource? If yes, please give a short description of the forum (nature, frequency, subject of discussions, outcomes, etc.).

On January 7th 2005, the Fisheries Advisory Board was inaugurated at the Ministry of Agriculture, Animal Husbandry and Fisheries, according to article 26 of the Sea Fisheries Act of December 2001. The main duty of this board is to advise the minister on fisheries matters, such as licenses and fishing regulations. Nowadays, this board seems to be inactive just like the Suriname Seafood Association. At national level the Fisheries Department functions as the main focal point for fisheries -related issues. It is worth mentioning that there's enough opportunity for the creation of a national forum for discussions.

The CRFM functions as a regional forum for discussions on for example management of the fisheries resources, a Common Fisheries Policy and Regime.

13. Any other comments relevant to current management of the fishery and the way forward for the introduction of EAF.

From 2007-2009, Suriname received technical assistance from the FAO in reviewing the Suriname Fisheries data collection program. The outcomes of this project were that: the ongoing data collection procedures are incomplete because they do not address the problem of effectively estimating fishing effort, there is a need for implementing new data collection procedures for fishing effort and systematic training of national experts in basic statistical concepts relating to sampling is essential (Stamatopoulos, 2008). One of the key aspects in achieving sustainable development of the marine capture fisheries could also be by implementing accurate and timely statistical monitoring as a basis for sound fisheries policy making and management. Therefore the following is needed in the way forward regarding the EAF project: increasing technical capacity in the Department of Fisheries and setting up a self-sustaining fisheries statistical monitoring program for marine capture fisheries is also essential. The following must be concluded after preparing the baseline report for Suriname: the present fisheries statistical systems are outdated and much in need of an overhauling. Moreover, funding will be needed for the above- mentioned.

More insight is needed into the fisheries dynamics which are appearing in the Guiana-Brazil Shelf area and the effects of climate change for the region. Adequate research projects should be formulated.

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This document presents the results of the national consultation that was organized in Suriname in the framework of the Case Study on the Shared Stocks of the Shrimp and Groundfish Fishery of the Guianas-Brazil Shelf of the Caribbean Large Marine Ecosystem Project (CLME). It is the fifth of ten reports that were produced as a result of the case study activities. These documents summarize the outputs of the different steps undertaken to mainstream the Ecosystem Approach to Fisheries (EAF) in the management of the shrimp and ground fish resources of the Northern Brazil Shelf Ecosystem.