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FINAL TECHNICAL REPORT

Technical Support to develop National and Regional environmental monitoring programmes related to SPS for fishery and aquaculture products in CARIFORUM States

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Final Technical Report – Technical support to develop National and Regional environmental monitoring programmes related to SPS for fishery and aquaculture products in CARIFORUM States

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1. Executive Summary

The aim of this assignment was to facilitate CARIFORUM States to gain and improve market access by complying with Europe's Sanitary and Phytosanitary Measures (SPS) and to help CARIFORUM states to meet the requirements necessary to maintain and expand on the trade of fish and fish products locally, regionally and internationally. The main purpose of the project was to strengthen monitoring programmes for health and food safety requirements of fisheries and aquaculture and to ensure safe food standards for fisheries products in the region, while meeting the requirements of the region's trading partners worldwide.

The current assignment took place under the 10th EDF Programme titled "Support to the Forum of Caribbean States in the implementation of the commitments undertaken under the Economic Partnership Agreement (EPA): Sanitary and Phytosanitary (SPS) Measures". The main regional partner agency that collaborated in the implementation of the assignment was the Caribbean Regional Fisheries Mechanism (CRFM).

The main activities of the project included: gathering background material regarding SPS requirements of the main markets for fishery products from Caribbean countries, assessments to evaluate the Sanitary and Phytosanitary measures applied in seven countries in the region and an informal visit to one country, preparation of country assessment reports for the seven countries visited as well as compilation of the findings in a regional assessment report. Finally, a proposal on strengthening national and regional SPS monitoring programmes was prepared based on the main findings of the assessment.

Findings regarding official control of fishery products indicated that Competent Authorities (CA), responsible for SPS monitoring & official control of Fishery Products are defined in the national regulatory framework in the majority (7 out of 8) of the countries visited. Furthermore, the majority (6 out of 8) of the countries visited have a defined structure for the implementation of inspections and written procedures (inspection manual & check list) are available. However, these written inspection procedures are only easily accessible to all stakeholders in 4 out of the 8 countries. The findings also show that in many cases (7 out of 8) different official control standards were applied for fishery products i.e. one for domestic market and another more stringent standard for the export market. The results also reveal that in 4 out of the 8 countries the CA does not take any official samples for analysis to verify compliance with the legislation and to assess consumer exposure in terms of food safety. In all cases the reason is lack financial resources.
Furthermore, the assessment revealed several deviations from the minimum Sanitary and Phytosanitary requirements in the entire production chain (vessels, landing sites, processing facilities, aquaculture and retail) in many of the Caribbean countries visited. Many of the deficiencies are due to the mind-set of the fishermen and fish handlers and limited education and training.

Based on the results of the assessment of the current state in the CARIFORUM countries presented in this report a proposal on strengthening national and regional SPS monitoring programmes was developed. This proposal consist of one recommendation for strengthening **national** SPS monitoring programmes and eight recommendation for strengthening **regional** SPS monitoring programmes, which also all apply to the national level. A draft version of the proposal was reviewed and discussed at a Regional Validation Workshop on the Fisheries Component of the 10th EDF Funded SPS Project held in August 2015 in Barbados. At this workshop the participants were asked to provide feedback on the draft proposal to facilitate finalization and CRFM approval. The assessments conducted in the countries visited also included extensive stakeholder consultative process and this wide range of

collaboration with the relevant stakeholders has allowed for adaptation of the recommendations (proposal) in order to improve its practical utility for the Caribbean region. Most importantly this close collaboration with stakeholders on the development of the proposal will ensure that ownership lies with them and will increase the chance of acceptance and uptake of the project outcomes, which is a key issue in order to ensure that the recommendations will in fact be realised in the future.

2. Introduction

The **Caribbean Forum** (**CARIFORUM**) is a subgroup of the African, Caribbean and Pacific Group of states and serves as a base for economic dialogue with the European Union, mainly within the framework of the Cotonou Agreement between the ACP and the European Union, and also the CARIFORUM-European Community Economic Partnership Agreement (EPA). The EPA aims at sustainable development through trade partnership between EU and the CARIFORUM states. The CARIFORUM-EU EPA addresses how the EU and CARIFORUM co-operate on a wide range of trade-related issues, including duties charged on imports of goods, achievement of certain agreed market standards, trade in services, etc. The EPA can offer benefits, but benefits come with costs and obligations.

In regards to food trade in the EPA agreement, both parties have affirmed their commitment to the rights and obligation provided for in the World Trade Organisation Agreement on Sanitary and Phytosanitary Measures (WTO SPS Agreement). Furthermore the Agreement notes that the parties should cooperate in establishing the appropriate level of SPS measures. Such cooperation calls for negotiation but as SPS measures deal with the level of food safety the EC requirements are non-negotiable. Consequently, the dialog between the parties relate to measures needed and assistance that may be available to comply with the EU standards.

Many of the CARIFORUM states are currently not authorised to export fish and fisheries products to the European market as they have not fulfilled the EC SPS requirements. Those countries are currently emphasising on exporting their fish and fishery products to the United States (US). With the new Food Safety Modernisation Act in the US that emphasises on preventive measures, the access requirement to that market may change in the near future and especially if the CARIFORUM countries intend to increase their value of the catch through further processing.

The provisions of the WTO SPS agreement relate to the following:

- The protection of animal or plant life or health within a territory from risks arising from the entry, establishment, or spread of pest, disease, disease-carrying organisms, or disease-causing organisms.
- The protection of human or animal life or health within a territory from risks arising from additives, contaminants, toxins, or disease-causing organisms in foods, beverages, or feedstuffs.
- The protection of human life or health within a territory from risks arising from diseases carried by animals, plants, or products thereof, or from entry, establishment, or spread of pests.
- The prevention or reduction of the risks of other damages within a territory from the entry, establishment, or spread of pests.

All WTO member states have agreed to the rights and obligations provided for in the WTO Agreement on Sanitary and Phytosanitary Measures but countries are allowed to set their own appropriate level of protection. The measures must though, be based on scientific principles, must not be maintained without sufficient scientific evidence and may be applied only to the extent necessary to protect human, animal or plant life or health. Furthermore such appropriate level of protection must be based

on risk assessment, as appropriate to the circumstances. The risk that a particular substance or product, including a process or production method, poses to human, animal, or plant life or health.

The scope of the SPS measures is complex and covers the whole food chain. With increased scientific knowledge and consumer awareness various chemicals and trace elements have been identified as food safety hazards and maximum limits set that need to be monitored at regular basis. In some instances such testing need access to high-tech laboratory facilities and well trained and skilled technicians. This may put a strain on small and under developed countries that do not possess the capacity and capital to invest in human resources and expensive equipment's.

The SPS status of the CARIFORUM States varies and in some cases considerable effort is needed to get a country up to standard. Currently there is a project being implemented, titled "Support to the Caribbean Forum of ACP States in the implementation of commitments undertaken under the Economic Partnership Agreement (EPA): Sanitary and Phytosanitary measures". This project is funded under the 10th European Development Fund (EDF) programme. The project is implemented by IICA, and the Caribbean Regional Fisheries Mechanism (CRFM) is responsible for the fisheries component of the project. The project is divided into three sub-components, that is: the establishment of a sound and comprehensive national and regional legislative framework; the development and organization of the national and regional institutional frameworks and coordinating mechanisms; and capacity building, and in particular, the capacity needs of environmental monitoring programmes for achieving good SPS standards for the fisheries and aquaculture situation in the CARIFORUM States. This report covers the assessment of the capacity needed for environmental monitoring, but in some instances covers partly the two other components also, as they are closely related.

3. Scope of the work

3.1. Project description

The assignment intends to provide support to CARIFORUM States and CRFM in establishing/strengthening monitoring programmes for food safety requirements of fisheries and aquaculture products. The scope of assessment includes harvesting, handling, production, storage, transport and marketing of fish and fisheries products intended for human consumption.

3.2. Project approach

The main activities of the project involves:

1. Eight country missions to undertake national consultations, consult with key informants and make direct observations in the field (landing sites, processing plants, aquaculture sites), in order to assess the current strengths and weaknesses of the environmental monitoring programmes relevant for supporting a SPS regime in fisheries and aquaculture
2. Prepare country and regional assessment reports, as well as proposal for improving such programmes.
3. Review, approval and finalization of the report and proposals through available consultation networks.

3.3. Project output

At the end of the assignment the following will be achieved

- A Regional Assessment report of existing fisheries and aquaculture sectors' environmental monitoring programmes related to Sanitary Standards in CARIFORUM States;

- Completed and documented national consultations/technical seminars on environmental monitoring in 8 CARIFORUM countries (country assessment reports);

- A Proposal on establishing/strengthening national and regional monitoring programmes formulated.

3.4. Project method

The approach used included gathering material on SPS measures (e.g. regulations, technical & scientific information) of the main marketing areas of Caribbean countries, with emphasis on the EU market. Reports from former EU missions were also reviewed to gain an understanding of the strengths and weaknesses of the countries to be visited.

Assessment of the SPS status of the region was approached by visiting eight countries. The aim was to meet with the Competent Authority of each of the countries to gather information on what SPS measures were in place and how they were being enforced. Following those meetings, the implementation and enforcement of the regulations was evaluated by visiting landing sites, processing facilities, aquaculture sites and by consulting with other stakeholders to gather information and input. Furthermore, the approach included visits to laboratories to evaluate their capability to conduct necessary analytical testing. It should be noted that the actual numbers and types of meetings and consultations varied with country, as arrangements for such were dependent on the local organiser, as well as the availability and cooperation of the local stakeholders.

4. Sanitary and Phytosanitary requirements for fish and aquaculture

In order to secure food safety and animal and plant health the World Trade Organization (WTO) member states have agreed to that governments can apply Sanitary and Phytosanitary measures in food trade, but they must be based on:

- Recognized international standards, preferably FAO/WHO Codex Alimentarius Commission, the World Organization for Animal Health (OIE), the International Plant Protection Convention (IPPC)
- Science, including scientific assessment of risk
- A temporary precautionary principle in the absence on international standards or scientific evidence

4.1. Policy and procedures

According to the WTO-SPS agreement, Member States can therefore either follow international standards or base their appropriate level of protection on science and scientific assessment of risk.
Fish is the biggest food entity traded internationally and fish exports to valuable markets have been difficult for many developing countries due to strict SPS requirements. It is understandable though that governments set strict levels of protection in order to protect their consumers if scientific evidence indicates that certain chemicals or biological substances could cause short or long term problems.

SPS measures should be applied throughout the entire food chain and they include the same basic requirements for all fish and fishery products (from wild and aquaculture):

- Environmental contamination of the aquatic/marine environment that could affect the aquatic/marine catch. SPS measures for the possible environmental contamination include setting up monitoring programs for contaminants, marine toxins, heavy metals, persistent organic pollutants and for aquaculture additional programs involve pesticides and drug residues.
- For harvesting the main SPS measures include the design and cleanliness of the boats/vessels that catch, store and transport the catch ashore and the handling and preservation of the catch. Official requirements therefore address the material of food contact surfaces and cleaning and sanitation programs. Furthermore emphasis is placed on icing the catch, and requirements can include minimum temperature at landing. If processing is applied at sea, further SPS requirements are set.
- In fish processing, the SPS measures become more complicated as once the fish is opened the edible part is more prone to contamination. The HACCP system (Hazard Analysis and Critical Control Points) is now mandatory in most countries. This system is based on the *Codex Alimentarius* guidelines and requires that before the process is analysed for hazards, the processor needs to set up a so called prerequisite program (PRP). The PRP is defined as basic conditions and activities that are necessary to maintain a hygienic environment throughout the food chain suitable for the production, handling and provision of safe end products and safe food for human consumption.

Most of the items identified in the PRP are set in regulations and they include:

- **Location** of the processing facility, meaning that it should be located away from polluted areas and areas that are prone to infestations. Furthermore that it should be in an area where waste can be removed effectively.
- The **design and layout** of the facility should permit good food hygiene practices and protect the product against cross-contamination.
- **Internal structure and fittings** such as walls, floors, windows, doors and food contact surfaces should be of impermeable material that is easy to clean and sanitize.
- **Equipment and containers** should be clean, well maintained and made from material intended for food production.
- **Water supply**. Sufficient quantity of potable water.
- **Drains and waste disposal**. There should be adequate drainage for the process and a waste disposal system and facility.
- **Personnel facilities and toilets**. There should be adequate means of washing and drying hands, including wash basins and a supply of hot and cold water and adequate and clean changing facilities for personnel.

- There should be adequate **ventilation** to minimize air-borne contamination of food and to control odour that may affect the suitability of food. Furthermore the ventilation should minimize or limit condensation.
- Adequate natural or artificial **lighting** to enable the undertaking operation in a hygienic manner.
- In order to **prevent food contamination** clean and unclean areas should be separated, external access controlled, avoid accumulation of food waste during processing and establish monitoring procedures for glass, oil and metal.
- **Water and ice** in processing must fulfil set criteria of potable water/clean seawater.
- **The management** must have sufficient knowledge in food safety to secure correct actions if needed.
- **Documentation and records**. Food safety issues must be confirmed with records. Work procedures increase the system reliability and effectiveness.
- **The cold chain** must be maintained i.e. raw material in reception, material in storage and during processing. Temperatures in freezers and cool storage must be monitored and recorded.
- **Calibration** of measuring equipment to ensure correct control (thermometers, pH equipment).
- Clear work procedures on **product recall and traceability**.
- **Cleaning plan** should be in place and include cleaning procedures, confirmation of cleaning, monitoring of cleaning and cleaning records.
- **Pest control plan** that includes facility resistance to pest, harbourage and infestation, monitoring, eradication and records.
- **Maintenance plan** for the facility and equipment.
- **Medical certification** for all staff members that enter the processing facilities and health monitoring of personnel.
- Rules on **personnel hygiene** including hand washing, use of protective clothing and handling of wound/cuts.
- **Accessibility and circulation of guests**. Same rules should apply to guests as staff.
- During **transport** the product should be sufficiently protected and kept at right temperature.
- **Labelling**. All food products should be accompanied by or bear adequate information to enable the next person in the food chain to handle, display, store and prepare and use the product safely and correctly. Furthermore the product bear a lot identification mark in case of product recall.
- **Staff training**. The training need is based on the nature of the food being processed and in particular its ability to sustain growth of pathogens or spoilage microorganism. The minimum requirement is that staff receive training on hygiene requirement in food production.

Once the PRP is established, the process can be analysed for hazards that are associated with the product (product related hazards) and hazards that are linked to the processing (process related hazards). If hazards are identified in the process, control procedures are set to secure production of safe food.

At distribution and retail level the main SPS measures for fish and fishery product are temperature control and temperature records should be retained for official verification. Once the product reaches the consumer he/she is responsible for handling and maintaining the product in accordance to the labelling instruction. The only SPS measures at this stage is consumer education.

4.2. Main regulatory framework for SPS measures

4.2.1. SPS regulations in the European Union

The main European food safety and hygiene requirements are covered in regulations EC 178/2002 (so-called Food Law), EC 852/2004 and EC 853/2004 (often referred to as the Hygiene package). These regulations set the stage for the SPS measures of the European market.

The Food Law provides the basis for the assurance of the level of protection of human health. It establishes common principles and responsibilities. With the Food law the European Food Safety Authority was established (EFSA), which is the keystone of the EU risk assessment regarding food and feed and is the basis of the EC SPS requirements. EFSA is an independent agency funded by the EU budget and provides scientific advice on existing and emerging risks. EFSA operates separately from the European Commission, European Parliament and EU Member States.

Regulation EC 852/2004 sets down general rules for food business operators on the hygiene of foodstuffs.

Regulation EC 853/2004 lays down the specific hygiene rules for food of animal origin. The requirements are set for food businesses handling food of animal origin at all stages of the food chain.

Both EC 852/2004 and EC 853/2004 apply to production and handling of fish and fisheries products. Additionally there are number of supportive Regulations and Directives that deal with detailed issues, these include:

- Regulation EC 885/2004 on official controls performed to ensure the verification of compliance with feed and food law, animal health and animal welfare.
- Regulation EC 854/2004 on laying down specific rules for the organisation of official controls on products of animal origin intended for human consumption.
- Regulation EC 2073/2005 on microbiological criteria for foodstuffs.
- Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption.
- Commission Regulation (EC) No. 466/2001 of 8 March 2001 setting maximum levels for certain contaminants in foodstuffs.

4.2.2. Main regulatory framework in the Unites States of America

The main SPS regulations in United States (US) are the

- 21 CFR 110 Current Good Manufacturing Practice in Manufacturing, Packing, or Holding Human Food and
- 21 CFR 123 Fish and Fishery Products HACCP
  - 21 CFR 123.12 on specific requirement for imported fish and fishery products.

Furthermore there are regulations on bioterrorism and on country of origin labelling that affect import of fish and fishery products. There are also regulations on maximum limits of pesticides, contaminants, toxins, heavy metals and other chemicals risks related to foodstuff.

Of interest is also the FDA Food Safety Modernization Act (FSMA) from January 4. 2011. It aims to ensure the U.S. food supply is safe by shifting the focus from responding to contamination

to preventing it. This is in line to European approach and is not proposed to introduce new requirements but to increase the enforcement of the current laws and regulations.

4.3. Chemical risks

4.3.1. Pollutants and toxic ingredients

Various chemical risks are documented food safety hazards in fishery products and the terminologies used for these risks have not been harmonised, therefore the terms and definitions used in this report are listed in table 1 below.

Table 1: Terms and definitions used to identify and verify chemical risks in food and feed

Terms	Definitions	Examples
Pollutant*	All s**ubstances** that can be harmful to plants, animals, humans, the environment	
- **Residue**	**Substances** to exert **an intended effect** on the production and storage of feed / food and primary products, while partly remaining in the final product	Pesticides, feed and food additives, pharmacologically active substances
- **Contaminants/undesirable substances**	**Substances** that **unintentionally** come in contact with feed / food and primary products and thereby are carried over to consumers	Heavy metals, toxic elements, chlorinated organic substances, PCB's and dioxins, marine biotoxins, radionuclides
Toxic Ingredients	**Substances** which are **formed** on or in feed / food during production and storage, and remain in the final product	Alkaloids, glycosides, PAHs, mycotoxins, phenols, nitrate nitrite, biogenic amines, nitrosamines

*Pollutant is the overarching term used, while residue and contaminants refer to specific type of substances as explained in the table

The most important regulation regarding contaminants in foodstuff in Europe is EC regulation No 1881/2006 with additional later amendments to this regulation.

Regulations (EC) No 1881/2006 covers the following aspects:

a) Environmental contaminants in foodstuff
- Mycotoxins (Aflatoxins, Ochatoxin A, Patulin, Dioxynivalenol, Zearalenone, Fumonosins, T 2/HT 2 Toxin)
- Metals (Lead, Cadmium, Mercury, Tin (inorganic))
- Dioxins and PCBs (Polychlorinated biphenyls)

b) Processing contaminants in foodstuff
- Nitrate
- Melamine
- PAHs (Polycyclic aromatic hydrocarbons)
- 3-MCPD (3-Monochloropropane-1,2-diol)

Regulations (EC) No 1881/2006 describes the following:

a) Regulation of maximum residues level (MRL) for several foodstuffs and comprehensive list with MRL for e.g. metals & Dioxins and PCBs in foodstuff are included in Annex to this regulation;

b) Sets the ALARA principle (*as low as reasonably achievable*) for genotoxic substances;

c) Regulations of sampling and analytical methods for official control, these are specified in Article 8 for the various chemical contaminants;

Biogenic amines (BAs) are non-volatile, heat stabile, organic bases formed in food by microorganisms through enzymatic decarboxylation of amino acid. BAs are a food safety hazard because they can trigger an allergic response in humans, they can be found in various foods such as inappropriately handled and/or stored scombroid fish (e.g. tuna, mackerel, and herring). Since these amines cannot be destroyed by cooking or detected with organoleptic evaluation, the European Council requires the determination of histamine in fish and fish products with High Pressure Liquid Analysis (HPLC) and regulates the maximum levels of histamine according to EC regulation No 2073/2005.

Polycyclic aromatic hydrocarbons (PAHs) is the name of a compound class which includes a large variety of different substances, which have in common an organic molecular structure of at least two fused aromatic rings. PAHs are generated during incomplete pyrolysis or combustion of organic matter and humans are exposed to them through many ways e.g. smoked and thermally processed food products. Because of their harmful effects on health, the EC regulates the maximum levels of PAH concentration in food according to EC Regulation No. 835/2011.

4.3.2. Drugs and residues

It is often inevitable to apply certain veterinary drugs in Aquaculture. Therefore, it is necessary to be able to monitor certain drug substances and residues thereof in aquaculture products. According to Council Directive 96/23/EC the EC requires that each country adopts and implements a national residue control plan (NRCP). The aim of the NRCP is to: i) Monitor that veterinary drugs are applied in accordance with legal provisions, ii) Monitor compliance with provisions on the prohibition of certain substances iii) Collect data on contamination originating in the environment. The substances of interest according to ANNEX I to Directive 96/23/EC are listed in table 2 below. The purpose of this plan is to safeguard consumers from illegal drug residues in aquaculture products.

The NRCP shall include the following:

- National legislation on the use of the substances listed in Annex I to Council Directive 96/23/EC, in particular provisions on their prohibition or authorization, distribution and placing on the market.
- The infrastructure of the relevant departments e.g. a list of approved laboratories with details of their capacities for processing samples.
- National tolerances for authorized substances where no maximum residue levels have been set under Regulation (EC) No 37/2010 and Regulation (EC) No 396/2005.
- A list of the substances to be detected, methods of analysis, standards for interpreting the findings.
- The number of official samples to be taken in relation to the number of animals of the species concerned slaughtered in preceding years.
- Details of the rules governing the collection of official samples.
- The type of measures laid down with regard to animals or products in which residues have been detected.

Table 2: Substances of interest according to ANNEX I to Directive 96/23/EC

GROUP A *– Substances having anabolic effect and unauthorized substances*	
A.1.	Stilbenes, stilbene derivatives, and their salts and esters
A.2.	Antithyroid agents
A.3.	Steroids
A.4.	Resorcylic acid lactones, including zeranol
A.5.	Beta-agonists
A.6.	Compounds included in Annex IV to Council Regulation (EEC) N° 2377/90 of 26 June 1990
GROUP B *– Veterinary drugs and contaminants*	
B.1.	Antibacterial substances e.g. sulphonamides, tetracycline, quinolones
B.2.	Other veterinary drugs a) Anthelmintics b) Anticoccidials c) Carbamates and pyrethroids d) Sedatives e) Non-steroidal anti-inflammatory drugs (NSAIDs) f) Other pharmacologically active substances

4.4. Responsibility of private sector

According to the EU food law the food companies i.e. primary producers, food processors and retailers are responsible for ensuring food safety and these parties are expected to exercise due diligence and self-controls.

4.5. Official control

The Codex Alimentarius Principles and Guidelines for National Food Control Systems (CAC/GL-2013) provides assistance to national governments, and their competent authority in designing, development, operation and improvement of the national food control system.
According to the guidelines the objective of a national food control system is to protect the health of consumers and ensure fair practices in the food trade.
According to the Codex guidelines a national food control system should be based on the following principles:

1. Protection of consumers
2. The whole food chain approach
3. Transparency
4. Roles and responsibilities
   - 4.1. All participants in a national food control system should have specific roles and responsibilities clearly defined.
   - 4.2. Food business operators should manage the food safety of their products
   - 4.3. National government should establish and maintain up to date legal requirements
   - 4.4. Competent Authority should ensure the effective operation of the nation food control system
   - 4.5. Consumer should manage food safety under their control.
   - 4.6. Academics and scientific institution have a role in contributing to a national food control system, as they are a source of expertise to support the risk based and scientific foundation of such a system.
5. Consistency and impartiality

6. Risk based, science based and evidence based decision making
7. Cooperation and coordination between multiple competent authorities
8. Preventive measures
9. Self-assessment and review procedures
10. Recognition of other systems (including equivalence)
11. Legal foundation
12. Harmonisation
13. Resources

A national food control system should possess three main characteristics which, among other things, can be used in self-assessment or other evaluation to determine if the system is fully functional and effective:
i) **Characteristic 1** Situational awareness means that a national food control system avails itself of accurate and current information on the entire food chain.
ii) **Characteristic 2** Pro-activity means that a national food control system is capable of identifying existing or emerging hazards before they materialise as risks in the food production and/or processing chain and at the early stages rather than in the end product. Early warning and/or rapid alert systems, traceability and contingency planning for managing and preparing for potential food safety incidents should be an inherent part of a pro-active control system.
iii) **Characteristic 3** Continuous Improvement means that a national food control system should possess the capability to learn through a process of review and reform utilising mechanisms that check and evaluate whether the system is able to achieve its objectives.

The CAC guidelines identify numerous issues to be addressed when setting up an implementation plan for the food control. Included in such a plan should be to issue operation procedures (or inspection manual) including methods of auditing, verification, inspection and control, sampling plans and testing.

The effectiveness and appropriateness of the nation food control system should be regularly assessed against the objective of the system, effectiveness of control programs, as well as against legislative and other regulatory requirements.

4.6. EU official control requirement

4.6.1. Role and responsibility

According to the EU food law the official food control shall be carried out by the relevant competent authorities (CA) and this control should be based on risk-oriented manufacturing control and risk-oriented sampling in order to minimize food risks. The CA should provide guarantees that an official inspection service is responsible for carrying out official controls throughout the production chain of fishery products to be exported to the EU i.e. from the fishing vessels or aquaculture farm to the exporting establishment. These official controls should cover all the relevant community requirements on hygiene, public health and, in the case of aquaculture products, also aquaculture health aspects.

The main EU related to official controls are Regulation (EC) No 882/2004 on official controls performed to ensure the verification of compliance with feed and food and Regulation (EC) No 854/2004 on specific rules for the organisation of official controls on products of animal origin intended for human consumption.

The main requirements regarding official food controls according to Regulation No 882/2004 are:

- Documented procedures

- Quality management through surveillance and monitoring
- Appropriate competence & training of staff performing controls
- Contingency plans for feed and food
- National control plans
- Annual reports
- Audits

4.6.2. Working procedures

The CA shall ensure that documented procedures are applied for their inspection service. The CA should also guarantee that official controls for fishery products intended for export to the EU include at least the following: organoleptic examinations, freshness indicators (in case of doubt of freshness of fishery products), histamine, residues and contaminants (including heavy metals, dioxins and PCBs, PAH) microbiological checks, parasites and poisonous/toxic fishery products, in line Regulation (EC) No 854/2004 and with the relevant Community requirements (Regulations (EC) Nos 2073/2005, 2074/2005, 1881/2006 and 333/2007).

The methods of sampling and laboratory analysis of official food/feed samples are crucial in order to obtain reliable analytical result and therefore the appropriate procedures for these important tasks are specified in Article 11 and 12 in regulation (EC) No 882/2004 on official controls performed to ensure the verification of compliance with feed and food law. According to this regulation (Article 11) "Sampling and analysis methods used in the context of official controls shall comply with relevant Community rules", further "The competent authorities shall establish adequate procedures in order to guarantee the right of feed and food business operators whose products are subject to sampling and analysis to apply for a supplementary expert opinion" and "Samples must be handled and labelled in such a way as to guarantee both their legal and analytical validity." According to regulation (EC) No 882/2004, "The competent authority shall designate laboratories that may carry out the analysis of samples taken during official controls. However, competent authorities may only designate laboratories that operate and are assessed and accredited in accordance with the following European standards:

- EN ISO/IEC 17025 on 'General requirements for the competence of testing and calibration laboratories'
- EN ISO/IEC 17011 on 'General requirements for accreditation bodies accrediting conformity assessment bodies'.

taking into account criteria for different testing methods laid down in Community feed and food law."

4.6.3. Monitoring and surveillance

Various official monitoring and surveillance are required for foodstuff according to EC regulations and the type and objectives of these programmes are listed in table 3 below. When the objective is to monitor to assess consumer exposure the sampling of the food/feed items should be planned so that it represents the exposure of the average population and the average levels in food and feed. When the objective on the other hand is surveillance for compliance with the legislation the sampling of the food/feed items should be risk based official control. The sampling and the analysis for the official control of the maximum levels specified in the Annex of Regulation (EC) No 1881/2006 shall be performed in accordance with Article 8 in this regulation.

Table 3. Official monitoring and surveillance is required in foodstuff according to EC regulations

Type of monitoring and surveillance	**Objectives of Program**

Official food control according Reg. (EC) No 882/2004 from production, over processing, to distribution inspections for sample tests	Surveillance for compliance with the legislation
Nationwide monitoring plan and food-monitoring according Reg. (EC) No 882/2004 (annual program)	Monitoring to assess consumer exposure
Dioxin-monitoring according Reg. (EC) No 1883/2006	Monitoring to assess consumer exposure
Control programs for Residues of Pesticides according Reg. (EC) No 396/2005 (multi-annual national control program 2013 – 2015)	Surveillance for compliance with the legislation
National Residue Control Plan according to Directive No 96/23/EC (pharmacologically active substances)	Surveillance for compliance with the legislation
Zoonoses-Monitoring according Dir. No 2003/99/EC in the food chain	Monitoring to assess consumer exposure
Integrated measurement program in radiation protection for food according Reg. (Euratom) No 3954/87	Surveillance for compliance with the legislation

4.6.4. Training

The CA should ensure that all staff performing official controls have an adequate knowledge of Community export requirements for fishery products.

5. Assessment of current state in seven Caribbean countries

5.1. Assessment report for Guyana

Dates of visit; 31 May - 4 June 2015

Mission team: Mr. Margeir Gissurarson, Dr. Helga Gunnlaugsdottir and Dr. Susan Singh-Renton

5.1.1. Official agencies

To gather information regarding official control related to SPS measures in Guyana two consultations were arranged with staff from official agencies working in this area.

Consultation held June 1st 2015 at Fisheries Department in Guyana

In addition to the mission team this consultation was attended by representatives from Fisheries Department (FD) and Veterinary Public Health (VPH) refer to Appendix for the complete list of attendants. The consultation focused on developing an understanding of the roles and responsibilities of the various agencies/departments in the area of health and food safety in the fisheries and aquaculture sectors. It was clarified that while the FD issues licences for fishing, consistent with regulations of the Fisheries Act, these did not cover SPS issues. Veterinary Public Health (VPH) under the Ministry of health, is in charge for official controls of Fishery Products (FP) since 2003 and is the competent authority (CA) for Guyana, their role is to ensure that all food business operators (FBOs) are working according to regulation. According to procedures the CA inspect and licenses all fisheries production establishment i.e. fishing vessels, landing sites, trucks for transport of fisheries products, processing plants. The CA also issues health certificates for export & import of fisheries products.

VPH communicates the result from the inspection of fishing vessels to the FD and the licensing of the vessels is based on VPH recommendation. Nevertheless, there are no written agreements available between these two agencies. The CA is not responsible for issuing and revoking licenses to fishing vessels and that could lead to complications as this is an important tool for the CA to enforce the relevant regulations. The CA has developed certain manuals including an inspection manual and the Team was advised that these were consistent with the existing legislative provisions. This Inspection manual was not provided to the Team. All surveillance and monitoring records were damaged in a recent (2013) fire, and since then the CA has been using traditional paper records.

The Team was informed that the CA conducts inspections of facilities at least annually, but the frequency of inspection of FBOs is based on risk assessment (RA). If corrective actions are required, the FBO is given notice and time for remedial action. Inspections can be conducted with increased frequency depending on the results of the inspection. Inspectors are rotated to avoid creation of close relationships with the FBOs.

The Team was advised that the CA was lacking human resources but the existing staff was well trained and had received training at the Guyana School of Agriculture, and there were also veterinarians who were specialized in food hygiene, fish inspection, quality assurance, sanitation, etc. Most of the staff at VPH have been formally trained with the EU Council for product safety and assurance. The CA furthermore informed that they are lacking financial resources to conduct necessary analysis of official control samples.

Consultation held June 2nd 2015 at Environmental Protection Agency (EPA)

In addition to the mission team this consultation was attended by representatives from EPA, please refer to Appendix for the complete list of attendance. The main purpose of the consultation was to seek information regarding the role and functions of the EPA in an effort to appreciate the linkages with the SPS measures in Guyana.

The team was informed that in the case of aquaculture operations, new facilities applying for authorization need to produce an environmental management plan, and these are evaluated taking into account the size and location of the proposed operation, as well as how ponds are being built and water quality aspects. In this regard, for new facilities, the process would normally warrant a site visit, completion of an Environmental Impact Assessment (EIA) and a social impact assessment. This process can take 6 months to 1 year. Any permit issued also has associated conditions covering requirements for operation, such as use of well, effluent flow, ground water monitoring.

EPA is furthermore responsible for environmental monitoring and should therefore carry out monitoring programme on contaminants in the marine environment. This program is however not functional at the moment, but EPA is in the process of building up these capacities. Concerning queries about heavy metal and contaminants testing, EPA staff confirmed that there was no capacity to test for mercury, while iron and manganese tests are performed. Currently no analysis are carried out for persistent organic pollutants.

EPA is responsible for testing of water from well to production facilities, however they only test for heavy metals but include other relevant parameters like e.g. persistent organic pollutants and microbial tests.

The Team then asked about the litter observed at the main Georgetown Wharf. EPA admitted that it remained unclear who was responsible for keeping the Wharf tidy. However, there was a new littering law in place, which would need to be enforced. There was also some discussion about the challenge of enforcing the laws in place.

5.1.2. Sites visited in Guyana

To assess enforcement procedures a number of site visits were carried out according to the table below.

Type	**Number of visits**
Landing sites	3
Aquaculture sites	1
Processing establishment	4
Ice production plants	2
Laboratory	1

The Team made direct observations regarding the infrastructure, vessels, equipment, environment, and made further enquiries about harvest and post-harvest procedures, aquaculture feed storage, fish transport, etc.

Landing sites, vessels and ice production

Please refer to the section *SPS requirements for fish and aquaculture* in the general background report regarding the minimum SPS requirements for landing sites, vessels and ice production.

Main observations noted:

- Artisanal vessels seem to be the main type of fishing vessels used in Guyana
- Fishing vessels were made of material (wood) that is difficult to clean
- Fishing vessels have insulated ice boxes and the fish is iced at sea
- Larger fish was landed gutted, while smaller fish was generally not landed gutted
- In some case the unloading of the fishing vessels was carried out by throwing the fish onto the dock using bare hands
- Ice used on boat, but very limited use of ice after landing
- Fish stored on bare ground and sold on the site
- Some landing site were not fenced off
- Numerous unauthorised persons were observed at the sites
- Fish transported from landing site in nylon bags, plastic buckets, wooden and steel wheel barrels. These containers were all unhygienic and not sanitised
- Some fish was processed (mostly on uncleaned wooden tables) and sold on the site i.e. not a clear separation between processing and landing of fish
- Limited or no running water at landing site
- Waste management not in place, hence plastic and other waste was piling up on all of the landing sites.
- Many different animals (dogs, cows, sheep) were observed at one of the sites visited
- No ice production was available at two of the landing sites. However, there was ice processing facility at one of the sites but was badly maintained and ice stored on floor and there was no separation between storage area and walking area
- No hygienic facilities were observed
- In trucks used to transport fish from landing sites the fish in generally stored on the floor of the truck and only separated using wood boards. Some ice used to cool fish, but also fish without ice because the truck is used to sell fish directly to customers at the site. The Team observed that workers stand on the fish & ice in the storage area of the truck

Processing establishment

The mission Team visited in total four processing establishments, two of these establishments processed mainly fish, one establishments processed both fish and shrimp, while one establishments processed solely shrimp. The status of the facilities in regards to SPS measures ranged from being very good to poor; please refer to the section *SPS requirements for fish and aquaculture* in the general background report regarding the minimum SPS requirements for processing establishments.

The mission team noted that the processing establishments that were producing fishery products for export were satisfactory in terms of SPS requirements, while the establishment producing fishery products for the local market was not.

Main observation noted by the mission team:

In three out of the four establishments the mission Team was informed that the Veterinary Public Health (VPH) had conducted an inspection within the last 12 months and they left a summary of their findings. The formal inspection report from their last visit had though not be sent. It was stated that often this formal report is not received until some months after an inspection had been conducted. In

the fourth establishment the responsible person was not sure whether the VPH had conducted an inspection but the owner of the facility was not available to confirm this.

In three out of the four establishment visited the structure, layout, maintenance and hygiene conditions for the processing and handling of raw material was satisfactory. In one of the establishments many problems were observed related to structure, layout, maintenance and the processing environment of the facility e.g. inadequate lay-out, with insufficient separation between clean and unclean areas which could lead to cross-contamination; very poor floors with cracks and pooling of water, not maintained in a sound condition and not easy to clean and to disinfect; unsuitable walls, which were rough, not easy to clean and not of a non-absorbent, washable material; unsuitable ceilings not constructed and finished so as to prevent the accumulation of dirt and to reduce condensations; very poor maintenance of equipment; very poor state of maintenance and cleanliness of changing rooms; very poor cleanliness and state of maintenance of cold stores with exposed and packaged fishery products. This processing establishment was producing fishery products for the local market.

In all facilities ice was used to keep the product cool during processing.

A HACCP system was in place in three out of the four establishments visited, while in one no food safety system was available.

The mission Team was informed that workers receive some basic training. However in facilities were supply of raw material is unstable the workers are not full time employees and such cases it is difficult organise training.

At least two of the processing facilities visited are using their own water supply for processing and ice production. Their quality personnel carries out own checks of the water used in their facilities and these include analysis of microbes and heavy metals.

Laboratories

The mission Team visited the laboratory in the Institute of Applied Science and Technology at the University of Guyana, as this is one of the laboratories that has been designated by the CA in Guyana to carry out analyses on fishery products as well as water and ice in the context of official controls. The team was informed that this laboratory is not accredited to ISO standard 17025. The Team was also informed that the laboratory had not received any official control samples for microbiological and chemical analysis for two years.

In addition, Food and Drug Department has been designated by the CA in Guyana to carry out some analysis on official control samples but the mission Team did not have the opportunity to visit this laboratory, but was informed that this laboratory is also not accredited to ISO standard 17025.

5.1.3. Consultation with stakeholders

National Consultation with stakeholders in Guyana took place on June 3rd 2015.

The key challenges highlighted were the following:

- Insufficient enforcement of regulation by the CA at the source of the deficiencies
- Attitude and mind set of fishermen and workers in primary production. Generally fishermen have very limited education and therefore very difficult to transfer knowledge to them e.g.

regarding maintenance of facilities, personal hygiene, hygienic handling of fish, importance of ice for cooling of fish.

- Management environment for owners of fisheries products establishments & fishing vessels is very instable, which in turn reduces the willingness to invest in the maintenance of boats landing sites etc.
- Several factors were identified which were linked to planning and management, and which were likely also contributing to the current attitude of fisher folk in primary production. These were: poor infrastructure; weak enforcement; inadequate policies and support for their implementation; the absence of a National Fisher folk Organization, and; apparent lack of planning for anticipated future developments of the fisheries and aquaculture sectors e.g. predicting and planning for likely future demands to be able to export fishery products and developing of new fishery and aquaculture products
- Attitude and mind set of local consumers. Some consumers actually prefer that fish is not placed on ice, as ice usage meant the fish was no longer fresh and that flies on the fish are an indicator of freshness.

5.1.4. Conclusion

The Veterinary Public Health within the Ministry of Health is clearly defined in the national regulatory framework regulation as the competent authority (CA) of Guyana. They are responsible for official control of all food business operators and to issue certificates and licenses. The Fisheries Department of the Ministry of Agriculture is issuing licences to vessels/boats based on outcome of inspection by the VPH. There are, however, no written Memoranda of Understanding (MoU's) between the two agencies in this regards. The CA can delegate certain activities to different agencies. However, they can only delegate the responsibility for these activities if there are written agreements and documented procedures regarding these activities.

The key to harmonization of regulatory enforcement is to have documented work procedures in place that explain in details how inspection should be conducted according to the regulatory requirements. Linked to such work procedures (usually called Inspection Manual) is a check list that can be used by the official inspectors during the inspection. Although the mission Team was unable to receive a copy the manual used by the CA it was informed that such document existed, but this could not be verified. An annual inspection plan is prepared by the CA and this plan is necessary to organize and have an overview of the implementation of inspection.

According to EU and national regulations the CA is required to carry out various official monitoring and surveillance of fishery products and to fulfil these requirements the CA should take official control samples for analyses to verify compliance with the legislation and to assess consumer exposure in terms of food safety. However, due to lack of financial resources, the CA in Guyana has no not been able carry out analysis of official control samples for 2 years. Sometimes, these official analysis may be a prerequisite for issuing export licences. Furthermore, neither a National Program for monitoring of environmental contaminants in products from wild fisheries nor a National Residue Control Plan for monitoring of residues of veterinary medicines and environmental contaminants in products from aquaculture are in place.

Accredited laboratories capacities are not available in the country, although this is a requirement for official analyses according to EU and national regulations.

Site visits indicated that the regulatory requirements related to health and food safety issues in the fisheries and aquaculture sectors of Guyana are not always enforced. Considerable deviations were observed at some sites, while at other sites requirements seem to be fulfilled. Although the same SPS

regulatory requirements apply for all fish and fisheries production, the enforcement is different between production for export and production for the local market.

The roles and responsibilities of the different agencies are not completely clear regarding SPS-related monitoring which results in confusion regarding the tasks of the different agencies e.g. responsibility for control of environmental issues at the landing sites (wharf) was not clear between the EPA and VPH. This is not unusual when a written documented procedures and agreements are not in place between different agencies.

Animals should be kept away from aquaculture farm ponds, fish feed and landing sites. Several known parasites can be transported with animal faeces into the aquaculture pond and/or feed and to the fish, hence this could lead to contamination that could be carried on to the consumer with serious health effects.

Processing and handling of fishery products for the domestic market is neither according to SPS requirements nor according to national regulations for these products. Considerable effort is needed to change the mind-set of the fishermen, fish vendors, processors and consumers e.g. regarding personal hygiene, hygienic handling of fish and the importance of ice for cooling of fishery products.

5.1.5. Recommendations

The CA is delegating the licensing of vessels to the Department of Fisheries to utilise the human resources at place. This is common practise but written documented procedures are required that clarify the responsibilities and tasks performed by both parties. These written procedures should also include arrangements regarding sharing of information and data so that the CA is able to react without delay if something goes wrong. Verbal agreements and information sharing is not sufficient and written documented procedures should be implemented.

Inspection manuals are important to enforce regulations and to harmonize the inspection system. It is also important that the Food Business Operators are well informed regarding which requirements they must fulfil and how their operation are evaluated as that will assist them in fulfilling their obligation. Therefore it is recommended that the inspection manual is accessible to all stakeholders, for example on the Internet, free of charge.

As the food processors are responsible for ensuring the safety of their production they are expected to exercise due diligence and self-controls (own checks), hence the testing for the microbiological status of food should be carried out by them. The CA should also take official control samples for microbiological analyses to verify that the food processors quality system is working. As this is an essential part of having a license to operate, it is not unfair that the industry covers the cost related to the analysis of these official control samples. This could, for example, be part of their annual license fee and if the results obtained are unsatisfactory extra payment from the FBOs in question should be required by the CA. This type of user fee would enable the CA to guarantee financial independence and sustainability of the official laboratories and that official control samples are tested on regular bases to verify the safety of water, ice and fisheries products.

The CA should ensure that official control samples for fishery products intended for export to the EU include official controls on the products, water and ice in line with the relevant Community requirements i.e. Regulation (EC) No 852/2004 and Directive 98/83/EC. The CA should also ensure that laboratories performing official analyses are assessed and accredited in accordance with standards providing guarantees at least equivalent to the requirements Regulation (EC) No 882/2004. The CA should also ensure that these laboratories take into account criteria for the different testing methods laid down in EC legislation. It is recommended that an assessment (including a cost-benefit analysis) is

carried out to evaluate which laboratory analyses is feasible to accredit and conduct nationally and which would be more beneficial to outsource.

Testing for contaminants/undesirable substances that unintentionally come in contact with food/feed and primary products e.g. PCB's and dioxins are also the responsibility of the producer as he must secure the safety of his product. However, testing for these undesirable substances in each assignment sold is far too expensive. Therefore it is better to establish a nationwide/regional wide monitoring plan that is carried out on regular basis to be able to assess consumer exposure to these undesirable substances. This type of monitoring plan for contaminants/undesirable substances in fishery products and water is currently not in place in Guyana. Similarly, a National Residue Control Plan for monitoring of residues of veterinary medicines and environmental contaminants in products from aquaculture has not been implemented. As neither of these plans are currently in place in Guyana, a suitable solution needs to be initiated and implemented.

Improve the coordination of the different agencies e.g. different organizations are collecting various types of data and should cooperate in the development of a comprehensive data and information exchange system that could be used to monitor, share information and knowledge and report on SPS practices.

It is important to place in motion a plan to improve maintenance and hygiene on board fishing vessels as well as improve SPS measures at landing sites, during transport, fisheries processing plants and in aquaculture in Guyana. This could, for example, be done through wide ranged training of persons working in the primary processing and local fishery products processing facilities e.g. regarding general SPS requirements in fisheries and aquaculture sectors as well as the specific requirements of the EC and USA markets. Training and education of local consumers is also required to improve their understanding and perception regarding food safety of fisheries products. Sharing of experience and best practise as well as success stories from other countries in the Caribbean region could also be a suitable way to create an incentive for persons working in primary processing.

In order to be able to plan for anticipated future developments of the fish industry it is necessary to start to predict and plan for likely future demands of current export markets as well as look out for additional export markets and identify new fishery and aquaculture products for these markets. This requires increased research & development related to the fisheries sector, e.g. regarding development of new products, as this will assist the fisheries sector to move further up the value chain and create a business environment for entrepreneurs in the fisheries industry. This could be achieved through long term (5-10 years) strategic planning with the participation of key stakeholders in the fishery and aquaculture sectors as well as academia.

5.1.6. Appendix

Consultations held in conjunction with National Consultation regarding; National programmes related to health and food safety in the fisheries and aquaculture sectors

Attendants at SPS consultation held June 1st 2015 at Fisheries Department in Guyana

Name	Designation	Name of Employer & Country	Email adress
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Attendants at SPS consultation held June 2nd 2015 at Environmental Protection Agency in Guyana

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Attendants at SPS consultation held June 3rd 2015 at IICA office with the Technical National Implementation Network Team (TNINT) in Guyana

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5.2. Assessment report for Belize

Dates of visit; 28 June - 4 July 2015

Mission team: Mr. Margeir Gissurarson, Dr. Helga Gunnlaugsdottir and Mr. Peter A. Murray.

5.2.1. Official agencies

To gather information regarding official control related to SPS measures in Belize three consultations were arranged with staff from official agencies working in this area.

Consultation held June29th 2015 at CRFM Secretariat in Belize City

In addition to the experts from the mission team this consultation was attended by representatives from the Belize Fisheries Department: please refer to Appendix for the complete lists of attendants. The consultation focused on developing an understanding of the roles and responsibilities of the various agencies/departments in the area of health and food safety in the fisheries and aquaculture sectors in the country.

It was clarified that the Fisheries Department (FD) is responsible for planning and management of fisheries resources, however, aquaculture is presently not part of their responsibilities. At the moment there is open access to catch seafood in Belize waters, but FD wants to introduce a system that requires issuing fishing licenses to fishing vessels and it is foreseen this will be done through a new legislation that hopefully will be passed in September 2015.

The Team was informed that artisanal vessels are most common type of fishing vessels in Belize. Artisanal fishermen are generally members of established fishing cooperatives; as a result the majority of their catch (mainly lobster and conch) is landed at one of these cooperatives where it is processed for export. The fishing cooperatives are owned by local investors and fishermen are the main shareholders.

3The Team was informed that the Competent authority (CA) in charge for official controls of fisheries products is the Belize Agricultural Health Authority (BAHA) under the Ministry of Agriculture and Fisheries and BAHA is defined in the regulatory framework (for further details see section Consultation held June 29th with BAHA below) .

Consultation held June 29th 2015 with BAHA

This meeting took place at the BAHA facilities in Central Farm in Belize and the aim of the meeting was to receive information from a representative of the CA in Belize on the roles and responsibilities of the CA related to health and food safety in the fisheries and aquaculture sectors. The experts from the consultation team and Ms. Vivian Belisle-Ramnarace from FD met with the BAHA Coordinator for Sanitary & Phytosanitary Enquiry Point, Ms. Delilah Cabb Ayala.

The Team was informed that BAHA and Ministry of health are collaborating on issues relating to the establishment, implementation and enforcement of hygienic practises in the entire food chain and a Memoranda of Understanding (MoU) is available between Ministry of health and BAHA regarding these procedures and responsibilities. Based on this agreement BAHA is responsible for official controls in the entire production chain of fisheries product both for export and domestic market The CA inspects, approves and certifies all fisheries production establishments and issues health certificates

for export of fisheries products. Two BAHA inspectors are designated for fisheries products and they have to inspect 7 processing facilities, 6 high sea vessels and aquaculture sites. The CA also validates HACCP plans for fisheries facilities.

There is a defined structure for the implementation of inspections and written procedures (inspection manual & check list) are available and used to carry out the inspections of the facilities. The CA has the power to take action in case of non-compliance with standards and carries out follow up of producers regarding the deficiencies noted and set deadlines for necessary corrective actions. The written inspection procedures are accessible to stakeholders and therefore transparent to all stakeholders

The CA regularly takes official control samples of the fisheries products, as well as of the water used in the processing establishments.

The Team learned that a National Program for monitoring of residues of environmental contaminants in fisheries products for export (shrimp, conch, lobster, tilapia) is in place, however, this does plan does not include fisheries products from the domestic market. Furthermore, not all the required chemical analysis according to EU regulations are carried out e.g. not for histamine, PAH, dioxins and PCBs.

The Team was advised that the designated laboratory for official analysis of food in Belize is the Central Investigation Laboratory (CIL) and that the CIL carries out analyses on fishery products and water in the context of official controls. The laboratory is currently working towards accreditation against ISO 17025 standard. The CIL carries out basic microbiological analysis i.e. Total Plate Count, Total Coliform Count, Faecal coliforms, *E. coli, Staphylococcus aureus, Salmonella* and *Vibrio spp.* as well as heavy metal and pesticides analysis.

The Team was informed that a National Residue Control Plan is in place for aquaculture products and the residues/substances analysed, maximum limits & the sampling plan is in line with EU regulations (Council Directive 96/23/EC). These analysis of residues of veterinary medicines and environmental contaminants in products from aquaculture are carried out by accredited laboratories in USA.

Consultation held June 30th 2015 with the Department of the Environment

This consultation was held at the Department of the Environment (DoE) in Belmopan and the aim of the consultation was to receive information from representatives of DoE regarding their role and responsibilities related to health and food safety in the fisheries and aquaculture sectors; please refer to Appendix for the complete lists of attendants.

The Team learned that if a developer wants to start aquaculture or other environmentally intensive project in Belize he has to prepare a project proposal. Based on the proposal it is decided whether it is necessary to carry out full scope Environmental Impact Assessment (EIA) or whether a Limited level-EIA (only tackles the 5 biggest issues) is sufficient. This depends on the size and pollution load of the project. The EIA covers all relevant environmental aspects and is evaluated by 13 people (the National Environmental Appraisal Committee - NEAC**)** from different backgrounds & if expertise is needed this is added to committee. The developer has to pay for the EIA and it is carried out by independent companies, however, the developer also pays a certain price to DoE for their work.

When the EIA has been evaluated and the project approved an Environmental Compliance Plan (ECP) is prepared, this is a legally binding contract between operator and DoE that the operator signs and therefore should follow. If ECP needs to be renewed then parts of the initial EIA may need to be reviewed. If changes are suggested by Operator to the ECP

then DoE needs to accept these e.g. if a >50% expansion is expected then some additional evaluations will have to be carried out.

The Team was informed that a legally binding ECP is enforced for all aquaculture sites in Belize and the DoE carries out an inspection of aquaculture facilities at least once/year and submits the inspection report to the Aquaculture Operator. Operators pay environmental fees to cover the cost of DoE. Aquaculture farms are also inspected by BAHA i.e. they check the quality of water and health/diseases status of shrimp/fish. In addition, the Food Business Operators (FBOs) and Aquaculture Operators regularly have to send their own data regarding water monitoring to DoE.

There is a good cooperation between DoE and BAHA, but no written MoU are available regarding procedures and responsibilities.

The Team was advised that a National water (marine and terrestrial water) quality monitoring program is under development but not implemented yet.

5.2.2. Sites visited in Belize

To assess enforcement procedures a number of site visits were carried out according to the table below.

Type	**Number of visits**
Aquaculture sites	2
Landing sites	1
Processing establishment	3
Laboratory	0

The Team made direct observations regarding the infrastructure, vessels, equipment, production environment, and made further enquiries to stakeholders at the sites visited about harvest and post-harvest procedures, fish transport, processing, etc.

Landing sites and vessels

Please refer to the section *SPS requirements for fish and aquaculture* in the general background report regarding the minimum SPS requirements for landing sites, vessels and ice production.

Main observations noted:

- The artisanal vessels observed by the Team were made of wood and they had a storage hold filled with ice on board. These vessels had several small wooden canoes stored on the deck. The Team was informed that once the main vessel reached the fishing grounds, these small canoes are used for a submarine fishing of lobster/conch carried out by divers, each small canoe having a captain and a diver. The lobsters and conch are then stored alive on the canoe and at the end of each fishing day the catch is transferred directly to the hold of the main

vessel. The fishermen stay out at sea for about 5-6 days, but they stay overnight at base camps on small islands in the shallow waters of the reef.

- Limited hygienic facilities on-board the main vessel and canoes, however, neither the hygienic procedures used by the fishermen during handling of the catch nor the conditions of the base camps could be evaluated by the Team
- Ice production facility was available at the landing site
- Infrastructure of landing sites was adequate in terms of SPS requirements

Processing establishment

The mission Team visited three processing establishment that all were producing fisheries products for export and the status of this establishments in regards to SPS requirements was satisfactory; please refer to the section *SPS requirements for fish and aquaculture* in the general background report regarding the minimum SPS requirements for processing establishments.

Main observations noted by the mission team:

In two out of the three establishments visited the structure, layout, maintenance and hygiene conditions for the processing and handling of raw material was satisfactory, these two establishments were both producing fisheries products for export. In one establishment producing fisheries products for export some problems related to maintenance were observed e.g. poor walls with cracks and missing tiles; unsuitable walls and floors (tiles), which were rough and not easy to clean. Additionally, the structure and hygienic conditions of the ice producing facility was not optimal e.g. ice stored on floor; considerable condensation at the ceiling; no separation between storage area and walking area. A HACCP system was in place in all three establishments.

The managers of all three establishments visited confirmed that the CA (BAHA) inspects their facilities on regular bases and provides them with formal inspection reports and results of analysis of official control samples taken at their facilities. Two of the establishments also carried out own checks in the own quality control laboratory.

Aquaculture sites

The mission Team visited two commercial aquaculture sites. One of these sites was dedicated to farming, production and processing of fresh tilapia, while the other site was farming and processing shrimp. In general, conditions and facilities were adequate for the intended activity also the official control and enforcement of the aquaculture operations seems satisfactory.

Main observations noted by the mission team:

The Tilapia farm was vertically integrated from brood stock to market size fish and the farming was carried out in semi intensive ponds. The water in the ponds was received from a nearby river and after the initial filling of the ponds with water, the pumps in the river are only used to cover the loss by evaporation - this is possible due to a recirculation system. The feed used in this farm was imported from an internationally recognised feed producer. The water quality in the ponds was checked daily by the operator e.g. analysis of ammonia, nitrate, pH and dissolved oxygen.

The Shrimp farm had recently received Aquaculture Stewardship Council (ASC) certification, which means that a third party audits and certifies the farm against ASC standards to assess whether they are operating responsibly. The aim of the ASC standards are to improve farming practises and reduce

negative environmental and social impact. In addition the operation had British Retail Consortium (BRC) certification. The water in their ponds was obtained from the sea and was taken approximately 800 m from shore. The Shrimp farm operator emphases on high a standard and good quality control (QC) through the entire processing chain. Therefore, regular own test both regarding water quality in the ponds, water used in the process and on the fisheries products are carried out in their own QC laboratory.

Both aquaculture operators confirmed that their facilities were inspected annually both by DoE and BAHA. Furthermore, BAHA carries out analysis of official control samples of the water in the pond and the aquaculture products. The Team was also informed that no drugs were used in the farming.

Laboratories

The mission Team did not visit any laboratory facilities in Belize and could therefore not make any direct observations regarding the infrastructure, equipment or laboratory capabilities in Belize. Some information regarding the laboratory capacity was provided by BAHA at the consultation held June 29th 2015 (see section above) and at the national consultation meeting on July 1st, but this information could not be verified by the mission Team.

5.2.3. Consultation with stakeholders

On July 1st 2015 a National Consultation with stakeholders was held.

The key challenges highlighted were the following:

- Belize has general effluent standards, however the monitoring of effluents from fish processing plants has been minimal. Discussions between Fisheries and the Department of Environment have resulted in plans being put in place to revitalize the implementation of these standards.
- There is currently a gap in the monitoring plan on residues of environmental contaminants in fisheries products from the wild fisheries as the present plan does not include analysis of environmental contaminants in fisheries products that are only for sale on the domestic market.
- The cost of analysis for e.g. residues of environmental contaminants in fisheries products could pose a problem for domestic producers. Therefore it is important to maximise the financial resources required for analysis of samples taken as part of official control and improve the coordination of the different agencies e.g. regarding samples and test performed, collection of various types of data, sharing of data and evaluation of the data.
- Laboratory capacities could/should be shared between sectors as the same analytical equipment and test procedures can be applied across sectors. To achieve this goal a task force with principal players with relevant technical expertise should be established and their mandate should be to identify how laboratory capacities can be optimised in Belize in order to minimised duplication of work and maximise the use of national resources.

5.2.4. Conclusion

The Competent authority (CA) in charge for official controls of fishery products is the Belize Agricultural Health Authority (BAHA) under the Ministry of Agriculture and Fisheries and BAHA is defined in the regulatory framework. BAHA and Ministry of health are collaborating on issues relating to the establishment, implementation and enforcement of hygienic practises in the entire food chain and MoU is available between these parties regarding these procedures and responsibilities. Based on this agreement BAHA is responsible for official controls in the entire production chain of fisheries product for export. However, the CA is not responsible for inspection of artisanal vessels and establishments processing domestic fisheries products.

There is a defined structure for the implementation of inspections and written procedures (inspection manual & check list) are available and used to carry out the inspections by the CA of the facilities. These written inspection procedures are accessible to stakeholders and therefore the FBOs are well informed regarding which requirements they must fulfil and how their operation is evaluated which improves the transparency of the inspection process.

The CA takes official control samples for analyses of the fisheries products as well as of the water/ice used in the processing establishments producing for export, this is in line with EU requirements regarding official monitoring and surveillance of fishery products and water.

Accredited laboratories capacities are not available in the country, although this is a requirement for official analyses according to EU and national regulations. Based on the results from a cost benefit analysis Belize will focus on the accreditation of certain methods and the groundwork for this accreditation is currently being pursued with assistance from the International Atomic Energy Agency (IAEA) and funds from the Inter-American Development Bank (IDB).

The designated official laboratory carries out some of the official analysis required for export of fisheries products to EU. However, official analysis of some chemical risks (histamine, PAHs, dioxins and PCBs) are not carried out, this is not in line with EU requirements. Furthermore, the National Program for monitoring of environmental contaminants in products from wild fisheries only covers fisheries products for export and does not include products from the domestic market.

A National Residue Control Plan is in place for aquaculture products and the residues/substances analysed, maximum limits & the sampling plan is in line with EU regulations (Council Directive 96/23/EC). However, the analysis of residues in aquaculture products is outsourced as the necessary laboratory capacities are not available in Belize.

Site visits indicated that the regulatory requirements related to health and food safety issues in the fisheries sectors of Belize are generally enforced by the CA for fisheries products intended for export, but not for the domestic market. Therefore, there is difference between the enforcement of regulations for fisheries products for export and production for the domestic market.

There is good cooperation between official agencies in Belize but in some cases written MoU would strengthen the system e.g. no MoU exists between DoE and BAHA

It is important to maximise the financial resources required for analysis of samples taken as part of official control and improve the coordination of the different agencies e.g. regarding collection of samples and analytical test performed, gathering of various types of data, sharing of data and evaluation of the data.

Laboratory capacities could be shared between sectors as the same analytical equipment and test procedures can be applied across sectors.

Good practise in place concerning procedures that are required before initiation of environmentally intensive projects and the operation of such activities e.g. regarding the need for an Environmental Impact Assessment (EIA), scope of the EIA, legally binding Environmental Compliance Plan.

5.2.5. Recommendations

As the food processors are responsible for ensuring the safety of their production they are expected to exercise due diligence and self-controls (own checks), hence the testing for the microbiological status of food should be carried out by them. The CA should also take official control samples for microbiological analyses to verify that the food processors quality system is working. As this is an essential part of having license to operate it is not unfair that the industry covers the cost related to the analysis of these official control samples. This could for example be part of their annual license fee and if the results obtained are unsatisfactory extra payment from the FBO in question should be required by the CA. This type of user fee would also enable the CA to guarantee financial independence and sustainability of the official laboratories and that official control samples are tested on regular bases to verify the safety of water, ice and fisheries products.

The CA should ensure that official control samples for fishery products intended for export to the EU include official controls on the products, water and ice in line with the relevant Community requirements i.e. Regulation (EC) No 852/2004 and Directive 98/83/EC. The CA should also ensure that laboratories performing official analyses are assessed and accredited in accordance with standards providing guarantees at least equivalent to the requirements Regulation (EC) No 882/2004. The CA should also ensure that these laboratories take into account criteria for the different testing methods laid down in EC legislation. It is recommended that an assessment (including a cost-benefit analysis) is carried out to evaluate which laboratory analyses is feasible to accredit and conduct nationally and which would be more beneficial to outsource. This assessment should also take into consideration which laboratory capacities could be shared between sectors e.g. in case the same analytical equipment and test procedures can be applied across sectors.

Testing for contaminants/undesirable substances that unintentionally come in contact with food/feed and primary products, e.g. PCB's and dioxins, are also the responsibility of the producer as he must secure the safety of his product. However, testing for these undesirable substances in each assignment sold is far too expensive. Therefore it is better to establish a national wide/regional wide monitoring plan that is carried out on regular basis to be able to assess consumer exposure to these undesirable substances. In Belize there is currently a gap in the monitoring plan of environmental contaminants in fisheries products from wild fisheries as the present plan does not include analysis of fisheries products that are only for sale on the domestic market. It is recommended that this gap will be filled so this monitoring plan covers all major fisheries products that are consumed and traded in Belize. Monitoring and collection of data on contaminants detected in fishery products from wild fisheries could also be shared within the region as this type of monitoring covers all marine species caught in Caribbean waters, hence this type of activity would benefit from a regionally coordinated approach.

It is important to make sure that the CA is enforcing one harmonised standard for all fishery products so that there are not two standards applied i.e. one for domestic market and another for the export market. Harmonisation of official control is essential to ensure the safety of fishery products to all consumers and enforcement of the CA according to national regulative requirements are considered the minimum requirements to make sure that fishery products on the market are safe.

There is good cooperation between official agencies in Belize, however, in some cases written procedures do not exist, it is recommend to prepare documented MoU between official agencies as verbal agreements are not sufficient e.g. in case of conflict of interest.

Improve the coordination of the different agencies e.g. different organizations are collecting various types of data and should cooperate in the development of a comprehensive data and information exchange system that could be used to monitor, share information and knowledge and report on SPS practices. Increased collaboration and coordination would also lead to better use the financial resources required for the collection and analysis of samples.

Good practise is already in place in Belize concerning procedures that are required before initiation of environmentally intensive projects and the operation of such activities and it is advised that these procedures will be shared with other Caribbean countries that have not come as far in this area.

In order to be able to plan for anticipated future developments of the fish industry it is necessary to start to predict and plan for likely future demands of current export markets as well as look out for additional export markets and identify new fishery and aquaculture products for these markets. This requires increased research & development related to the fisheries sector, e.g. regarding development of new products, as this will assist the fisheries sector to move further up the value chain and create a business environment for entrepreneurs in the fisheries industry. This could be achieved through long term (5-10 years) strategic planning with the participation of key stakeholders in the fishery and aquaculture sectors as well as academia.

Consultation held in conjunction with National Consultation regarding; National programmes related to health and food safety in the fisheries and aquaculture sectors

Attendants at SPS consultation held June 29th 2015 at CRFM Secretariat in Belize City

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5.3. Assessment report for Grenada

Dates of visit; 7 - 11 June 2015

Mission team: Mr. Margeir Gissurarson, Dr. Helga Gunnlaugsdottir and Dr. Susan Singh-Renton (experts from another consulting team on legislation related to health and food safety issues in the fisheries and aquaculture sectors also participated all consultations and site visits carried out in Grenada).

5.3.1. Official agencies

To gather information regarding official control related to SPS measures in Grenada two consultations were arranged with staff from official agencies working in this area.

Consultation held June 8th 2015 at Fisheries Division in Grenada

In addition to the experts from the two mission teams this consultation was attended by representatives from Fisheries Division (FD) and some members of the Technical National Implementation Network Team (TNINT) in Grenada that participated in part of the consultation: please refer to Appendix for the complete lists of attendance. The consultation focused on developing an understanding of the roles and responsibilities of the various agencies/departments in the area of health and food safety in the fisheries and aquaculture sectors.

It was clarified that Grenada has developed, enacted and implemented at national level the relevant fish and fishery product regulations according to EU requirements and has been exporting fishery products to EU since 2006. Nevertheless, USA is currently the main market for pelagic species, especially yellowfin tuna. The Team was also informed that there are currently no commercial aquaculture site operating in Grenada. The Competent authority (CA) in charge for official controls of fishery products is the Chief Environmental Health Officer (CEHO) under the Ministry of Health and CEHO is defined in the regulatory framework. In addition, four fisheries officers (FO) from the Fisheries Division (FD) under the Ministry of Agriculture, Lands, Forestry, Fisheries & Environment (MALFFE) are officially designated as fish inspectors to assist the CA regarding the supervision of the fisheries products processing facilities and fishing vessels. In this case the Ministry of Health is responsible for the work carried out by the FO. Certain requirement are set out by the CA regarding the training and qualification of the FO that are designated to carry out inspections and the four FO that are working in this area have a certification regarding their qualifications. Normally and audit/inspection of a fisheries products establishment is carried out simultaneously by health and fisheries officers. The team was informed that usually it is the same FO that carries out the inspection of facilities in a certain area in Grenada, but the system also allows for independent checks by other officers. The CA certifies the processing facilities and based on this certificate the FO give license to export fisheries products.

The Team was advised that there was no formal manual on inspections, but that the procedures followed are based on the existing regulations. FD staff confirmed that there was a checklist used for inspections and agreed to provide the Team with the set of forms used.

The Team was informed that Grenada is striving for a single, acceptable standard related to health and food safety issues in the fisheries sector, since the allowance of different standards could create weaknesses and loopholes for stakeholder operations.

Consultation held June 9th 2015 with the Competent Authority

This meeting took place at the Ministry of Health and the aim of the meeting was to receive information from a representative of the CA in Grenada on the roles and responsibilities of the CA related to health and food safety in the fisheries sectors. The experts from both consultation teams and Mr. St. Louis from FD met with the Chief Environmental Health Officer (CEHO), Mr. André Worme, and one of the fisheries officer responsible for SPS matters, Mr. Jude Andrews.

The CEHO confirmed the information regarding roles and responsibilities related to health and food safety in the fisheries sectors provided at the consultation held the day before at the FD. The Team learnt that the CA conducts inspections of facilities 1-3 times per year. If corrective actions are required, the food business operators (FBOs) are given a deadline and time for remedial action. The CA collaborates with the FBOs regarding getting them up to standards, therefore the most serious deficiencies are prioritised and the FBOs work on improving them first. If the FBOs do not realise the corrective actions by the given deadline their licence to operate can be revoked.

The Team was informed that the only designated laboratory for official analysis in Grenada is the Produce Chemist Laboratory (PCL). The team also learnt that due to financial restrictions the CA does not currently carry out official sampling and check of water, ice and fishery products. An official monitoring plan for contaminants/residues in fishery products and water is also not in place. The Team was advised that waster testing was usually done by the National Water and Sewerage Authority and the results from these tests are sent to the CA. In addition, the operating facilities do their own tests, e.g. checks of heavy metals in water in USA, and the results from these tests are send to the CA. The Team was informed that the cost of analysis of official control samples taken by the CA are paid by the government i.e. the FBO do not pay user fees for the analysis of official control samples.

5.3.2. Sites visited in Grenada

To assess enforcement procedures a number of site visits were carried out according to the table below.

Type	Number of visits
Landing sites	1
Fishing/freezer vessels	2
Processing establishment	2
Laboratory	2

The Team made direct observations regarding the infrastructure, vessels, equipment, production environment, and made further enquiries to stakeholders at the sites visited about harvest and post-harvest procedures, fish transport, processing, laboratory analysis etc.

Landing sites and vessels

Please refer to the section *SPS requirements for fish and aquaculture* in the general background report regarding the minimum SPS requirements for landing sites, vessels and ice production.

Main observations noted:

- Artisanal vessels seem to be the main type of fishing vessels used in Grenada

- The internal surface of the fishing vessels was normally made of material (plastic/fibre-glass) that is easy to clean, however wood was also used on some surfaces that came in direct contact with the fish caught
- Fishing vessels have insulated ice boxes and the fish is iced at sea
- Fish is beheaded and gutted by the fishermen at sea and these parts of the fish are not utilised and are thrown back into the sea, after harvest the gutted fish is stored on ice in the boat storage area
- During landing of the fish, e.g. yellowfin tuna (YFT), it is transported from the boat storage area using hooks, but eventually the fishermen have to climb into the storage area to reach the fish, this poses a sanitary risk as they might forget to sanitise their boots and step on the fish.
- Some litter was observed at the site
- Ice production facility was available at a processing establishment close by the landing site
- No hygienic facilities were observed

Processing establishment

The mission Team visited in total two processing establishments, both of these establishments processed mainly fish and their main emphasis was on export of raw tuna on ice. At one of the establishments, there was also limited production of smoked fishery products exclusively for the domestic market. The status of these establishments in regards to SPS requirements were adequate for fisheries product intended to be heated but insufficient for ready to eat products (e.g. tuna for sushi), please refer to the section *SPS requirements for fish and aquaculture* in the general background report regarding the minimum SPS requirements for processing establishments.

Main observations noted by the mission team:

Generally the structure, layout, maintenance and hygiene conditions for the processing and handling of raw material was satisfactory in terms of SPS requirements in both processing establishment visited as the fish processing only involved, cleaning, chilling and packaging of the fish . The Team however noted that at one of the establishments there was no separation between storage area and walking area in the ice processing facility, which could result in contamination of the ice as workers walk directly into this area. This establishment was currently in the process of installing a new ice processing facility to improve this deficiency. A HACCP system was in place in both establishments and the mission Team was informed that workers receive basic training. The team noted that the critical limits in the HACCP plan implemented in one establishment were not correctly defined.

The parts of the operations of these two processing establishments that were intended for fishery products for export were generally satisfactory in terms of SPS requirements, while a lower standard was applied for the part of their operation that was producing fishery products for the domestic market.

The Team was informed that both establishment place emphasis on cooling the fish caught down fast with ice as soon as possible after it has been caught and keeping it cold through the entire processing chain. In addition, the traceability of the tuna is of importance and therefore each fish is tagged at sea and data records kept for each individual landed and processed.

Laboratories

The mission Team visited the Produce Chemist Laboratory (PCL), which has been designated by the CA in Grenada to carry out analyses on fishery products as well as water and ice in the context of official

controls. The team was informed that this laboratory is not accredited to ISO standard 17025. The Team was also informed that the laboratory had not received any official control samples for microbiological analysis for two years. Furthermore, no official chemical analysis (heavy metals, environmental contaminants and histamine) on fishery products and water have been carried out for one year. The team observed that the environmental conditions in the official PCL were currently not adequate to be able to carry out accredited analysis e.g. not very clean, untidy and some equipment was not properly maintained.

The mission Team also visited Bureau of standards laboratory (BSL), which carries out microbiological analysis of food and water for various clients (including FBO). They aim to set up heavy metal analysis in food products in the near future and have already procured the necessary analytical equipment. BSL is independently financed i.e. raise 70% of their funds on their own. The team was informed that this laboratory is not accredited to ISO standard 17025, but BSL is working towards this goal and their aim is that the first analysis (pH and moisture) will be accredited by the end of this year.

5.3.3. Consultation with stakeholders

Two consultations with stakeholders were held in Grenada i.e. a consultation with key stakeholders on June 9th 2015 and a National Consultation with stakeholders on June 10th 2015, please refer to Appendix for the complete list of attendance.

The key challenges highlighted were the following:

- The current processing of fishery products in Grenada is not very complicated i.e. it involves only weighing, cleaning and storing/holding the fish. If Grenada desires to export a ready to eat product, a higher SPS standard would need to be maintained. Further, if any "value added" activities were being considered, the present facilities would be faced with new challenges.
- Need to be able to guarantee financial independence and sustainability of the official laboratories so that official control samples are tested on regular bases. This could for example be done through user fees to cover the cost of the analysis of these samples. Nevertheless, it also necessary to make sure that this user fees is paid directly to the official laboratories and not into consolidated governmental funds.
- SPS requirements of various markets are basically the same, but are applied differently. Hence, the national system has to be flexible to manage these differences simultaneously. However, it is challenging to set up different quality control systems for different markets and such a multi-standard system would require strong official controls. At the moment there is for example limited fish trading among Caribbean countries due to limited harmonisation of standards across the Caribbean countries.
- FBOs need to have all documentation available at all times e.g. regarding own check according to HACCP, documentation is vital for transparency and legal purposes as well as for all audit visits by different authorities
- Needs of individual artisanal fishermen have to be addressed as they are lacking behind in terms of meeting SPS requirements e.g. regarding infrastructure, maintenance and hygiene facilities on-board the vessel and therefore they cannot participate according to standards. One solution to this problem has been the establishment of co-ops i.e. an association of Artisanal fishermen that collaborate together in terms of infrastructure, management etc. Nevertheless, the FO attending the consultations informed that the attitude and mind set of

fishermen has improved considerably in the last 10 years due to considerable training at all levels in the fisheries production

- There is currently insufficient technical expertise and relevant university programs related to food science, environmental science and engineering in the country and this hampers research & development related to the fisheries sector e.g. regarding development of new products and value addition
- Responsibilities regarding monitoring and collection of data on contaminants detected in fishery products from wild fisheries could be shared within the region as this type of monitoring covers all marine species caught in Caribbean waters, hence this type of activity would benefit from a regionally coordinated approach
- Important to establishing a contingency plan for fishery products. Such a plan is necessary to react to serious health related risks through food consumption and sets the stage for institutional cooperation to be able to react quickly to outbreaks and minimize possible damages to human health.

5.3.4. Conclusion

The Chief Environmental Health Officer (CEHO) within the Ministry of Health is clearly defined in the national regulatory framework as the competent authority (CA) of Grenada. They are responsible for official control of all food business operators and issue certificates and licenses. In addition, four fisheries officers (FO) from the Fisheries Division (FD) under the Ministry of Agriculture, Lands, Forestry, Fisheries & Environment are officially designated as fish inspectors to assist the CA regarding the supervision of the fisheries products processing facilities and fishing vessels. In this case the Ministry of Health is responsible for the work carried out by the FO.

The key to harmonization of regulatory enforcement is to have documented work procedures in place that explain in details how inspection should be conducted according to the regulatory requirements. Linked to such work procedures (usually called Inspection Manual) is a check list that can be used by the official inspectors during the inspection. This type of inspection manual that describes the implementation of inspections is not available in Grenada, a check list is however used but not supported by detailed work procedure, leaving the interpretation regarding inspection procedures, deadlines and enforcements of corrective action up to individual inspectors. This could cause problem in harmonizing the inspection system.

According to EU and national regulations the CA is required to carry out various official monitoring and surveillance of fishery products and water/ice. In order to fulfil these requirements the CA should take official control samples for analyses to verify compliance with the legislation and to assess consumer exposure in terms of food safety. However, due to lack of financial resources the CA in Grenada has no not been able carry out analysis of official food control samples for 1-2 years. Sometimes, these official analysis may be a prerequisite for issuing export licences. Furthermore, a National Program for monitoring of environmental contaminants in products from wild fisheries is not in place.

Currently there is no commercial aquaculture carried out in Grenada and therefore it is not necessary for the CA to implement a National Residue Control Plan (NRCP) for monitoring of residues of veterinary medicines and environmental contaminants in products from aquaculture. However, in case commercial aquaculture will be developed in Grenada in the future it will be necessary to implement the NRCP.

Accredited laboratories capacities are not available in the country, although this is a requirement for official analyses according to EU and national regulations.

Site visits indicated that the regulatory requirements related to health and food safety issues in the fisheries sectors of Grenada are generally enforced by the CA. Nevertheless, it was noted that the enforcement is different between production for export and production for the domestic market despite the fact that the same SPS regulatory requirements apply for all fish and fisheries production.

Normally it is the same FO that carries out the inspection of the facilities in a certain area in Grenada, this arrangement could create close relationships (friendship) between inspector and owner of FBO, which may lead to deviations from procedures for the inspection.

The current lack of technical expertise and relevant university programs related to food science, environmental science and engineering in the country is hampering research & development related to the fisheries sector e.g. regarding development of new products and value addition .

5.3.5. Recommendations

Inspection manuals are important to enforce regulations and to harmonize the inspection system. It is also important that the Food Business Operators are well informed regarding which requirements they must fulfil and how their operation are evaluated as that will assist them in fulfilling their obligation. Therefore it is recommended that written procedures (inspection manual) that explain in details how inspection should be conducted according to the regulatory requirements will be developed and implemented in official control in the fisheries sector. Further, it is advised that this inspection manual will be accessible to all stakeholders, for example on the Internet, free of charge.

As the food processors are responsible for ensuring the safety of their production they are expected to exercise due diligence and self-controls (own checks), hence the testing for the microbiological status of food should be carried out by them. The CA should also take official control samples for microbiological analyses to verify that the food processors quality system is working. As this is an essential part of having license to operate it is not unfair that the industry covers the cost related to the analysis of these official control samples. This could for example be part of their annual license fee and if the results obtained are unsatisfactory extra payment from the FBO in question should be required by the CA. This type of user fee would enable the CA to guarantee financial independence and sustainability of the official laboratories and that official control samples are tested on regular bases to verify the safety of water, ice and fisheries products.

The CA should ensure that official control samples for fishery products intended for export to the EU include official controls on the products, water and ice in line with the relevant Community requirements i.e. Regulation (EC) No 852/2004 and Directive 98/83/EC. The CA should also ensure that laboratories performing official analyses are assessed and accredited in accordance with standards providing guarantees at least equivalent to the requirements Regulation (EC) No 882/2004. The CA should also ensure that these laboratories take into account criteria for the different testing methods laid down in EC legislation. It is recommended that an assessment (including a cost-benefit analysis) is carried out to evaluate which laboratory analyses is feasible to accredit and conduct nationally and which would be more beneficial to outsource.

Testing for contaminants/undesirable substances that unintentionally come in contact with food/feed and primary products, e.g. PCB's and dioxins, are also the responsibility of the producer as he must secure the safety of his product. However, testing for these undesirable substances in each assignment sold is far too expensive. Therefore it is better to establish a national wide/regional wide monitoring plan that is carried out on regular basis to be able to assess consumer exposure to these undesirable substances. This type of monitoring plan for contaminants/undesirable substances in fishery products and water is currently not in place in Grenada, hence a suitable solution needs to be initiated and implemented.

It is important to make sure that the CA is enforcing one harmonised standard for all fisheries products so that there are not two standards applied i.e. one for domestic market and another for the export market. Such double moral will not only lead to bad attitude towards food safety and public health but will also delay the development of the fishery sector and the fisheries communities and have a negative effect on the sustainable utilisation of the fishery resources.

Improve the coordination of the different agencies e.g. different organizations are collecting various types of data and should cooperate in the development of a comprehensive data and information exchange system that could be used to monitor, share information and knowledge and report on SPS practices.

In order to be able to plan for anticipated future developments of the fish industry it is necessary to start to predict and plan for likely future demands of current export markets as well as look out for additional export markets and identify new fishery and aquaculture products for these markets. This requires increased research & development related to the fisheries sector, e.g. regarding development of new products, as this will assist the fisheries sector to move further up the value chain and create a business environment for entrepreneurs in the fisheries industry. This could be achieved through long term (5-10 years) strategic planning with the participation of key stakeholders in the fishery and aquaculture sectors as well as academia.

5.3.6. Appendix

Consultations held in conjunction with National Consultation regarding; National programmes related to health and food safety in the fisheries and aquaculture sectors

Attendants at SPS consultation held June 8th 2015 at Fisheries Division in Grenada

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5.4. Assessment report for Suriname

Dates of visit; 11 - 16 June 2015

Mission team: Mr. Margeir Gissurarson, Dr. Helga Gunnlaugsdottir and Dr. Susan Singh-Renton.

5.4.1. Official agencies

To gather information regarding official control related to SPS measures in Suriname three consultations were arranged with staff from official agencies working in this area.

Consultation held June 12th 2015 at Fisheries Department in Suriname

In addition to the experts from the mission team this consultation was attended by representatives from Fisheries Department (FD) under the Ministry of Agriculture, Animal Husbandry and Fisheries; please refer to Appendix for the complete lists of attendants. The consultation focused on developing an understanding of the roles and responsibilities of the various agencies/departments in the area of health and food safety in the fisheries and aquaculture sectors in Suriname.

It was clarified that the Fisheries Department (FD) is responsible for fisheries management and development of aquaculture. The FD is in charge of issuing fishing licenses to fishing vessels and catch certificate. Vessel monitoring system is mandatory for all trawlers and legislation present for protected areas. Observers from FD go on board fishing vessels and catches are registered on the basis of these observations, however the FD staff does not deal with SPS measures on board the vessels.

The Team was informed that Suriname has developed, enacted and implemented at national level the relevant fish and fishery product regulations according to EU requirements and has been exporting fishery products to EU since. The Competent authority (CA) in charge for official controls of fishery products is the Vis Keurings Instituut (VKI is the Dutch abbreviation) under the Ministry of Agriculture, Animal Husbandry and Fisheries and VKI is defined in the regulatory framework. However, there seemed to be some uncertainty about which agency functioned as the overall CA for food in general in Surname, but it appeared that several agencies were involved for example the Ministry of Health was involved in market inspections.

The Team was advised that the aquaculture legislation is currently under revision and when the new legislation has been passed and implemented aquaculture operations would need a licence as well as an Environmental Impact Assessment (EIA). At present, compliance was voluntary.

Consultation held June 12th 2015 with the Competent Authority

This consultation took place at VKI and the aim of the consultation was to receive information from representatives of the CA in Suriname on the roles and responsibilities of the CA related to health and

food safety in the fisheries and aquaculture sectors, please refer to Appendix for the complete lists of attendants.

The Team was informed that the CA inspects and licenses all fisheries production establishment for export i.e. fishing vessels, landing sites, processing plants and commercial aquaculture farms and issues health certificates for export & import of fisheries products. There is a defined structure for the implementation of inspections and written procedures (inspection manual & check list) are available and used to carry out the inspections of the facilities. An annual inspection plan is prepared that is based on risk assessment, history and complaints related to the respective facilities. There are four inspector trained as quality managers that perform the inspections and two assistant inspectors (samplers) help out. The inspectors are required to take a one year course in "Fish Inspection and Quality Management in the Fisheries Sector", which is organised by the FD and the University of Suriname and recognised by the Ministry of Education. The CA currently inspects 60 industry fishing vessels (not artisanal boats), 7 landing sites, 16 processing plants and 3 commercial aquaculture farms. Only products coming from certain registered processing establishments can be exported to EU. The human resources of the CA are currently limited and therefore it places less focus on inspection of domestic fisheries production and facilities. In case the inspection reveals that corrective actions are required, the food business operators (FBOs) are given a deadline and time for remedial action. The CA collaborates with the FBOs regarding getting them up to standards, therefore the most serious deficiencies are prioritised and the FBOs work on improving them first. If the FBOs do not realise the corrective actions by the given deadline the CA can prevent the export of consignments to EU and if continued problems occur their licence to operate can be revoked. The Team also learned that HACCP plans are submitted by FBOs to the CA and it provides suggestions for improving the plans. Registering and approving of new fisheries establishments is also the responsibility of the CA and these procedures are documented. The Team was informed that the Bureau of Public Health (BPH) was responsible for other food control and that the CA collaborated with BPH on policy issues as well as laboratory services.

The Team leader enquired whether the SPS requirements were different for fisheries products destined for local consumption as the CA seemed to place less emphasis on inspection of domestic fisheries production, and it was clarified that the SPS requirements were supposed to be the same.

The Team learnt that while inspection procedures were documented the FBOs have to access these procedures at VKI, they were not currently available in electronic format as the website for VKI is still under development.

The Team was informed that the CA is a financially independent organization and their financing is based on import/export fees per kg of product. Health certificates are issued for each export shipment and paid for by the FBOs and the consumables for the laboratory tests are paid for by them as well, while the Ministry provides for the building, furniture and some laboratory equipment. This implies that the CA is not a completely financially independent organization as it is partly dependent on support from the FBOs regarding purchase of consumables for the official analysis.

The Team was advised that the only designated laboratory for official analysis in Suriname is the VKI laboratory (for details see section on Laboratories below).

Regarding challenges and capacity building needs the VKI staff acknowledged that there were difficulties to access suitable training opportunities, and that they were interested in doing internships with another experienced Competent Authority within EU. There is also a need for additional laboratory equipment.

Consultation held June 12th 2015 with the National Institute for Environment and Development (NIMOS)

This consultation was held at NIMOS and the aim of the consultation was to receive information from representatives of NIMOS regarding their role and responsibilities related to health and food safety in the fisheries and aquaculture sectors; please refer to Appendix for the complete lists of attendants.

The Team was advised that there was not yet any specific environmental legislation in place in Suriname and the principal role of NIMOS is to provide environmental advice. NIMOS has prepared voluntary environmental guidelines for impact assessment of aquaculture and these are usually attached to operating permits, however, at the moment no license for aquaculture operation is needed.

The Team learned that a National Program for monitoring of residues of environmental contaminants in products from wild fisheries is currently not in place.

The Team was informed that the national water company had responsibility for testing the general drinking water and VKI deals with potable water used in fisheries and aquaculture sector.

5.4.2. Sites visited in Suriname

To assess enforcement procedures a number of site visits were carried out according to the table below.

Type	**Number of visits**
Landing sites	5
Fishing/freezer vessels	2
Processing establishment	6
Laboratory	1

The Team made direct observations regarding the infrastructure, vessels, equipment, production environment, and made further enquiries to stakeholders at the sites visited about harvest and post-harvest procedures, fish transport, processing, laboratory analysis etc.

Landing sites and vessels

Please refer to the section *SPS requirements for fish and aquaculture* in the general background report regarding the minimum SPS requirements for landing sites, vessels and ice production.

Main observations noted:

- Industrial fishing and freezer vessels as well as artisanal vessels are used in Surinamese waters
- Poor state of maintenance of the vessels, which were not made of corrosion-resistant material which was not smooth and easy to clean
- Absence of temperature recording devices on-board the vessels
- Fish is not bled and some fish species are gutted at sea while others are not

- Industrial fishing vessels use plastic boxes for storing the fish caught on ice on-board the vessels, these boxes are also used to transport the fish on ice from the vessels to refrigerated trucks or directly to processing facilities
- Limited hygienic facilities on-board the vessels
- Poor hygiene conditions and cleaning procedures on-board the vessels
- Some artisanal vessel landing sites were not fenced off
- Animals (dogs and rats) were observed at the artisanal landing sites
- Ice production facilities were generally available at the landing site and tubes used to transport ice to the holding area on-board the vessels
- In some cases the unloading of artisanal vessels was carried out by throwing the fish onto the dock using bare hands, after this the fish was transferred to plastic boxes with no ice
- In a truck used to transport fish from an artisanal landing site the fish was stored on the floor of the truck and in plastic boxes. Some ice used to cool fish, but also fish without ice was observed because the truck was used to sell fish directly to customers at the site. The Team noted that workers stood on the fish & ice in the storage area of the truck and sorted the fish using their bare hands

Processing establishment

The mission Team visited in total six processing establishments, three of these establishments processed fish, one establishments processed fish and shrimp, one establishments processed surimi and one only shrimp. The status of the facilities in regards to SPS requirements ranged from being very good to poor; please refer to the section *SPS requirements for fish and aquaculture* in the general background report regarding the minimum SPS requirements for processing establishments. The mission team noted that the processing establishments that were producing fishery products for export were satisfactory in terms of SPS requirements, while the establishment producing fishery products for the domestic market was not.

Main observation noted by the mission team:

In four out of the six establishments visited the structure, layout, maintenance and hygiene conditions for the processing and handling of raw material was satisfactory, these four were all producing fisheries products for export. In one establishment producing fisheries products for export some problems related to maintenance were observed e.g. poor floors with cracks and pooling of water; unsuitable walls, which were rough and not easy to clean; poor state of maintenance and cleanliness of changing rooms. In another establishment producing fisheries products exclusively for the domestic market many problems were observed related to structure, layout, maintenance and the processing environment of the facility e.g. inadequate lay-out, with insufficient separation between clean and unclean areas which could lead to cross-contamination; poor maintenance of walls, floors, equipment, tools, and doors; windows, doors and openings not pest proof, but a rodent was observed at the landing site next door; poor hygiene conditions and cleaning procedures were applied.

A HACCP system was in place in five out of the six establishments visited, while in one no food safety system was available. All five establishments that had a HACCP system were exporting fisheries products, while the one with no food safety system was producing fisheries products for the domestic market. The team noted that the critical limits in the HACCP plan implemented in one establishments were not correctly defined.

The managers of the five establishments that were exporting fisheries products confirmed that the CA (VKI) inspects their facilities on regular bases and provides them with formal inspection reports and

results of analysis of official control samples taken at their facilities, the Team was also shown an example of these documents for verification. They also confirmed that in case the inspection reveals that corrective actions are required, they are given a deadline and time for remedial action. The establishment producing fisheries products for the domestic market was not inspected by the CA (VKI), but Team was informed that the Bureau of Public Health was responsible for the inspection of their facilities.

Laboratories

The VKI laboratory is the designated laboratory for official analysis in Suriname. The VKI suffered a fire in 2010 after which their operation was carried out in a building next to FD. A new facility for their operation had been provided only recently and the laboratory in this facility was still under construction and therefore currently not fully functional for official analysis. The VKI laboratory is not accredited, but is working towards ISO17025 accreditation of the laboratory. As the VKI laboratory facility was not yet fully operational the team was advised that some of the laboratory analyses were currently done by the Central Laboratory under the BPH, but this laboratory is also not accredited.

The VKI laboratory carries out microbiological analysis, histamine analysis (with the ELISA rapid kit test), organoleptic and freshness test (TVB-N). Several analytical test are currently outsourced e.g. the microbiological analysis of fisheries products and analysis of heavy metals (Mercury, Lead, Cadmium, Zinc) are performed by Central Laboratory, while PAHs in smoked products and residue tests for aquaculture products are carried out abroad. The team was informed that a National Program for monitoring of residues of veterinary medicines and environmental contaminants in products from aquaculture is in place. The team was informed that a National Program for monitoring of residues of veterinary medicines and environmental contaminants in products from aquaculture is in place.

The VKI laboratory aims to implement heavy metal analysis with Atomic Adsorption and histamine analysis with HPLC in the near future.

Regarding user fees and payments to the VKI laboratory, it was clarified that the law made a specific provision concerning monthly official control samples. However, based on results of these samples, the CA (VKI) would then identify a need to resample. The Team leader highlighted that sampling should be based on risk assessment, and so he expressed some concern that the inspection process was not separate from the laboratory service (both under the charge of VKI). In response VKI staff explained that samples for regular checks and official control were paid by the VKI, according to the law. The user fee was paid only based on the amount exported.

5.4.3. Consultation with stakeholders

On June 15th 2015 a National Consultation with stakeholders was held.

The key challenges highlighted were the following:

- The current processing of fishery products in Suriname is in some cases not very complicated i.e. it involves mainly weighing, descaling, cleaning, and storing/holding the fish. If these establishments would like to export a ready to eat product, a higher SPS standard would need

to be maintained. If any "value added" activities were being considered, these processing facilities would also be faced with new challenges.

- The issue regarding the transparency in inspection procedures was discussed and the consultants explained that it is important that the Food Business Operators are well informed regarding which requirements they must fulfil and how their operation are evaluated as that will assist them in fulfilling their obligation.
- The problems related to maintenance, poor hygiene conditions and cleaning procedures on-board the vessels were discussed. It was explained that was mainly due to attitude and mind set of fishers and workers in primary production. Generally these workers have very limited education and therefore it is very difficult to transfer knowledge to them e.g. regarding maintenance of facilities, personal hygiene, hygienic handling of fish and the importance of ice for cooling of fish. It was also pointed out that such training could not be delivered by the usual conventional methods and suggested that this training could begin with the captains and their first assistants.
- Management environment for owners of fisheries facilities, i.e. processing establishments & vessels, is very instable in Suriname, which in turn reduces the willingness to invest in the maintenance of boats. Furthermore, catches are decreasing which also reduces their willingness to maintain boats, because of the unpredictability of the future.
- There is currently insufficient research and development in the fisheries industry in Suriname and this hampers progress in the fisheries sector e.g. regarding development of new products and maximum use of all raw material that could lead to value addition and built up of a more science/knowledge based industry

5.4.4. Conclusion

The Competent authority (CA) in charge for official controls of fishery products is the Vis Keurings Instituut (VKI is the Dutch abbreviation) under the Ministry of Agriculture, Animal Husbandry and Fisheries and VKI is defined in the regulatory framework. The CA inspects and licenses all fisheries production establishment for export i.e. fishing vessels, landing sites, processing plants and commercial aquaculture farms and issues health certificates for export & import of fisheries products. An annual inspection plan is prepared that is based on risk assessment, history and complaints related to the respective facilities.

There is a defined structure for the implementation of inspections and written procedures (inspection manual & check list) are available and used to carry out the inspections by the CA of the facilities. This type of documented written procedures are the key to harmonization of regulatory enforcement and they should be easily accessible to stakeholders, this is not the case in Suriname as FBOs have to access these procedures at VKI facilities.

The CA is to a large degree a financially independent organization and their financing is based on import/export fees per kg of product. Health certificates are issued for each export shipment and paid for by the FBOs and the consumables for the laboratory tests are paid for by them. Therefore, the CA is not a completely financially independent organization as it is partly dependent on support from the FBOs regarding purchase of consumables for the official analysis.

Accredited laboratories capacities are not available in the country, even though this is a requirement for official analyses according to EU and national regulations. The designated official laboratory has the capabilities to carry out some essential official analysis, however some of the more complex chemical analysis (e.g. veterinary residue testing) are outsourced to laboratories abroad. Further, the analysis of histamine in official samples is not carried out according to EC regulation No 2073/2005.

The inspection process of the CA is not clearly separated from the laboratory service as they are both under the charge of VKI.

Suitable training opportunities related to EU requirements and working procedures in official control are not available for the staff of the CA within the country.

A National Program for monitoring of environmental contaminants in products from wild fisheries is not in place in Suriname, this is not in line with EC regulations e.g. Reg. (EC) No 882/2004 & Reg. (EC) No 1883/2006.

Site visits indicated that the regulatory requirements related to health and food safety issues in the fisheries sectors of Suriname are generally enforced by the CA for fisheries products intended for export, but not for the domestic market. Many problems e.g. related to maintenance, hygiene conditions and cleaning procedures were observed in the entire production chain for fisheries products intended for the domestic market. Therefore, there is difference between the enforcement of regulations for fisheries products for export and production for the domestic market despite the fact that the same SPS regulatory requirements apply for all fish and fisheries production.

The problems observed in the entire production chain for fisheries products intended for the domestic market are due to attitude, mind set and limited education of fishermen and workers in the primary production.

The management environment for owners of fisheries facilities, i.e. processing establishments & vessels, is very instable, which in turn reduces the willingness to invest in the maintenance of boats.

There is currently a lack of research and development in the fisheries industry in Suriname and this hampers progress in the fisheries sector e.g. regarding development of new products and maximum use of all raw material that could lead to value addition and built up a more science/knowledge based industry.

5.4.5. Recommendations

Inspection manuals are important to enforce regulations and to harmonize the inspection system. It is also important that the Food Business Operators are well informed regarding which requirements they must fulfil and how their operation are evaluated as that will assist them in fulfilling their obligation. Therefore it is recommended that written procedures (inspection manual) that explain in details how inspection should be conducted according to the regulatory requirements will be accessible to all stakeholders, for example on the Internet, free of charge.

As the food processors are responsible for ensuring the safety of their production they are expected to exercise due diligence and self-controls (own checks), hence the testing for the microbiological status of food should be carried out by them. The CA should also take official control samples for microbiological analyses to verify that the food processors quality system is working. As this is an essential part of having license to operate it is not unfair that the industry covers the cost related to the analysis of these official control samples.

This type of user fee system has already been implemented in Suriname as the FBOs pay export fee that is used to finance the CA. however, this export fee does not cover the entire cost of the operation of the CA and it is recommended that this will be amended to guarantee financial independence and sustainability of the official laboratories. Further, the export fee payed by the FBOs is only determined by Kg catch not value of fish, thus if value of fish caught is low it may be difficult for FBOs to pay the export fee, this problem should to be address by the relevant stakeholders to safeguard the economic stability of all parties.

It is recommended that a complete financial separation between the inspection process for fisheries products of the CA in Suriname and the designated laboratory for official analysis will be ensured. This is important for good governance and in order to be able to cope with all the emerging needs in a transparent and conflict-free manner.

The CA should ensure that official control samples for fishery products intended for export to the EU include official controls on the products, water and ice in line with the relevant Community requirements i.e. Regulation (EC) No 852/2004 and Directive 98/83/EC. The CA should also ensure that laboratories performing official analyses are assessed and accredited in accordance with standards providing guarantees at least equivalent to the requirements Regulation (EC) No 882/2004. The CA should also ensure that these laboratories take into account criteria for the different testing methods laid down in EC legislation. It is recommended that an assessment (including a cost-benefit analysis) is carried out to evaluate which laboratory analyses is feasible to accredit and conduct nationally and which would be more beneficial to outsource.

Testing for contaminants/undesirable substances that unintentionally come in contact with food/feed and primary products, e.g. PCB's and dioxins, are also the responsibility of the producer as he must secure the safety of his product. However, testing for these undesirable substances in each assignment sold is far too expensive. Therefore it is better to establish a national wide/regional wide monitoring plan that is carried out on regular basis to be able to assess consumer exposure to these undesirable substances. This type of monitoring plan for contaminants/undesirable substances in fishery products and water is currently not in place in Suriname, hence a suitable solution needs to be initiated and implemented.

It is important to make sure that the CA is enforcing one harmonised standard for all fisheries products so that there are not two standards applied i.e. one for domestic market and another for the export market.

It is advised to look for suitable training opportunities for the inspectors/staff of VKI e.g. regarding methods of sampling and laboratory analysis of official food/feed samples. This could for example be done through internships of the VKI control staff at an experienced CA in EU, there may also be possibilities through 3rd country twinning support by EU e.g. "Better and Safer Food Training" which is carry out by the EU Directorates Enlargement and DG SANCO.

Improve the coordination of the different agencies e.g. different organizations are collecting various types of data and should cooperate in the development of a comprehensive data and information exchange system that could be used to monitor, share information and knowledge and report on SPS practices.

In order to be able to plan for anticipated future developments of the fish industry it is necessary to start to predict and plan for likely future demands of current export markets as well as look out additional markets and identify new fishery and aquaculture products for these markets. This requires increased research & development related to the fisheries sector, e.g. regarding development of new products, as this will assist the fisheries sector to move further up the value chain and create a business environment for entrepreneurs in the fisheries industry. This could be achieved through long term (5-10 years) strategic planning with the participation of key stakeholders in the fishery and aquaculture sectors as well as academia.

5.4.6. Appendix

Consultation held in conjunction with National Consultation regarding; National programmes related to health and food safety in the fisheries and aquaculture sectors.

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5.5. Assessment report for Jamaica

Dates of visit; 17 - 20 June 2015

Mission team: Mr. Margeir Gissurarson and Dr. Helga Gunnlaugsdottir.

5.5.1. Official agencies

To gather information regarding official control related to SPS measures in Jamaica three consultations were arranged with staff from official agencies working in this area.

Consultation held June 19th 2015 at the Veterinary Service Division in Jamaica

In addition to the mission Team this meeting was attended by representatives from the Veterinary Service Division (VSD) and the Fisheries Division (FD) under the Ministry of Agriculture & Fisheries: please refer to Appendix for the complete list of attendants. The meeting focused on developing an understanding of the roles and responsibilities of the various agencies/departments in the area of health and food safety in the fisheries and aquaculture sectors.

It was clarified that the VSD is the Competent Authority (CA) for fisheries products for export, but for other food items processed and sold on the local market the CA is the Ministry of Health.

The laws related to food safety and SPS measures of fishery products has recently been revised and now the same regulations apply for export and the domestic market.

There is a defined structure for the implementation of inspections and VSD has established an inspection manual based on the current regulation and a check list has been developed based on the inspection manual. Inspection of the Food Business Operators (FBOs) producing for export and vessels providing raw material for the export production are carried out based on the check list. At the end of the inspection all deviations are recorded on the check list, a date set for corrective actions and a copy left with the FBOs.

Financing of the CA is based on annual license fees for export. In addition, the FBOs pay for health certificates that are issued for export shipment. Furthermore, the FBOs are charged a fee for the analysis of all official samples taken at their establishment, this fee partially covers the cost related to these analysis.

The CA regularly takes official control samples of the fisheries products, as well as of the water used in the processing establishments producing for export. However, official control of fisheries products intended for the domestic market and potable water is not part of their responsibilities/task. The mission Team was informed that the CA had established a National Program for monitoring of residues of environmental contaminants and toxins in products from wild fisheries for export. This program includes monitoring the levels of marine biotoxins (PSP, DSP, and ciguatera), pesticides, heavy metals (cadmium, lead and mercury) and microbiological testing in fishery products. Microbiological testing of water use in processing is carried out. Seawater monitoring analysis on toxin producing algae/dinoflagellates are also performed.

Consultation held June 19th 2015 at the Ministry of Health (MoH)

In addition to the mission Team this consultation was attended by representatives from the MoH: please refer to Appendix for the complete list of attendants.

The mission Team was informed that MoH is responsible for SPS measures of all food produced and imported for the domestic market and therefore the CA of all domestic food. They conduct inspection of establishments, fish markets, retail stores, hotels and restaurants. Additionally all imported food is inspected routinely and protocols are in place regarding sampling of consignments. Fish inspection is carried out by trained public health inspectors and in regards to export they coordinate their effort with the VSD. A Memoranda of Understanding (MoU) is available between MoH and VSD.

The Team was informed that fish for the domestic market comes from three sources; wild fisheries, aquaculture and imported fish. Currently all aquaculture fish is sold on the domestic market. The fishery products for the domestic market originates from artisanal fisheries and are distributed through fish markets that are located at the landing sites. All fish handlers/vendors must obtain a permit prior to being able to handle/trade fish.

The Team was informed that in regards to aquaculture the MoH monitors water quality, feed and selling and processing (which mainly consist of gutting and descaling).

The Team learned that there is a concern regarding food safety for the many tourists entering the country as around 30% of the country GDP comes from the tourist industry. Fortunately, food-borne illnesses have not been common although the hygiene at the domestic landing sites and fish markets is not up to standard. MoU acknowledged that SPS measures of the domestic fishery products needs to improve but they are mainly due to social issues and therefore difficult to control.

The Team inquired about incidents on ciguatera poisoning from fishery products and the MoH informed that ciguatera outbreak have occurred in the past and in connection to consumption of barracuda and lion fish. They informed that there are ongoing consumer educational programs to increase the public awareness regarding the food safety of certain types of fish.

Consultation held June 18th 2015 at National Environment and Planning (NEPA)

In addition to the mission Team this consultation was attended by representatives from the NEPA and FD: please refer to Appendix for the complete list of attendants.

The Team was informed that NEPA issues environmental permits for aquaculture. They use screening procedures to decide whether an Environmental Impact Assessment (EIA) is needed. They evaluate the quality of the water of the aquaculture site by looking at impacts from agricultural activities e.g. test for pesticides, heavy metals and test the discharge generated as a result of aquaculture activities. Furthermore, some basic microbiological tests for E coli and Faecal coliforms are performed. Currently they monitor around 300 sites.

The Team learned that the scope of NEPA is wide and they are involved in monitoring of all industrial activities that can cause environmental pollution. They are also called upon to investigate incidences that may be caused due to environmental pollution. NEPA has limited authority to enforce incidences connected to environmental contamination and therefore communicate their findings to the MoH and VSD relating to fisheries.

The mission Team was informed that NEPA does some sampling of marine waters and especially in evaluating water quality of beaches by taking samples for analysing of E coli and faecal coliforms.

In regard to processing facilities NEPA monitors the discharge water from the facilities. A regulation on waste water and sludge is in place that aims at reducing their impact on the environment.

5.5.2. Sites visited in Jamaica

To assess enforcement procedures a number of site visits were carried out according to the table below.

Type	**Number of visits**
Landing sites	2
Processing establishments	0
Aquaculture sites	2
Laboratory	1

The Team made direct observations regarding the infrastructure, vessels, equipment, environment, and made further enquiries about harvest and post-harvest procedures, aquaculture feed storage, fish transport, etc. The mission Team did neither have the opportunity to make site visits to processing facilities nor to observe fishing vessels for export.

Landing sites and vessels

Please refer to the section *SPS requirements for fish and aquaculture* in the general background report regarding the minimum SPS requirements for landing sites, vessels and ice production.

Two landing sites were visited where artisanal fishermen that are members of established fishing co-operatives landed their fish and sold it at a fish market close to the landing sites.

Main observations noted:

- Artisanal vessels were made of material (wood) that is difficult to clean
- Fishing vessels have insulated ice boxes and the fish is iced at sea
- No ice production facility was available at the landing site. The Team was however informed that fishermen normally purchase ice block from vendors to bring with them to sea in ice boxes. This ice is broken up at sea and to chill down the fish. This procedure is generally the case when fishermen go far out and stay out for some days.
- Waste management was not in place at the landing sites and considerable amount of garbage was observed around the landing site, especially on the beach where the fish was landed.
- Retail and processing of the fisheries product intended for the domestic market was not carried out directly at the landing sites, but was executed at fish markets close by
- Poor hygiene conditions and cleaning procedures were used at the fish market to process fish intended for the domestic market e.g. unclean wooden cutting boards, seawater used for cleaning, limited use of potable water in the processing

- Poor maintenance of facilities at the fish market and animals (dogs) were observed at the site
- One of the landing site was a combination of fish landing site and a recreational beach. At this site the Team observed that discards from the processing was thrown back into the sea where people were bathing.
- Limited hygienic facilities were observed at the fish market and the recreational beach

Aquaculture sites.

The Team visited two aquaculture sites. One was an aquaculture research facility operated by the Fisheries Department and the other was a Tilapia farm.

Main observations:

The research facilities were mainly focusing on possibilities for development and extension of aquaculture. Presently the main focus is on red hybrid Tilapia also some work on silver fish Tilapia and Pangasius.

The Team also visited one of the bigger Tilapia farms in Jamaica. Currently all product is sold to the local market. Fish from aquaculture is generally sold alive in Jamaica and therefore no processing takes place at the site. The water in the ponds was irrigation water and the Team was informed by the owner that environmental contaminants were not a problem, however a monitoring program for testing of contaminants was not in place. The Team was furthermore informed that no drugs were used in the production. A National Residue Control Plan for aquaculture products is not in place in Jamaica and analysis of residues of veterinary medicines and environmental contaminants in products from aquaculture are currently not carried out.

Processing establishment

The mission Team did not visit any processing establishments in Jamaica and could therefore not make any direct observations regarding the status of these type of processing facilities in regards to SPS requirements.

Laboratories

The CA official laboratories is the VSD laboratory. They carry out microbiological analysis, testing of organochlorides (pesticides), heavy metals (mercury, lead and cadmium) and marine biotoxins (PSP, ASP and lipophilic toxins). For areas were VSD laboratory does not have the analytical capability, they collaborate with three laboratories all belonging to the University of West Indies and those laboratories have been designed by the CA to carry out official controls.

The Team was informed that the VSD laboratory is working towards accreditation according to the standard ISO 17025. All relevant quality control (QC) documents are in place and a Quality Manager has been recruited to work on the Quality Management System.

The VSD laboratory carries out analysis of official samples as well as samples from FBO. Testing of the FBOs samples mainly involve microbiological testing (Salmonella, E coli and Listeria).

The VSD laboratory has the laboratory capacities to carry out analysis of lipophilic marine biotoxins and ASP according to the method approved ty the European Union.

5.5.3. Meeting with stakeholders

The mission team was informed that a stakeholder consultation could not be arranged as stakeholders participated in such a dialog very recently on similar issues.

5.5.4. Conclusion

There are two CA for fisheries in Jamaica. For fish handling and processing for export VSD is clearly defined as the Competent Authority. For all food for the domestic market the MoH is the CA. Although the same regulatory framework applies for export and the local market, there is clearly a big difference in how the regulations are enforced. It is known that enforcement of regulations for local markets are more difficult to manage but in order to secure the safety and health of the population it needs to be addressed forcefully but gradually.

The VSD has a clear working procedures or an Inspection Manual that is based on the current SPS regulation and although it could not been confirmed it seem they are enforcing the regulation. The VSD monitoring is financed through annual license fees for export and fees for issuing export certificates. In addition VSD do charge fees for analysis of all official samples tested. This financial independence does allow for better planning and enforcement.

VSD has established a laboratory with necessary equipment to carry out most official testing and have trained staff to carry out the work. The laboratory is not accredited but VSD is working towards accreditation, which they will most probably receive based on their observed competence. As accreditation of tests require a minimum amount of samples some tests may need to be outsourced, as is the case of the VSD laboratory.

The CA takes official control samples for analyses of the fisheries products as well as of the water/ice used in the processing establishments producing for export, this is in line with EU requirements regarding official monitoring and surveillance of fishery products and water.

The enforcement of the SPS regulation for fisheries product intended for local consumption needs improvement. The condition of landing sites and handling of fish by vendors is not acceptable for food meant for human consumption. If stricter enforcement were applied fishermen and fish handlers would soon understand that if they want income form fisheries they need to follow the regulations in force. Food security is not about quantity of food but rather about delivering safe food that will provide better health and nutrition to the consumer and consequently a better standard of living.

Tourism provides around 30% of the country GDP and the tourists are fed by local fish. It was stated during the mission that not many food-borne illnesses from fish consumption has been reported by tourist but it is well known that in developed countries only about 15 to 20 per-cent of food-borne illnesses are reported and this number is even much less for tourists entering an area were food is expected to be unsafe. Although the food-borne illness may not be from fish consumption the fish may be a carrier of a pathogen entering other food causing the illness.

A National Residue Control Plan for aquaculture products is not in place in Jamaica and analysis of residues of veterinary medicines and environmental contaminants in products from aquaculture are currently not carried out.

Environmental permits are issued for aquaculture sites and Environmental Impact Assessment (EIA) is conducted depending on outcome of screening for new aquaculture site.

5.5.5. Recommendations

There are two CA enforcing the SPS regulation in Jamaica, VSD is the CA for exported fish products and the MoH for all food items for the local market, including fish and fish products. Such a setup is known in many countries. This double standard has caused confusion as regulatory requirements are only required sometimes and is dependent on the inspector carrying out audits at different places in the fish value chain and in the worst cases is when the authorities have accepted that the country regulations do not apply to certain stakeholders, without making changes to the legal framework. Furthermore, bad handling of fish products does not only devaluate the fishery resources but will affect development of the industry. Therefore it is recommended that the SPS measures for the local market will be enforced, but based on the current situation a roadmap should be drawn up showing actions to be taken within a specified timeframe. It is also recommended that it should be considered to place all official control of food in one CA.

Landing sites need upgrading and proper management. SPS measures need to be applied and the official authorities need to set up a strategy to move things in the right direction. It needs to be understood by all fisherman and fish handlers that unsafe food is not an option and that they are responsible for the safety of their products. It is recommended that the authorities set up a working plan in cooperation with stakeholders that will bring the boats and the landing sites in conformity to the minimum SPS measures within a reasonable time. It should also be kept in mind that tourism is about 30% of the country GDP and serious outbreak may affect that income.

Testing for contaminants/undesirable substances that unintentionally come in contact with food/feed and primary products, e.g. PCB's and dioxins, are also the responsibility of the producer as he must secure the safety of his product. However, testing for these undesirable substances in each assignment sold is far too expensive. Therefore it is better to establish a national wide/regional wide monitoring plan that is carried out on regular basis to be able to assess consumer exposure to these undesirable substances. In Jamaica there is currently a gap in the monitoring plan of environmental contaminants in fisheries products from wild fisheries as the present plan does not include analysis of fisheries products that are only for sale on the domestic market. It is recommended that this gap will be filled so this monitoring plan covers all major fisheries products that are consumed and traded in Belize. Monitoring and collection of data on contaminants detected in fishery products from wild fisheries could also be shared within the region as this type of monitoring covers all marine species caught in Caribbean waters, hence this type of activity would benefit from a regionally coordinated approach.

A National Residue Control Plan should be established for the aquaculture farming. Although the products from aquaculture is only sold on the local market, residues if present could be harmful for the domestic consumer and number of tourists entering the country.

In order to be able to plan for anticipated future developments of the fish industry it is necessary to start to predict and plan for likely future demands of current export markets as well as look out for additional export markets and identify new fishery and aquaculture products for these markets. This requires increased research & development related to the fisheries sector, e.g. regarding development of new products, as this will assist the fisheries sector to move further up the value chain and create a business environment for entrepreneurs in the fisheries industry. This could be achieved through long term (5-10 years) strategic planning with the participation of key stakeholders in the fishery and aquaculture sectors as well as academia.

5.5.6. Appendix

Consultation held in conjunction with National Consultation regarding; National programmes related to health and food safety in the fisheries and aquaculture sectors

Attendants at SPS consultation held June 18th 2015 at VSD in Kingston, Jamaica

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Meeting held in conjunction with National Consultation regarding; National programmes related to health and food safety in the fisheries and aquaculture sectors

Attendants at SPS meeting held June 18th 2015 at National Environment Planning Agency in Jamaica

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Meeting held in conjunction with National Consultation regarding; National programmes related to health and food safety in the fisheries and aquaculture sectors

Attendants at SPS meeting held June 19th 2015 at Ministry of Health in Jamaica

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5.6. Assessment report for the Bahamas

Dates of visit; 20 - 24 June 2015

Mission team: Mr. Margeir Gissurarson and Dr. Helga Gunnlaugsdottir.

5.6.1. Official agencies

To gather information regarding official control related to SPS measures in Bahamas two consultations were arranged with staff from official agencies working in this area.

Consultation held June 22nd 2015 at Department of Marine Resources in the Bahamas

In addition to the experts from the mission team this consultation was attended by representatives from the Department of Marine Resources (DMR) in the Bahamas: please refer to Appendix for the complete lists of attendants. The consultation focused on developing an understanding of the roles and responsibilities of the various agencies/departments in the area of health and food safety in the fisheries and aquaculture sectors in the country.

The regulatory framework related to food safety and quality, including fishery products, is currently under major revision. Furthermore, a new bill regarding health and food safety authority has been developed. When these laws have been implemented all food safety and official control regulations related to food will be under one umbrella. Implementations of the new legislation will start in September 2015 and hopefully be in full force by 2016. The present food regulation will be replaced with this new legislation and establish a completely new structure and the DMR staff acknowledged that the implementation and enforcement of this new regulatory framework will be a challenge for the relevant authorities.

The Team was informed that Bahamas has developed, enacted and implemented at national level the relevant fish and fishery product regulations according to EU requirements and is currently exporting fishery products to the EU and USA. The Competent Authority (CA) in charge for official controls of fisheries products for export is the Department of Marine Resources (DMR) under the Ministry of Agriculture and Marine Resources and the DMR is defined in the regulatory framework. The CA inspects and licenses all fisheries production establishment for export i.e. factory vessels, landing sites, processing plants and issues export license for export of fisheries products. There is a defined structure for the implementation of inspections and written procedures (inspection manual & check list) are available and used to carry out the inspections of the facilities. An annual inspection plan is prepared that is based on risk assessment and three different risk categories have been defined. In case the inspection reveals that corrective actions are required, the food business operators (FBOs) are given a deadline and time for remedial action. The non-compliances observed have to be corrected before the factory vessels or the processing plants receive an export license for their operation in the next season. As part of the official control service the establishment's implementation of the HACCP-plan is also checked.

The Team learnt that DMR has no mandate for official controls of fishery products sold on the domestic market as these are currently controlled by the public health authorities. Further, the Team was advised that at the moment there is only one trained inspector working on official control in the field,

however, the financing of eight additional inspectors is waiting for acceptance by the government. Currently the main focus of inspections is on factory vessels that are mainly producing ready to eat stone crabs (6) and processing facilities for fisheries products (20).

The CA regularly takes official control samples of the fisheries products, as well as of the water used in the processing establishments producing for export. However, official control of fisheries products intended for the domestic market and potable water is not part of their responsibilities/task. Furthermore, the official control of the ice used in the fisheries products production chain, e.g. on board the vessels, falls under the Environmental Health authorities.

The Team learned that a National Program for monitoring of residues of environmental contaminants in products from wild fisheries is currently not in place. Furthermore, no water monitoring analysis on toxin producing dinoflagellates is currently carried out and limited scientific data is available concerning ciguatera toxicity and the safety of marine reef associated fish species.

The Team was advised that the only designated laboratory for official analysis in the Bahamas is the Food Safety & Technology Laboratory (for details see section on Laboratories below).

Consultation held June 24th 2015 with Bahamas Agricultural & Industrial Corporation (BAIC)

This consultation was held at DMR facilities in the Bahamas and the aim of the consultation was to receive information from a representatives from BAIC regarding their role and responsibilities related to health and food safety in the fisheries and aquaculture sector. The experts from the consultation team and Mr. Edison Deleveaux from DMR met Mr. Verron Darville from BAIC and later Mrs. Brikell Pinder from the Ministry of Agriculture & Marine Resources joined the meeting.

The team learnt that BAIC is a quasi-governmental organization and that all industries fall under BAIC including fisheries and aquaculture. BAIC participates in policy making e.g. regarding management of resources, food security and environment. BAIC is also providing supporting to stakeholders e.g. on Good Agricultural Practices and ISO 22000 – Food Safety Management System and their aim is to create link between buyers/retailers and producers.

The team was informed that aquaculture is still in its infancy in the Bahamas and that there are presently no commercial aquaculture sites in the country.

Permits for aquaculture sites should be given based on an Environmental impact assessment (EIA). The EIA is carried out by private companies but reviewed by the so called BEST commission under Environmental ministry prior to permit.

Mrs. Brikell Pinder has been engaged in the drafting the new regulatory framework related to food safety and quality for the country and informed the Team about the main issues that this new legislation covers (for details see information from the consultation held June 22nd at DMR above).

5.6.2. Sites visited in Bahamas

To assess enforcement procedures a number of site visits were carried out according to the table below.

Type	Number of visits
Landing sites	1
Fishing/freezer vessels	2
Processing establishment	1
Laboratory	1
Retail/ Fish market	2

The Team made direct observations regarding the infrastructure, vessels, equipment, production environment, and made further enquiries to stakeholders at the sites visited about harvest and post-harvest procedures, fish transport, processing, laboratory analysis etc.

Landing sites, vessels and retail

Please refer to the section *SPS requirements for fish and aquaculture* in the general background report regarding the minimum SPS requirements for landing sites, vessels and ice production.

Main observations noted:

- Industrial fishing and freezer vessels were the type of vessels observed by the Team
- Poor state of maintenance of the vessels, which were not made of corrosion-resistant material which was not smooth and easy to clean
- Limited hygienic facilities on-board the vessels
- Poor housekeeping (e.g. litter) as well as poor hygiene conditions and cleaning procedures on-board the vessels
- On an industrial fishing vessels that stays at sea for up to 6 weeks, the fish was sorted according to species after it had been caught and then the fish was transferred un-gutted into large plastic bags and these bags are then placed on hooks in the freezer of the vessel. This procedure leads to very slow freeing of the fish that will have a negative impact on the quality and safety of the fish
- Absence of temperature recording devices on-board the vessels
- Ice production facility was not available at the landing site and the ice used (cubes) was not optimal to ensure fast cooling of the catch
- Infrastructure of landing sites was adequate in terms of SPS requirements
- Retail and processing of the fisheries product intended for the domestic market was not carried out at the landing site, but was executed at a separate location
- Poor hygiene conditions and cleaning procedures used to process fish and conch intended for the domestic market e.g. unclean wooden cutting boards, seawater from the harbour is used for cleaning, limited use of potable water in the processing
- Waste management was not in place at one of the domestic retail and processing sites, hence discards from the processing and other waste was piling up next to the site

- No hygienic facilities were observed at the domestic retail and processing site

Processing establishment

The mission Team visited only one processing establishment and the status of this establishments in regards to SPS requirements was very good; please refer to the section *SPS requirements for fish and aquaculture* in the general background report regarding the minimum SPS requirements for processing establishments.

Main observations noted by the mission team:

The processing establishment is certified to the British Retail Consortium (BRC) standard and it exports to Europe and the USA. A HACCP plan has been implemented and there is focus on high a standard and good quality control (QC). Regular out own testing on fisheries products and water are performed in their own QC laboratory, but samples are also analysed by an external laboratory as well as the CA. It was confirmed that the CA carries out inspections on a regular bases and submits an inspection report to the FBO. The processing facility has own wells with brackish water and uses reverse osmosis to remove NaCl from it to obtain potable water.

The structure, layout, maintenance and hygiene conditions for the processing and handling of raw material was satisfactory in terms of SPS requirements. The facility uses Ozone in their production for sanitation. The processing establishment was processing conch at the time of the visit and the Team was informed that it receives the conch frozen in big bags and thaws it, then the conch is cleaned e.g. the intestine is removed and skin, when it has been thoroughly cleaned (difficult product to get clean because the conch is slimy) it is frozen again and sold frozen in small units.

Laboratories

The mission Team visited the Food Safety & Technology Laboratory (FSTL), which has been designated by the CA in Bahamas to carry out analyses on fishery products and water in the context of official controls. The team was informed that FSTL is accredited to ISO standard 17025 for basic microbiological analysis (Aerobic bacteria, Total Coliforms, Faecal Coliforms, E.coli, Salmonella, Staphylococcus & Listeria) and a few chemical analysis e.g. sulphites, TVB-N crude protein. However, FSTL does not have the capacities to carry out analysis of heavy metals, histamine, PAHs, dioxins and PCBs.

The FSTL is not financial independent and depends on the financing of laboratory supplies etc. from the Ministry of Agriculture and Marine Resources, the procurement procedures are often very slow and threaten the sustainability of the laboratory. Fees are charged by FSTL to cover the cost of the analysis carried out for Food Business Operators (FBOs) of these samples, however these fees go into consolidated governmental funds and not directly to FSTL.

5.6.3. Consultation with stakeholders

On June 23rd 2015 a National Consultation with stakeholders was held

The key challenges highlighted were the following:

- Need to be able to guarantee financial independence and sustainability of the official laboratory so that the laboratory can procure the necessary laboratory supplies for the day to day operation of the laboratory. This can for example be done through user fees to cover the cost of the analysis of samples. Nevertheless, it also necessary to make sure that this user fee is paid directly to the laboratory and not into consolidated governmental funds.
- The problems related to maintenance, poor hygiene conditions and cleaning procedures on-board the vessels were discussed. It was explained that was mainly due to attitude and mind set of fishers and workers in primary production. Generally these workers have very limited education and therefore it is very difficult to transfer knowledge to them e.g. regarding maintenance of facilities, personal hygiene, hygienic handling of fish and the importance of ice for cooling of fish. It was also pointed out that such training could not be delivered by the usual conventional methods and it was suggested that short videos and/or commercials could be more effective.
- The small community of the country sometimes hampers enforcement of regulation at the source of the deficiencies e.g. issuing and revoking licenses of fisheries establishments as the FBOs try to use their connections to avoid the enforcement.
- Attitude and mind set of local consumer also needs to be addressed to increase public awareness regarding the importance of SPS measures/sanitation in the entire processing chain for fisheries products as the consumers don't understand the importance of basic SPS requirements in terms of health and food safety. Some consumers actually prefer that fish is not placed on ice, as ice usage meant the fish was no longer fresh and that flies on the fish are an indicator of freshness. Have to find a way to reach the general consumer and it was suggested that short videos and/or commercials could be useful.
- There is currently insufficient technical expertise and relevant university programs related to food science, environmental science and engineering in the country and this hampers research & development related to the fisheries and aquaculture sector e.g. regarding development of new products and value addition.
- Responsibilities regarding monitoring and collection of data on contaminants detected in fishery products from wild fisheries could be shared within the region as this type of monitoring covers all marine species caught in Caribbean waters, hence this type of activity would benefit from a regionally coordinated approach.

5.6.4. Conclusion

The Competent Authority (CA) in charge for official controls of fisheries products for export is the Department of Marine Resources (DMR) under the Ministry of Agriculture and Marine Resources and the DMR is defined in the regulatory framework. The CA inspects and licenses all fisheries production establishment for export i.e. factory vessels, landing sites, processing plants and issues export license for export of fisheries products. An annual inspection plan is prepared that is based on risk assessment and three different risk categories have been defined.

There is a defined structure for the implementation of inspections and written procedures (inspection manual & check list) are available and used to carry out the inspections by the CA of the facilities.

Accredited laboratories capacities according to ISO standard 17025 are available in the country and the designated official laboratory carries out some of the official analysis required for export of fisheries products to EU. However, official monitoring of chemical risks (heavy metals, histamine, PAHs, dioxins and PCBs) are not carried out. Furthermore, a National Program for monitoring of environmental contaminants in products from wild fisheries is not in place, this is not in line with EU requirements. In addition, no environmental monitoring regarding ciguatera toxin in fishery products nor the relevant dinoflagellates in seawater are carried out, despite the relevance for this type of monitoring in this area.

The CA takes official control samples for analyses of the fisheries products as well as of the water used in the processing establishments producing for export, this is in line with EU requirements regarding official monitoring and surveillance of fishery products and water. The official control of the ice used in the fisheries products production chain, e.g. on board the vessels, falls under the Environmental Health authorities.

Currently there are a number of authorities involved in official food control in the Bahamas and therefore it is difficult to streamline their activities regarding SPS-related monitoring. However, the foreseen changes in the regulatory framework related to health and food safety authority in Bahamas will address this deficiency.

Currently there is no commercial aquaculture carried out in Bahamas and therefore it is not necessary for the CA to implement a National Residue Control Plan (NRCP) for monitoring of residues of veterinary medicines and environmental contaminants in products from aquaculture. However, in case commercial aquaculture will be established the Bahamas in the future it will be necessary to implement the NRCP.

Site visits indicated that the regulatory requirements related to health and food safety issues in the fisheries sectors of Bahamas are generally enforced by the CA for fisheries products intended for export, but not for the domestic market. Many problems e.g. related to maintenance, hygiene conditions and cleaning procedures were observed in the entire production chain for fisheries products intended for the domestic market. Therefore, there is difference between the enforcement of regulations for fisheries products for export and production for the domestic market.

The problems observed in the entire production chain for fisheries products intended for the domestic market are due to attitude, mind set and limited education of fishermen and workers in the primary production. Furthermore, the small community of the country sometimes hampers enforcement of regulation at the source of the deficiencies, e.g. issuing and revoking licenses of local fisheries facilities, as the FBOs try to use their connections to avoid the enforcement.

In the Bahamas the conch is most often served and eaten cooked, but sometimes it is eaten raw in a conch salad which is a ready to eat high risk product and thus good SPS standards are critical in the entire production chain.

Attitude and mind set of local consumers is also a problem as they don't understand the importance of basic SPS requirements in terms of health and food safety.

There is currently insufficient technical expertise and relevant university programs related to food science, environmental science and engineering are not available in the country and this is hampering research & development related to the fisheries sector e.g. regarding development of new products, value addition and better use of marine resources.

5.6.5. Recommendations

Inspection manuals are important to enforce regulations and to harmonize the inspection system. It is also important that the Food Business Operators are well informed regarding which requirements they must fulfil and how their operation are evaluated as that will assist them in fulfilling their obligation. Therefore it is recommended that written procedures (inspection manual) that explain in details how inspection should be conducted according to the regulatory requirements will be accessible to all stakeholders, for example on the Internet, free of charge.

As the food processors are responsible for ensuring the safety of their production they are expected to exercise due diligence and self-controls (own checks), hence the testing for the microbiological status of food should be carried out by them. The CA should also take official control samples for microbiological analyses to verify that the food processors quality system is working. As this is an essential part of having license to operate it is not unfair that the industry covers the cost related to the analysis of these official control samples. This could for example be part of their annual license fee and if the results obtained are unsatisfactory extra payment from the FBO in question should be required by the CA. This type of user fee would also enable the CA to guarantee financial independence and sustainability of the official laboratories and that official control samples are tested on regular bases to verify the safety of water, ice and fisheries products.

The CA should ensure that official control samples for fishery products intended for export to the EU include official controls on the products, water and ice in line with the relevant Community requirements i.e. Regulation (EC) No 852/2004 and Directive 98/83/EC. The CA should also ensure that laboratories performing official analyses are assessed and accredited in accordance with standards providing guarantees at least equivalent to the requirements Regulation (EC) No 882/2004. The CA should also ensure that these laboratories take into account criteria for the different testing methods laid down in EC legislation. It is recommended that an assessment (including a cost-benefit analysis) is carried out to evaluate which laboratory analyses is feasible to accredit and conduct nationally and which would be more beneficial to outsource.

Testing for contaminants/undesirable substances that unintentionally come in contact with food/feed and primary products, e.g. PCB's and dioxins, are also the responsibility of the producer as he must secure the safety of his product. However, testing for these undesirable substances in each assignment sold is far too expensive. Therefore it is better to establish a national wide/regional wide monitoring plan that is carried out on regular basis to be able to assess consumer exposure to these undesirable substances. This type of monitoring plan for contaminants/undesirable substances in fishery products and water is currently not in place in the Bahamas, hence a suitable solution needs to be initiated and implemented.

It is important to make sure that the CA is enforcing one harmonised standard for all fisheries products so that there are not two standards applied i.e. one for domestic market and another for the export market. Such double moral will not only lead to bad attitude towards food safety and public health but will also delay the development of the fishery sector and the fisheries communities and have a negative effect on the sustainable utilisation of the fishery resources.

It is important to place in motion a plan to improve maintenance and hygiene on board fishing vessels as well as improve SPS requirements at landing sites in the DR. This could, for example, be done through wide ranged training of persons working in the primary processing and local fishery products processing facilities e.g. regarding general SPS requirements in fisheries and aquaculture sectors as well as the specific requirements of the EC and USA markets. Training and education of local consumers is also required to improve their understanding and perception regarding food safety of fisheries products. Sharing of experience and best practise as well as success stories from other countries in the Caribbean region could also be a suitable way to create an incentive for persons working in primary

processing. In order to transfer knowledge to consumer and workers in primary processing short videos and/or commercials could be useful.

Improve the coordination of the different agencies e.g. different organizations are collecting various types of data and should cooperate in the development of a comprehensive data and information exchange system that could be used to monitor, share information and knowledge and report on SPS practices.

The Caribbean countries should increase their research collaborations regarding ciguatera toxin in fisheries products and the type of dinoflagellates that may pose a risk to public health in Caribbean waters.

In order to be able to plan for anticipated future developments of the fish industry it is necessary to start to predict and plan for likely future demands of current export markets as well as look out for additional export markets and identify new fishery and aquaculture products for these markets. This requires increased research & development related to the fisheries sector, e.g. regarding development of new products, as this will assist the fisheries sector to move further up the value chain and create a business environment for entrepreneurs in the fisheries industry. This could be achieved through long term (5-10 years) strategic planning with the participation of key stakeholders in the fishery and aquaculture sectors as well as academia.

5.6.6. Appendix

Consultation held in conjunction with National Consultation regarding; National programmes related to health and food safety in the fisheries and aquaculture sectors

Attendants at SPS consultation held June 22nd 2015 at Department of Marine Resources in Bahamas

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5.7. Assessment report for Dominican Republic

Dates of visit; 24 - 28 June 2015

Mission team: Mr. Margeir Gissurarson and Dr. Helga Gunnlaugsdottir

5.7.1. Official agencies

To gather information regarding official control related to SPS measures in Dominican Republic (DR) one consultation was arranged with staff from official agencies working in this area and another consultation with staff working in academia on aquaculture research.

Consultation held June 25th 2015 at Ministry of Agriculture in the Dominican Republic

In addition to the experts from the mission team this consultation was attended by representatives from Consejo Dominicano de Pesca y Acuicultura (CODOPESCA), Office of Agricultural Trade Agreements (OTCA is the Spanish acronym) and Committee on Sanitary and Phytosanitary Measures; please refer to Appendix for the complete lists of attendants. The consultation focused on developing an understanding of the roles and responsibilities of the various agencies/departments in the area of health and food safety in the fisheries and aquaculture sectors in Dominican Republic (DR).

The Team was advised that the present legislation on fisheries products concerns the protection of the resources along the fisheries products production chain and it does not include requirements concerning public health issues as is required by EC. New legislation related to food safety issues is in progress in the DR and this will also deal with SPS requirements in fisheries products.

It was clarified that the CA in charge for official controls on fisheries products (wild and aquaculture) in the DR is the Consejo Dominicano de Pesca y Acuicultura (CODOPESCA) under the Ministry of Agriculture (MoA). The main task of this CODOPESCA is to deal with the protection of marine resources and a sustainable development of fishing activities. However, the legal act that created CODOPESCA does not include tasks related to SPS measures e.g. concerning hygiene and food safety of fisheries products. Hence, the staff from the CA does not have the legal power to carry out inspections at processing establishments, vessels, landing sites and commercial aquaculture sites in order to control and enforce SPS requirements. Therefore, CODOPESCA has to collaborate with different governmental agencies regarding SPS requirements in the entire production chain for fisheries products and there is a lot of overlap between agencies in DR. For example CODOPESCA collaborates with the Animal Health Department and the Food Safety department under the Ministry of Agriculture as well as Secreteria de Estado de Salud Publica y Asistencia Social (SESPAS) under the Ministry of Health regarding SPS requirements and public health issues in the production chain for fisheries products. Presently no written Memoranda of Understanding (MoU's) are in place regarding these collaborations, although there are some existing MoU's between these agencies for Agriculture products and there is interest in preparing similar documents regarding fisheries products in the future. The Team learned that SESPAS has competence in the hygiene of food in general in DR.

Written procedures concerning official controls on fisheries products are presently not in place. Furthermore, have inspection reports and forms regarding SPS requirements and public health aspects of official control not yet been adopted.

The Team learned that very complicated procedures exists e.g. regarding issuing export and health certificates for fisheries products and who is responsible for what tasks. The procedures applied depend for example on the requirement of the different export countries. Consequently, the current procedures are even difficult to comprehend for the staff within the relevant agencies in DR and no explanation outlines, such as simple schematic diagrams, seem to be available. Further, the Team was informed that bureaucracy is very complicated in DR, because people tend to try to misuse the system. Consequently, there is considerable mistrust towards fisheries products from DR which also makes it difficult to export them.

The Team was informed that the Central Veterinary Laboratory (CVL) which is part Livestock Directorate General of the Secretariat of State for Agriculture (Secretaria de Estado de Agricultura, Direccion General de Ganaderia) is the main laboratory for analysis of food and water in Santo Domingo. The CVL carries out some official analysis on microbiology and heavy metals in the framework of the official controls of fisheries products. However, official monitoring of chemical risks (histamine, Polycyclic Aromatic Hydrocarbons (PAHs), dioxins and Polychlorinated Biphenyls (PCBs)) are not carried out. Likewise, a National Program for monitoring of residues of environmental contaminants in products from wild fisheries is currently not in place. Furthermore, no water monitoring analysis on toxin producing dinoflagellates is currently carried out and limited scientific data is available concerning the safety of marine reef associated fish species.

The CVL has some analytical test ISO 17025 accredited e.g. microbiological and heavy metals analysis. However, not all these analysis are currently accredited for fisheries products, but have been accredited for other matrixes and thus there is a potential for getting them accredited for fisheries products as well.

Consultation held June 25th 2015 at Visita al Instituto Superior de Agricultura (ISA),

This consultation was held at ISA aquaculture facilities in Santiago in DR and the aim of the consultation was to receive information from representatives of ISA regarding their role and responsibilities related to health and food safety in the aquaculture sector; please refer to Appendix for the complete lists of attendants.

The Team learned the ISA aquaculture facility in Santiago was solely an aquaculture research station under the University of Santiago and not a commercial aquaculture site. ISA collaborates closely with Instituto Dominicano de Investigaciones Agropecuarias y Forestales (IDIAF). The main emphasis of ISA activities in Santiago is on transfer of knowledge to e.g. people that want to build Aqua-ponds e.g. framers, fishermen, technicians in aquaculture. The ISA staff is also involved in education of BSc students as well as research & development related to aquaculture and food science. Consequently, the ISA staff has no official role and responsibilities related to health and food safety in the aquaculture sector.

The Team was informed there is no system in place for the registration of aquaculture farms, but an Environmental impact assessment (EIA) is carried out before aquaculture license (issued by CODOPESCA) is given to aquaculture farms.

The team was advised that a National Program for monitoring of residues of veterinary medicines and environmental contaminants in products from aquaculture has not been implemented in DR.

5.7.2. Sites visited in the Dominican Republic

To assess enforcement procedures site visits were carried out according to the table below.

Type	**Number of visits**
Landing sites	2
Fishing/freezer vessels	0
Processing establishment	0
Laboratory	0
Retail/Supermarket	1

The Team made direct observations regarding the infrastructure, vessels, tool/equipment and made further enquiries to stakeholders at the sites visited about harvest and post-harvest procedures.

Landing sites and vessels

Please refer to the section *SPS requirements for fish and aquaculture* in the general background report regarding the minimum SPS requirements for landing sites, vessels and ice production.

Main observations noted:

- Artisanal vessels seem to be the main type of fishing vessels used in DR
- Some fishing vessels were made of material (wood) that is difficult to clean, while other vessels were made from fibre glass that is easy to clean
- Fishing vessels have insulated ice boxes and the fish is normally iced at sea, but in some cases fish is stored in the front of the boat with no ice
- Fish is normally gutted at sea and landed gutted
- Limited hygienic facilities on-board the vessels, but the boats stay out for 4-5 h
- Landing sites were not fenced off and there was inadequate overall management of the sites
- No ice production facilities at the site, but said to be close by (the mission Team was not able to verify this)
- Numerous unauthorised persons were observed at the site
- Some fish was processed and sold on the site i.e. not a clear separation between processing and landing of fish
- Poor hygiene conditions and cleaning procedures were used for the processing of the fish at the landing site e.g. the fish was sliced on uncleaned wooden/plastic cutting boards

Processing establishment

The mission Team did not visit any processing establishments in the DR and could therefore not make any direct observations regarding the status of these type of processing facilities in regards to SPS requirements.

Laboratories

The mission Team did not visit any laboratory facilities in the DR and could therefore not make any direct observations regarding the infrastructure, equipment or laboratory capabilities in the DR. Some information regarding the laboratory capacity was provided by CODOPESCA staff at the consultation held June 25th 2015 at Ministry of Agriculture (see section above), but this information could not be verified by the mission Team.

5.7.3. Consultation with stakeholders

On June 26th 2015 a National Consultation with stakeholders was held. For the benefit of the local stakeholders this consultation was carried out in Spanish. However, neither of the consultants was good in Spanish and thus had to rely on an interpreter to understand what took place. This made it difficult to take notes during the consultation and may also have caused misinterpretation.

The key challenges highlighted were the following:

- The proposed changes in legislation related to food safety issues and its relevance for fishery and aquaculture products were presented and discussed
- The proposed Sanitary Regulation and the suggested standard SPS requirements for fishery and aquaculture products were presented and discussed
- Problems related to attitude and mind set of fishers and workers in primary production were discussed. Generally these workers have very limited education and therefore it is very difficult to transfer knowledge to them e.g. regarding maintenance of facilities, personal hygiene, hygienic handling of fish and the importance of ice for cooling of fish.

5.7.4. Conclusion

The current legislation concerning potable water and fisheries products does not include requirements concerning public health issues equivalent to EC requirements.

The role and responsibilities of the CA does not include tasks related to the hygiene or public health aspects of fisheries products and the CA has no legal power to stop the production of the establishment in case of hygiene deficiencies, this is not in line with EC requirements.

The key to harmonization of regulatory enforcement is to have documented work procedures in place that explain in details how inspection should be conducted according to the regulatory requirements. Linked to such work procedures (usually called Inspection Manual) is a check list that can be used by the official inspectors during the inspection. In the DR no written procedures concerning official controls on fisheries products are in place. Moreover, have inspection reports and forms regarding SPS requirements and public health aspects of official control not yet been adopted.

The roles and responsibilities of the different agencies are not completely clear regarding SPS-related monitoring which results in confusion regarding the tasks of the different agencies. This is not unusual when no written documented procedures and/or agreements are in place between different agencies.

Limited accredited laboratories capacities are available in the country. The designated laboratory has the capabilities to carry out some official analysis on microbiology and heavy metals in the framework of the official controls of fisheries products. However, official monitoring of chemical risks (histamine, PAHs, dioxins and PCBs) are not carried out. Furthermore, neither a National Program for monitoring of environmental contaminants in products from wild fisheries nor a National Residue Control Plan for monitoring of residues of veterinary medicines and environmental contaminants in products from aquaculture are in place, this is not in line with EU requirements. In addition, no environmental monitoring regarding ciguatera toxin in fishery products nor the relevant dinoflagellates in seawater are carried out, despite the relevance for this type of monitoring in this area.

According to EU regulations the CA is required to carry out various official monitoring and surveillance of fishery products and water/ice. In order to fulfil these requirements the CA should take official control samples for analyses to verify compliance with the legislation and to assess consumer exposure in terms of food safety. The Team was informed that a limited number of official control samples are taken for analyses of water and fishery products in the DR, however this could not be verified as the team neither visited a processing establishment nor the designated laboratory.

Site visits indicated that SPS requirements related to health and food safety issues in the fisheries sectors are generally not enforced for fisheries products in the DR. Considerable effort is needed to change the mind-set of the fishermen, local fish vendors, processors and consumers e.g. regarding personal hygiene, hygienic handling of fish and the importance of ice for cooling of fishery products.

5.7.5. Recommendations

The necessary legal framework should be implemented so that an official inspection service is responsible for carrying out official controls throughout the production chain of fisheries products i.e. from the fishing vessels or aquaculture farm to the exporting establishment. These official controls should cover all relevant requirements regarding SPS requirements and public health issues for fisheries and aquaculture products.

Inspection manuals are important to enforce regulations and to harmonize the inspection system. It is also important that the Food Business Operators are well informed regarding which requirements they must fulfil and how their operation are evaluated as that will assist them in fulfilling their obligation. Therefore it is recommended that written procedures (inspection manual) that explain in details how inspection should be conducted according to the regulatory requirements will be developed and implemented. Additionally, inspection reports and forms on official control should be adopted.

It is important to make sure that the CA is enforcing one harmonised standard for all fisheries products so that there are not two standards applied i.e. one for domestic market and another for the export market. Therefore, it is recommended to look for suitable training of control staff so that it will be able to carry out the official inspection service throughout the production chain of fisheries products according to the revised legislation that is currently in progress.

As the food processors are responsible for ensuring the safety of their production they are expected to exercise due diligence and self-controls (own checks), hence the testing for the microbiological status of food should be carried out by them. The CA should also take official control samples for microbiological analyses to verify that the food processors quality system is working. As this is an essential part of having license to operate it is not unfair that the industry covers the cost related to

the analysis of these official control samples. This could, for example, be part of their annual license fee and if the results obtained are unsatisfactory extra payment from the FBOs in question should be required by the CA. This type of user fee would enable the CA to guarantee financial independence and sustainability of the official laboratories and that official control samples are tested on regular bases to verify the safety of water, ice and fisheries products.

The CA should ensure that official control samples for fishery products intended for export to the EU include official controls on the products, water and ice in line with the relevant Community requirements i.e. Regulation (EC) No 852/2004 and Directive 98/83/EC. The CA should also ensure that laboratories performing official analyses are assessed and accredited in accordance with standards providing guarantees at least equivalent to the requirements Regulation (EC) No 882/2004. The CA should also ensure that these laboratories take into account criteria for the different testing methods laid down in EC legislation. It is recommended that an assessment (including a cost-benefit analysis) is carried out to evaluate which laboratory analyses is feasible to accredit and conduct nationally and which would be more beneficial to outsource.

Testing for contaminants/undesirable substances that unintentionally come in contact with food/feed and primary products, e.g. PCB's and dioxins, are also the responsibility of the producer as he must secure the safety of his product. However, testing for these undesirable substances in each assignment sold is far too expensive. Therefore it is better to establish a national wide/regional wide monitoring plan that is carried out on regular basis to be able to assess consumer exposure to these undesirable substances. This type of monitoring plan for contaminants/undesirable substances in fishery products and water is currently not in place in the DR. Similarly, a National Residue Control Plan for monitoring of residues of veterinary medicines and environmental contaminants in products from aquaculture has not been implemented. As neither of these plans are currently in place in the DR a suitable solution needs to be initiated and implemented.

It is important to place in motion a plan to improve maintenance and hygiene on board fishing vessels as well as improve SPS requirements at landing sites in the DR. This could, for example, be done through wide ranged training of persons working in the primary processing and local fishery products processing facilities e.g. regarding general SPS requirements in fisheries and aquaculture sectors as well as the specific requirements of the EC and USA markets. Training and education of local consumers is also required to improve their understanding and perception regarding food safety of fisheries products. Sharing of experience and best practise as well as success stories from other countries in the Caribbean region could also be a suitable way to create an incentive for persons working in primary processing.

Improve the coordination of the different agencies e.g. different organizations are collecting various types of data and should cooperate in the development of a comprehensive data and information exchange system that could be used to monitor, share information and knowledge and report on SPS practices.

In order to be able to plan for anticipated future developments of the fish industry it is necessary to start to predict and plan for likely future demands of current export markets as well as look out additional markets and identify new fishery and aquaculture products for these markets. This requires increased research & development related to the fisheries sector, e.g. regarding development of new products, as this will assist the fisheries sector to move further up the value chain and create a business environment for entrepreneurs in the fisheries industry. This could be achieved through long term (5-10 years) strategic planning with the participation of key stakeholders in the fishery and aquaculture sectors as well as academia.

Caribbean countries should increase their research collaborations regarding ciguatera toxin in fisheries products and the type of dinoflagellates that may pose a risk to public health in Caribbean waters.

5.7.6. Appendix

Consultation held in conjunction with National Consultation regarding; National programmes related to health and food safety in the fisheries and aquaculture sectors.

Attendants at SPS consultation held June 25th 2015 at Consejo Dominicano de Pesca y Acuicultura (CODOPESCA) in Dominican Republic

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6. Regional assessment report

6.1. Result and discussion

The main purpose of this project is to facilitate CARIFORUM states to gain and improve market access for fishery products to European markets by complying with Europe´s Sanitary and Phytosanitary (SPS) measures. To accomplish this goal it requires that the CARIFORUM states achieve good SPS standards. As explained in details in section 4 and related sub-sections the SPS requirements include all issues related to health and food safety in the fisheries and aquaculture sectors and this wide range was reflected in the scope of the assignment (see section 3 for details). In this section the results from the seven individual country assessment reports i.e. Bahamas, Belize, Dominican Republic, Grenada, Guyana, Jamaica, Suriname as well as the results from a short in-official visit to St. Vincent and the Grenadines are compiled in order to provide an overview of the main findings for the CARIFORUM states. The project method is described in detail in section3.4, briefly it was based on gathering background material regarding SPS requirements of the main markets for fishery products from Caribbean countries, visit eight Caribbean countries in 30 days, consult with key informants e.g. official agencies, make direct observations in the field e.g. landing sites, vessels, processing establishment, retail/fish market, aquaculture sites, visit official laboratories, undertake national consultations with key stakeholders and prepare country assessment reports.

In Table 4 the main findings regarding official control of fishery products in eight Caribbean countries are presented, from this it is clear that a Competent Authority (CA) that is responsible for SPS monitoring & official control of FP has been defined in the national regulatory framework in the majority (7 out of 8) of the countries visited. Furthermore, the majority (6 out of 8) of the countries visited have a defined structure for the implementation of inspections and written procedures (inspection manual & check list) are available. However, these written inspection procedures are only easily accessible to all stakeholders in 4 out of the 8 countries. The findings also show that in many cases (7 out of 8) different official control standards were applied for fishery product i.e. one for domestic market and another more stringent standard for the export market. The results also reveal that in 4 out of the 8 countries the CA does not take any official samples for analysis to verify compliance with the legislation and to assess consumer exposure in terms of food safety. In all cases the reason for this is lack analysis of official control samples is due to lack financial resources of the CA. Nevertheless, the CA´s and the designated official laboratories in the Caribbean countries visited in many cases neither charged a fee for their inspection service nor the analysis of official control samples. In some counties the designated official laboratories charged a minor fee for the analysis of official control samples however the fee they charged did not cover the entire cost of these analysis and the income created through these fees went into consolidated governmental funds and not directly to the official laboratory that carries out the analysis.

The main findings regarding official control laboratory capacities in the eight Caribbean countries visited are shown in Table 5. These results reveal that serval deficiencies were observed e.g. regarding accreditation of analysis and capacity for analysis according to EU requirements. In 3 out of the 8 countries some of the more complex chemical analysis (e.g. drug residues, PCBs and dioxins) are outsourced to an external accredited laboratory by the designated official laboratory. This procedure is acceptable if the chemical analysis takes place in accordance with a protocol that the competent authority and the food business operators or organisation concerned have agreed to.

The main findings regarding ongoing plans for monitoring & surveillance of fishery products in the eight Caribbean countries visited are shown in Table 6. The results show that in the majority of the countries (6 out of 8) a national plan for monitoring of contaminants in fishery products from wild fisheries is not in place and in the two countries were a plan has been implemented only covers fisheries products for export and does not include products from the domestic market. A National Residue Control Plan for aquaculture products is currently only in place in 1 out of the 8 countries visited, however, in three of the countries (Bahamas, Grenada, St. Vincent and the Grenadines) there is currently no commercial aquaculture and therefore it is at present not necessary/relevant for the CA to implement a National Residue Control Plan for monitoring of residues of veterinary medicines and environmental contaminants in products from aquaculture. Regular monitoring of marine biotoxins & toxin producing algae are only carried out in 1 out of the 8 countries visited, despite the relevance for this type of monitoring due to the increasing frequency and severity of harmful algal bloom in the Caribbean region. These type of harmful algal blooms constitute one of the most important sources of contamination in the sea, potentially producing harmful biotoxins (phycotoxins) at high concentrations and therefore they should be considered an emerging risk for the Caribbean region.

The main findings regarding SPS measures in the production chain for fishery products in the eight Caribbean countries visited are presented in Table 7. The results reveal that serval problems related to minimum SPS requirements were observed in the entire production chain (vessels, landing sites, processing facilities, aquaculture and retail) in many of the Caribbean countries visited (Table 7). The problems observed in the entire production chain for fisheries products are mainly due to attitude, mind set and limited education of fishermen and workers in the primary production (Table 8). Further, the attitude and mind set of local consumers is a problem (Table 8) as they don't understand the importance of minimum SPS requirements to ensure the health and food safety of fishery products and therefore the local consumer are not demanding proper hygienic handling of fishery products and hygiene conditions e.g. during processing and retail of fishery products on the domestic market. Site visits indicated that the regulatory requirements related to health and food safety issues in the fisheries sectors of the countries visited are generally enforced by the CA for fishery products intended for export, while this was not the case for the domestic market. Therefore, there is frequently a difference between the enforcement of regulations by the CA for fisheries products intended for export and production for the domestic market (Table 1). In some of the countries visited the SPS measures applied in the production chain for fisheries products were sufficient for products that would be cooked prior to consumption, but not for ready to eat high risk products (Table 7), e.g. sushi, this applies both for fisheries products intended for export and production for the domestic market.

The consultation with official agencies and key stakeholders in each of the eight countries visited revealed that there is generally limited sharing of data between official agencies within each countries as well as on the regional level (Table 8). Different organizations within each country are collecting various types of data and they could therefore benefit from increased collaboration regarding the gathering of data e.g. development of comprehensive national database, which could also feed data into a regional database. This type of national/regional database could be used to monitor, share information and knowledge about food safety of fishery products from the Caribbean region. Further, a comprehensive database could be beneficial to be able to provide data to e.g. food/fisheries authorities, industry, foreign customers and consumers regarding the status of

Caribbean fishery products in terms of food safety and wholesomeness in general. In the future, a comprehensive database could also be used for risk assessment and scientific research.

The findings from the consultations also show that there is currently insufficient technical expertise and relevant university programs related to food science, environmental science and engineering in the region (Table 8) and this is hampering research & development related to the fisheries sector e.g. regarding development of new products, value addition and better use of marine resources.

Based on the results of the assessment of the current state in the CARIFORUM countries presented in tables 4-8 a proposal on strengthening national and regional SPS monitoring programmes has been developed and this proposal should also be regarded as the main conclusions of this project/consultancy.

Table 4. Main findings regarding official control of fishery products (FP) in eight Caribbean countries

Observation	1	2	3	4	5	6	7	8	Total Y
CA responsible for SPS monitoring & official control of FP	Y	Y	Y	N	Y	Y	Y	Y	**7**
Different official control standards applied for FP for export & domestic	Y	Y	Y	X	Y	Y	Y	Y	**7**
Written inspection procedures available	Y	Y	Y	N	N	Y	Y	Y	**6**
Written inspection procedures accessible to all	Y	Y	Y	N	N	N	N	Y	**4**
Fees for inspection service of CA	X	N	Y	N	N	N	Y	N	**2**
CA takes official control samples for analyses (Export)	Y	Y	Y	X	N	N	Y	N	**4**
Formal MoU available between all relevant agencies involved in official control	N	N	Y	N	Y	N	X	Y	**3**

Key: 1= Belize**, 2=** Bahamas**, 3=** Jamaica**, 4=** Dominican Republic**, 5=** Grenada**, 6=** Guyana**, 7=** Suriname, **8=** St. Vincent and the Grenadines
Y= Yes, **N**= No, **X**= Information not available

Table 5. Main findings regarding official control laboratory capacities in eight Caribbean countries

Observation	1	2	3	4	5	6	7	8	Total Y
Designated official control laboratory accredited	N	Y	N	N	N	N	N	N	**1**
Designated laboratory carries out all analysis required by EU	N	N	N	N	N	N	N	N	**0**
Designated laboratory carries out basic microbiological analysis	Y	Y	Y	X	N	N	Y	N	**4**
Capacity for analysis of marine biotoxins & toxin producing algae	N	N	Y	N	N	N	N	N	**1**
Chemical analysis outsourced by the official control laboratory	Y	N	Y	N	N	N	Y	N	**3**

Key: 1= Belize**, 2=** Bahamas**, 3=** Jamaica**, 4=** Dominican Republic**, 5=** Grenada**, 6=** Guyana**, 7=** Suriname, **8=** St. Vincent and the Grenadines

Y= Yes, **N**= No, **X**= Information not available

Table 6. Main findings regarding monitoring & surveillance of fishery products in eight Caribbean countries

Observation	1	2	3	4	5	6	7	8	Total Y
National plan for monitoring of contaminants in FP from wild fisheries (Export) in place	Y	N	Y	N	N	N	N	N	**2**
National Residue Control Plan for aquaculture products in place	Y	N	N	N	N	N	Y	N	**2**
Regular monitoring of marine biotoxins & toxin producing algae carried out	N	N	Y	N	N	N	N	N	**1**

Key: 1= Belize**, 2=** Bahamas**, 3=** Jamaica**, 4=** Dominican Republic**, 5=** Grenada**, 6=** Guyana**, 7=** Suriname, **8=** St. Vincent and the Grenadines
Y= Yes, **N**= No, **X**= Information not available

Table 7. Main observations regarding SPS measures in production chain for fishery products in eight Caribbean countries

Observation	1	2	3	4	5	6	7	8	Total Y
Many problems with Vessels: maintenance, hygiene conditions & cleaning – applies to export & domestic market	N	Y	Y	Y	N	Y	Y	N	**5**
Many problems with Landing sites: maintenance, handling of FP, hygiene conditions, waste management – applies to domestic market	N	N	Y	Y	N	Y	Y	N	**4**
Many problems with retail: maintenance, handling of FP, hygiene conditions, waste management – applies to domestic market	X	Y	Y	Y	X	Y	Y	Y	**6**
Some problems related to processing facility: maintenance, hygiene conditions – applies to export market	N	N	X	X	N	N	Y	N	**1**
SPS measures sufficient for high risk ready to eat product – applies to export market	Y	N	X	X	N	N	N	N	**1**
Some problems with Aquaculture site: hygiene conditions, water quality	N	X	Y	X	X	Y	X	X	**2**

Key: 1= Belize**, 2=** Bahamas**, 3=** Jamaica**, 4=** Dominican Republic**, 5=** Grenada**, 6=** Guyana**, 7=** Suriname, **8=** St. Vincent and the Grenadines
Y= Yes, **N**= No, **X**= Information not available

Table 8. Other observations related to SPS measures in production chain for fishery products in eight Caribbean countries

Observation	1	2	3	4	5	6	7	8	Total Y
Persons working in the primary fisheries processing sufficiently trained	X	N	N	N	N	N	N	N	**0**
Sufficient consumer knowledge regarding proper handling of FP	X	N	N	N	N	N	N	N	**0**
Environmental Impact Assessment (EIA) required for starting Aquaculture activity	Y	Y	Y	Y	X	Y	N	X	**5**
Sharing of data between official agencies	N	N	N	N	N	N	N	X	**0**
Ongoing innovation and product development & planning for future	N	N	N	N	N	N	N	N	**0**

Key: 1= Belize**, 2=** Bahamas**, 3=** Jamaica**, 4=** Dominican Republic**, 5=** Grenada**, 6=** Guyana**, 7=** Suriname, **8=** St. Vincent and the Grenadines

Y= Yes, **N**= No, **X**= Information not available

7. Conclusions

7.1. Proposal on strengthening national and regional SPS monitoring programmes

Introduction

This proposal is based on findings of an assessment of existing national monitoring programmes related to health and food safety in the fisheries and aquaculture sectors. This assessment included technical reviews and country visits that included stakeholder consultative process in seven CARIFORUM countries and these assessment activities have been compiled in both in country and regional assessment reports (sections 5 and 6). In addition, a draft version of this proposal was reviewed and discussed at a Regional Validation Workshop, Fisheries Component of the 10th EDF Funded Sanitary and Phytosanitary (SPS) Measures Project on the 24 - 25 August 2015 in Barbados. At this Regional Validation Workshop CARIFORUM State representatives and other participants were asked to provide feedback on the draft proposal to facilitate finalization and CRFM approval.

The CARIFORUM State representatives at this workshop were from the following countries; Antigua and Barbuda, Barbados, Belize, Dominica, Dominican Republic, Grenada, Guyana, Jamaica, St. Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago. Furthermore, several representatives from regional organisations e.g. CARICOM Organisation for Standards and Quality (CROSQ), Caribbean Agricultural Health and Food Safety Agency (CAHFSA), Centre for Resource Management and Environmental Studies (CERMES) at the University of the West Indies, as well as stakeholders from the fisheries sector, e.g. Caribbean Network of Fisher folk Organization and private companies, attended the workshop and participated in the review and discussion of the draft proposal. This wide range of collaboration with the relevant stakeholders has allowed for adaptation of the proposal in order to improve its practical utility for the

Caribbean region. Most importantly this close collaboration with stakeholders on the development of this proposal will ensure that ownership lies with them and will increase the chance of acceptance and uptake of the project outcomes.

Proposal

Strengthening National SPS monitoring programmes

1. Strengthen national official control and enforcement of deficiencies according to regulatory requirements and make sure that the competent authority is enforcing one harmonized standard for all fishery products so that there are not two or more standards applied and these should be defined in the national regulation. The *Codex Alimentarius* guidelines and standards should be used as the minimum SPS requirements.

Way forward:

a) One way to address the current weaknesses in the national official control is to prepare a roadmap with input from relevant stakeholders such as official national control agencies in food and aquaculture sector and national food business operators. This roadmap has to be based on a previous National assessment on the SPS measures in the entire production chain for fishery products to identify where the main weaknesses are. To organise and achieve the necessary corrections/improvements identified in the roadmap, a plan with clearly defined priorities regarding how to deal with the main weaknesses according to *Codex Alimentarius* guidelines and standards that defines the minimum SPS requirements was well as a timeframe for finalising the defined actions should be prepared.

Ways to achieve the suggested way forward:

a) Twinning mechanisms i.e.two Caribbean countries or agencies depending on what is the objective that collaborate e.g. on cross-training of personnel and conducting team or joint inspections.

b) Apply for 3rd country twinning support by EU e.g. through the program "Better and Safer Food Training" which is carry out by the EU Directorates Enlargement and DG SANCO.

c) Obtain consultation from suitable experts to help with the National assessment on the identification of the main weaknesses related to SPS requirements in the entire production chain for fishery products.

PLEASE NOTE THAT ALL THE PROPOSED REGIONAL SUGGESTIONS BELOW ALSO APPLY TO THE NATIONAL LEVEL DESCRIBED ABOVE

Strengthening regional SPS monitoring programmes

1. Harmonize the official inspection service carried out by the official food control authorities in the CARIFORUM states. The aim of this regional harmonization should be that the official controls for the fishery products (from wild and aquaculture) sector, provide guarantees that can be considered as at least equivalent to European Commission requirements.

Way forward:

a) Synchronisation of written inspection procedures which interprets the SPS regulatory requirement. This harmonisation should e.g. include the following aspects: inspection manual, inspection check list, instrumentation and official calibration/validation of the same. The written procedures should also describe delegation of specific tasks related to official controls to other control bodies, e.g. designation of officials that conduct duties on behalf of the CA, and organisation of audits/inspections by the competent authority of the delegated tasks.

b) These synchronised written procedures should be easily accessible to stakeholders.

c) Harmonize official monitoring and surveillance of fisheries products as well as of water and ice used in the production.

d) Regional audits to evaluate compliance according to the regionally harmonized inspection service, carried out by identified trained regional auditors.

Ways to achieve the suggested way forward:

a. Countries (e.g. Bahamas, Belize, Jamaica, Suriname) that have already developed and implemented these types of written inspection procedures could e.g. share these documents and they could serve as the basis for the regional harmonization of inspection procedures. Twinning mechanisms (two countries or agencies depending on what is the objective) that collaborate e.g. on cross-training of personnel and conducting team or joint inspections. Further, regional training of staff performing official controls can be organised.

b. The synchronised written procedures should be made accessible to stakeholders on the internet e.g. via relevant websites.

c. Official monitoring & surveillance should be based on risk-oriented sampling. Caribbean states that have already developed and implemented effective official monitoring and surveillance plans that cover the entire production chain for fisheries products, e.g. the Bahamas, Belize and Suriname, could share these procedures. These Caribbean countries have implemented these types of monitoring plans for fisheries products intended for export and these could be adapted and expanded to cover also fisheries products intended for the domestic market. In addition, consultation from suitable experts from Europe on the main features of the risk based inspection of food business operators applied for the EU food market could be attained. Furthermore, a Working group consisting of regional SPS experts that have previous experience from the implementation of SPS requirements in the food and/or aquaculture sector in their home country could be established. Such a Working Group can bring together a

pool of regional expertise and regional think tank, that is necessary to develop and implement effective official regional monitoring and surveillance plans

d. Each country within the region should nominate a qualified official inspector to carry out evaluations regarding the compliance of SPS requirements in different countries within the region. This inspection should be carried out based on the harmonized regional inspection procedures. The nominees should receive training in carrying out SPS audits and interpretation of the written inspection procedures in order to harmonize their work. A suitable organisation within the CARIFORUM states should be identified to organize and manage this regional audit e.g. the Caribbean Agricultural Health and Food Safety Agency (CAHFSA). The cost related to such audits should be kept to the minimum.

   Audits carried out by an auditor from a different CARIFORUM state could be valuable for each state within the region and for the region as a whole. The main benefit of this system will be that it can deliver impartial information on strengths and weaknesses of each country and a comparison can be made between countries within the region. Furthermore, this kind of collaboration between official inspection service staff can lead to transfer of knowledge regarding how to enforce similar deficiencies observed in different Caribbean countries.. The main objective of these audits is to inform the States of any deviations from the regional or common requirements (standard).

2. Investigate the possibilities for setting up regional laboratories and/or regional laboratory clusters for the analysis of official control samples as well as samples from Food business operators.

Way forward:

a) Review available studies that have been carried out in the region to determine laboratory capacity and identify limitations. Then carry out an assessment to update the existing information and provide current state of play regarding laboratory analysis for the fisheries and aquaculture sectors. The assessment could also take into consideration which laboratory capacities could be shared between sectors e.g. in case the same analytical equipment and test procedures can be applied across sectors. This cross-sectoral assessment should include evaluation related to possible cross contamination of samples & equipment.

b) Test the feasibility of the sending samples from different Caribbean countries to the laboratory clusters.

Ways to achieve the suggested way forward:

a. The review and the assessment needs to give a holistic overview, including
a cost-benefit analysis, regarding regional laboratories and/or regional laboratory clusters. Therefore it should provide information regarding which laboratory analyses can be accredited and conducted nationally and which would be more beneficial to carry out regionally. It should identify which laboratory capacities are available in the CARIFORUM states and present weaknesses in terms of necessary laboratory capacities in the region (e.g. equipment, availability of analytical

expertise, accreditation and validation of the analytical procedures) and estimate costs related to building up these capacities in the Caribbean region. Further, the review and assessment should take into account:

logistics related to transport of samples within the Caribbean region e.g. cost, time, reliability of the transport, criteria for transporting highly contagious or infectious material and the need for IATA Certification for submission of samples to foreign reference laboratories.

b. After the finalisation of the assessment and identification of suitable Caribbean laboratory clusters, two – three case studies should be carried out to test the feasibility of the sending samples from different Caribbean countries to the laboratory clusters. The main purpose of these case studies will be to identify weaknesses and problems related to the pre-analytical work required and the logistics of sending perishable samples between countries, the results of these studies should be used to find solutions to overcome the barriers/ problems identified to facilitate the usefulness of the laboratory clusters for the lead users within Caribbean region.

3. Monitoring and collection of data on contaminants/undesirable substances detected in fishery products from wild fisheries can be shared within the region as this type of monitoring covers all economically important marine species caught in Caribbean waters, hence this type of activity would benefit from a regionally coordinated approach.

Way forward:

a) Monitoring should be based on risk-oriented sampling, which requires some data e.g. regarding common fish stocks, occurrence and level of biological and chemical hazards in wild fishery products, market share and consumption data. The wide range of data requirements for the risk-oriented sampling approach calls for collaboration between different official agencies and authorities e.g. within fisheries, food and public health. Therefore, a suitable Caribbean regional organization should be identified to carry out this inter-agency co-ordination.

b) The waters in the region could e.g. be divided into grids and each member state is responsible for collecting and analysing samples within a predefined grid

c) To optimise the benefits of the monitoring program for the region the analytical results from the monitoring activities should be reported in a harmonised way for all samples e.g. the results for chemical analysis should expressed using the same units

4. Monitoring and collection of data on marine biotoxins like ciguatera toxin, PSP, DSP detected in fishery products can be shared within the region as this type of monitoring data is essential for scientific risk assessment regarding the extent of this problem in the Caribbean region. In addition, the CARIFORUM states should increase their research collaborations regarding ciguatera toxin in fisheries products and the type of dinoflagellates that may pose a risk to public health.

Way forward:

a) Monitoring should be based on risk-oriented sampling, which requires some data e.g. which type of dinoflagellates are likely to produce harmful biotoxins (phycotoxins) at high concentrations in the Caribbean sea, occurrence and level of these harmful biotoxins in fishery products in the Caribbean region. The wide range of data requirements for the risk-oriented sampling approach calls for collaboration between different official agencies and authorities e.g. within fisheries, food and public health. Therefore, a suitable Caribbean regional organization should be identified to carry out this inter-agency co-ordination.

b) Increase research collaborations on this topic among the CARIFORUM states.

Ways to achieve the suggested way forward:

a. Carry out a wide ranged literature search and write a review report based on the results. The purpose of this task is to obtain an overview of published scientific articles and reports on this topic to determine the present state of knowledge and the scope of the problems related to marine biotoxins in the CARIFORUM states.

b. Seek research collaboration with neighbouring countries that are already carrying out scientific research on this topic

5. Improve the coordination of the different agencies within the region e.g. different organizations are collecting various types of data and should cooperate in the development of a comprehensive data and information exchange system that could be used to monitor, share information and knowledge and report on SPS practices.

Way forward:

a) To investigate the feasibility of comprehensive data and information exchange system both on national and on regional level an assessment should be carried out to determine the required computer infrastructure (e.g. regarding hardware, software, net capacity) and type of technical expertise needed to develop and maintain such as system

b) Implement the same coordination mechanism as the Plant Health Authorities of the region are currently applying as suggested by one of the working groups at the Regional validation workshop of the Fisheries Component of the 10th EDF Funded Sanitary and Phytosanitary Measures Project on the 24 - 25 August 2015 in Barbados.

6. Increase collaboration between official control agencies in the CARIFORUM states regarding suitable regional training programs for persons working in the primary fisheries processing e.g. regarding general SPS requirements in fisheries and aquaculture sectors as well as the specific regulatory requirements of the EU and USA markets.

Way forward:

a) Carry out an assessment of existing training programs in the region that focus on general SPS requirements in fisheries and aquaculture sectors and are tailored for persons working in the primary fisheries processing and best practices regarding reaching out and transferring knowledge to this target group.

b) Apply for funding to EU to be able to carry out regional wide training of stakeholders.

7. Increase collaboration between public health authorises regarding consumer education to improve their understanding and perception regarding food safety of fishery products.

Way forward:

a) Define and agree upon basic messages to help improve consumer education

b) Outline effective ways to reach consumers

Ways to achieve the suggested way forward:

a. Regional workshop with representatives from public health authorises in the CARIFORUM states, held to discuss, define and agree upon basic messages to help improve consumer education and help change their perception and behaviour. This workshop would encourage information exchange
among public health authorises in the CARIFORUM states on good practices and effective ways to transfer knowledge to this target group.

b. Use social media to reach consumers with the basic messages that have been agreed upon

8. Investigate possibilities to increase technical expertise and scientific research related to the fisheries and aquaculture sector in order to boost value addition and better use of marine resources in the CARIFORUM states.

Way forward:

a) Soliciting assistance from the University of the West Indies (UWI) and/or request that they have a specific BSc & MSc programmes to help strengthen the Fishery Sector in the region.

b) Explore possibilities for building bridges between academia and private sector to increase their collaboration and define common goals

regarding innovation and future developments of the fisheries and aquaculture sector. A regional workshop with representatives from academia and private sector could be a suitable forum to discuss and define common goals and develop a long term strategic plan to obtain these goals.

Identifying possible funding sources for research & development in the Caribbean region and establish development funds within each country that are solely intended for research and development in fisheries sector. The financing of the national development fund could be obtained through taxes/fees e.g. from export of fishery products.

Annex 1 TERMS OF REFERENCE

TERMS OF REFERENCE

FOR

Technical support to develop national and regional environmental monitoring programmes related to SPS for fishery and aquaculture products in CARIFORUM States

1. BACKGROUND INFORMATION

1.1. Beneficiary

The direct beneficiaries for the implementation of this assignment are the CARIFORUM countries[1].

1.2. Contracting Authority

CRFM Secretariat
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Belize City
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1.3. Background

The Forum of the Caribbean Group of African, Caribbean and Pacific (ACP) States (CARIFORUM) is the body that comprises Caribbean ACP States for the purpose of promoting and coordinating policy dialogue, cooperation and regional integration, mainly within the framework of the Cotonou Agreement between the ACP and the European Union, and also the CARIFORUM-European Community Economic Partnership Agreement (EPA). The region occupies a total area of 510,713 km^2 and comprises 4 large island states, 8 small island states and 3 mainland states, all with a total population of 28 million (2014); 89% lives in Dominican Republic, Haiti, Jamaica, and Trinidad and Tobago. The countries are positioned around the Caribbean Sea with USA to the north, the Atlantic Ocean to the east, Central and South America to the west and south, respectively. The countries are predominantly small economies, depending mostly on agriculture and tourism, and are susceptible to natural disasters. Although there are many similarities in the grouping around culture and history, their geography may be very different and the present-day social and economic indicators such as population, per capita income, life expectancy etc., vary enormously so much so that a distinction is drawn in membership identifying less developed countries (LDCs) for special treatment. The combined GDP of the CARIFORUM region in 2013 was approximately US$136.54 billion, with the Dominican Republic accounting for 45% of the total GDP[2].

The fisheries sector is important for CARIFORUM States as it provides employment, contributes to food security and export earnings. The marine capture sector is characterized as largely artisanal / small-scale multi-gear fishery, where fishers utilize small boats and limited gear technology (fish traps, cast nets, and hook and line) to catch spiny lobster (Jamaica, The

[1] CARIFORUM members includes Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, St. Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines, Suriname, and Trinidad and Tobago. The group also allows observer status for British and Dutch Oversees Territories and Countries (OCT) and French Overseas Departments (DOMs) in the Caribbean (http://www.caricom.org/).

?- World Bank. www.worldbank.on.?.

Bahamas), conch (Jamaica, The Bahamas, Belize, Dominica Republic), shrimp (Guyana, Suriname, Trinidad and Tobago), and finfish (all countries). The aquaculture sector in the region varies from experimental and small-scale for oyster (Jamaica and Belize) and sea moss (Antigua and Barbuda, Barbados, Dominica, Saint Lucia) to large scale shrimp and tilapia production (Jamaica, Belize, Dominica Republic). Direct employment in marine fisheries and aquaculture is an estimated 121,218 persons, with suppliers of goods and services and other indirect service 354,712 persons[3]. Total marine fish production is an estimated 181,653 MT (2012). Fish harvested are sold mainly on the domestic market while industrial catches are processed (limited to freezing and packaging) and exported. The total earnings from marine capture fisheries and aquaculture export was over USD 191 million in 2012[4].

Regional cooperation in managing marine fisheries and aquaculture resources in CARIFORUM countries is promoted through CARICOM / CRFM. In February 2002, CARICOM established the Caribbean Regional Fisheries Mechanism (CRFM) to promote and facilitate the responsible utilization of the Region's fisheries and other aquatic resources for the economic and social benefits of the current and future population of the region[5]. All CARIFORUM States, with the exception of the Dominican Republic are members of the CRFM. However, in October 2008, the CRFM and the Government of Dominican Republic signed a Memorandum of Understanding to facilitate cooperation to ensure the sustainable development, utilization conservation and management of the fish stocks and associated ecosystems occurring within the Caribbean Sea and adjacent areas, through, *inter alia*, the effective and efficient development and implementation of programmes, projects and activities in these areas. The CRFM has a close, on- going relationship with the Dominican Republic in fisheries.

The objectives of the CRFM are: (a) the efficient management and sustainable development of marine and other aquatic resources within the jurisdiction of Member States; (b) the promotion and establishment of cooperative arrangements among interested States for the efficient management of shared, straddling or highly migratory marine and other aquatic resources; and
(a) the provision of technical advisory and consultative services to fisheries divisions of Member States in the development, management and conservation of their marine and other aquatic resources.

The recently approved Caribbean Community Common Fisheries Policy[6] includes several provisions addressing Sanitary and Phytosanitary (SPS) issues in fisheries, including 3 of the 9 objectives (Art 4.3(b) (g) and (i)), and Article 18 on Marketing and Trade). In order to address SPS issues in marine fisheries and aquaculture, a plan is outlined in the CRFM's Strategic Plan[7] and Biennial work plan[8], which represents a consensus of Member States priorities, under Strategic Objective C: Sustainable Management and Use of Fisheries Resources. The overall aim of the SPS plan is to reduce post-harvest loss, improve the quality of fish and fisheries

[3] Masters, 2014. CRFM Statistics and Information Report 2012 and http://www.codopesca.2ob.do/

[4] Masters, 2014. and Produccion pesquera para el periodo 2008 - 201 1, por grupos explotados, en MT (http://www.codopesca.2ob.do0

[5] CFRM, 2002 Agreement Establi shing the Caribbean Regional Fisheries Mechanism

[6] CRFM, 201 1. Agreement Establ ishing the Caribbean Community Common Fisheries Policy (www.crfm.int). lt was confinned at the 51" Special COTED Meeting (October 2014) that the CCCFP represents the approved policy of the Community and should be applied as far as possible.

[7] CRFM, 2013. 2"d Draft CRFM Strategic Plan (2013 - 2021). CRFM Administrative Report. 39pp.

[8] CRFM, 2014. CRFM Biennial Work Plan and Budget, I April 2014 to 31 March 2016. CRFM Administrative Report. 24 pp.

products, and improve infrastructure for marketing and trade of fish and fisheries products to meet domestic needs and international standards.

1.4. Current situation in the sector

The World Trade Organization (WTO) Agreement on the application of the SPS Agreement to protect human, animal and plant life and health, encourages countries to adopt measures on the basis of international standards, guidelines and recommendations. International trade laws such as the TBT and SPS Agreement[9] adopts SPS standards which protect public health while facilitating regional and international trade. As such, WTO Member States[10] are obligated to apply international standards, guidelines, and recommendations when trading agricultural products (including fish and fish products)[11]. CARICOM / CARIFORUM makes similar requirements of Member States. The Revised Treaty of Chaguaramas[12] requires the establishment (Article 57, Section lk) and the harmonization of laws and administrative practices in respect of SPS measures (Article 72, Section 2e).

Currently, the standard of fish handling practices / quality control systems varies among CARIFORUM countries. Most fishers operate from small open fiberglass / wooden vessels and land catches at landing sites with inadequate infrastructure. The sectors face a number of SPS challenges[13]:

- vessels - maintaining ambient temperature, gutting fish, cleaning vessels
- Landing sites - water and ice supply, chill storage facility, gutting fish on the beach or jetty
- Transportation - no ice, open transportation
- Retail market - general conditions unsatisfactory
- Process establishment - some needs to be compliant (HACCP, EU Directive 91/493/EEC, WHO Guidelines)
- Environmental health management
- Testing Laboratory - capacity in some countries limited

Inadequate health controls for fishery products in CARIFORUM countries can or has resulted in restrictions on access to the European and other international markets[14]. Hence, countries are working to improve sanitary standards including the formation of competent authorities, improved legislation, and implementation of strict sanitary guidelines and monitoring systems.
The region exports fishery products to markets with high food standards such as the EU, USA, Canada and Japan. These trading partners require countries to implement monitoring programmes for the presence of veterinary medicines, pesticides, and environmental contaminants in food and animal origin; for example, EU (Directive 91/67/EEC, 96/23/EC),

[9] Agreement of Teclmical Barrier to Trade

[10] WTO Member States include all CARIFORUM countries except The Bahamas (an Observer).

[11] Agreement on the Application of Sanitary and Phytosanitary measures, Article 2, section 3

[12] CARICOM, 2002. Revised Treaty of Chaguaramas Establishing the Caribbean Community including The CARJCOM Single Market and Economy. 288p.

[13] OECS, 2003. Technical Assistance Inputs to Enhance Sanitary Standards and Capacity in the Supply Chain for Marine Products for Human Consumption in the Eastern Caribbean States. 162p.

[14] Vanthuyne, 2002. Strategy and project proposal for an integrated CARICOM / CARIFORUM Programme to enhance the regional institutional capacity to expand the trade in fishery products, locally, regionally, and internationally.

USA (US Food Safety Modernization Act), and other international directives (WTO-SPS, CITES). Monitoring programme is aimed at increasing the safety of both local and imported food supplies, and considers all levels of the food system such as field investigation, processing facilities, inspection and port entry checks, and an effective laboratory system.

Basic monitoring programmes have been established in a number of CARIFORUM countries by the relevant competent authorities in collaboration with official laboratories. They are set up to conduct accidental contamination and residue monitoring in accordance to Council Directive 91/67 EEC. Competent authorities and Aquaculture farms in Suriname, Jamaica, and Belize monitor the residues of drugs used on the farms. In Suriname, the Fish Inspection Institute implemented an annual residue monitoring plan for aquaculture products in compliance with EU regulations. The programme monitors the following possible residues in aquaculture products at farm level: Chloramphenicol, Nirofurans (AHD, AMOZ, AOZ, SEM), Tetracyclines, Oxolinic acid, Enrofloxacin, Emamectine, SUM DDT, Malachite green, Leucomalachite green and Crystal violet) [15]. The Competent Authority in Jamaica, the Veterinary Services Division, has an agriculture monitoring programme, which includes fisheries and aquaculture products. The aim of the programme is to improve the safety of domestic and imported food by minimizing the potential public health risk. In regards to the conch fishery, Jamaica has an active monitoring programme in keeping with EU Directives, which involves: (i) microbiological testing along with residue (heavy metals); (ii) parasitology, (iii) test for hellfish poisoning (lipophilic, amnesic, paralytic hellfish poisoning); and (iv) toxic phytoplankton species [16].

This Consultancy seeks to assess monitoring programmes for fisheries and aquaculture sectors in CARIFORUM countries, and to propose national and regional monitoring systems. Support is provided by the Sanitary and Phytosanitary Measures programme, one component of the 10th EDF Programme titled *"Support to the Caribbean Forum of ACP States in the Implementation of Commitments Undertaken Under the Economic Partnership Agreement (EPA): Sanitary and Phytosanitary Measures (SPS)"*[17], executed by the Inter-American Institute for Cooperation on Agriculture (IICA), with the fisheries sub-component being coordinated by the CRFM. The project aims to facilitate CARIFORUM States to gain and improve market access by complying with Europe's Sanitary and Phytosanitary Measures (SPS) and to help CARIFORUM states to better develop their own regionally harmonized SPS measures and institutional capability to meet the requirements necessary to maintain and expand on the trade of fish and fish products locally, regionally and internationally.

1.5. Related programmes and other donor activities

The SPS project activities address legislation, coordination, and capacity building related to agriculture, fisheries, plant protection, animal health, food security and the environment. Component 3 of the project deals with the development / strengthening of national and / or regional regulatory and industry capacity to meet the SPS requirements of international trade. National and regional environmental monitoring programmes and national (aquaculture) farm

[15] LVY. Note regarding plant, animal, and fisheries health in Suriname.

[16] Personal Communication with staff at the Jamaica Fisheries Division and Veterinary Services Division.

[17] IICA, 2014. !Oth EDF SPS Project: Support to the Caribbean Forum of ACP States in the Implementation of Commitments Undertaken Under the Economic Partnership Agreement (EPA): Sanitary and Phytosanitary Measures (SPS).

level residue monitoring programmes will be assessed, and the findings used to inform development of a proposal for environmental monitoring suitable for the CARIFORUM region. It is important that these activities are linked to agriculture monitoring programmes nationally and regionally.

In the conduct of the assignment, the Consultant's Authorized Key Experts (KEs) are expected to liaise with the above-mentioned programmes or institutions when appropriate in order to gather relevant information and to ensure cooperation with the projects / programmes.

2. OBJECTIVE, PURPOSE & EXPECTED RESULTS

2.1. Overall objective

The overall objective of the project of which this contract will be a part is as follows:

To support the integration of CARIFORUM states into the world economy and specifically to increase production and trade in agriculture and fisheries which meet international standards while protecting plant, animal and human health and the environment.

2.2. Purpose

The purpose of this contract is as follows:

To strengthen / establish national and regional monitoring programmes related to health and food safety in the fisheries and aquaculture sectors of CARIFORUM States, to meet domestic needs and international standards.

2.3. Results to be achieved by the Consultant's Authorized Key Experts (KEs)

The KEs will produce the following results as part of this assignment:

2.3.1. A Regional Assessment report of existing fisheries and aquaculture sectors' environmental monitoring programmes related to Sanitary Standards in CARIFORUM States;

2.3.2. Completed and documented national consultations / technical seminars on environmental monitoring in 8 CARIFORUM countries (country assessment reports);

2.3.3. A Proposal on establishing or strengthening national and regional monitoring programmes formulated.

3. ASSUMPTIONS & RISKS

3.1. Assumptions underlying the project

In 2001, a diagnostic m1ss10n was organized to assess the capacity and potential of CARIFORUM Member States to expand their capacities for production and trade in fishery products locally, regionally, and internationally [18]. This led to the inclusion of fisheries in the EPA project proposal. The need for this activity was further reiterated by CRFM (Member States) in the CRFM biennial work-plan and reviewed again most recently by regional stakeholders at the Blue Growth Workshop in Grenada [19].

It is assumed that CARIFORUM States are willing to cooperate in project activities and will actively utilize prepared guidelines and legislation. Government officials and key stakeholders are expected to attend and participate in the validation workshop. It is also assumed that national / regional organizations and implementing agencies are committed to strengthening their links, willing to share data and information, and willing to establish coordination mechanism to ensure effectiveness and sustainability of this intervention.

3.2. Risks

It is expected that CRFM Secretariat will take all the necessary measures to ensure the fulfillment of CRFM's obligations as set out in this project. However, Acts of God, such as hurricanes, flooding, etc., may delay project implementation. Also, project awareness by civil society and direct stakeholders is important, as no information may lead to non-participation. Failure to meet these requirements could result in the project not meeting the expected results. However, these risks have been minimized, since Member States requested the intervention and will commit the necessary time to assist in implementation. Also, the projects visibility activities will improve project awareness.

4. SCOPE OF THE WORK

4.1. General

4.1.1.Project description

This assignment will provide support to CARIFORUM States and the CRFM to establish / strengthen monitoring programmes for health and food safety requirements of fisheries and aquaculture (inland, marine) products. This will also ensure safe food standards for fisheries products in the region, while meeting the requirements of the region's trading partners worldwide. The scope of this analysis should include harvesting, handling, production, processing, storage, transportation, and marketing of fisheries and aquaculture products intended for human consumption.

[18] Vanthuyne, 2002.

[19] CRFM, 2014. Report of the CRFM/CFNO/CTA Regional Fisheries Workshop: Investing in Blue Growth, St. George's, Grenada 20-21 November 2014. CRFM Technical and Advisory Document - Number 2014/3

This task involves the following:

1. Assessment of existing monitoring programmes

This task will involve preparation of an assessment report of CARIFORUM States SPS monitoring programmes for fisheries and aquaculture sectors, based on technical review and stakeholder consultations.

The assessment should include, but not be limited to the following:

- Review related national / regional / international legal instruments, SPS instruments (CODEX, WHO guidelines), requirements by CARIFORUM main trading partners (EU, USA, Canada), and other international organizations (CITES);
- Review and analyse existing national and regional SPS monitoring programmes, including site assessment, sample collection, sample transfer and storage, laboratory analysis, interpretation of results, and reporting;
- Assess institutional capacity, institutional overlaps, and identify gaps and areas of weakness;
- Assess total supply chain process for fisheries and aquaculture products related to SPS requirements;
- Analyse farm level residual monitoring for the aquaculture sector, based on review of systems and processes in place, and stakeholder consultations;
- Assess and advise on developing the necessary accredited microbiological, chemical and biochemical laboratory capacity (HRD, equipment, certified training) for, *inter alia:*
    i) routine testing of water and ice - total coliforms, faecal coliforms, total aerobic counts, faecal *streptococci*, Sulphite reducing *clostridia;*
    ii) routine testing of seawater, seagrass - toxic elements (as also bullets iii, iv)
    iii) routine testing of fishery products - coliforms, total aerobic count, *Eschisichia coli, etc.*, hellfish poisoning (lipophilic, amnesic, paralytic hellfish poisoning), toxic phytoplankton species;
    iv) routine testing of fihisy products for environmental contaminants - chemicals or biochemical test such as heavy metals (mercury, lead, copper, cadmium), histamine, pesticide / hisbicide ·residues (organochlorine compounds) and othis bio-toxins as required.
    v) Monitoring fihisy products for marine biotoxins like ciguatera toxin, PSP, DSP etc.
- Provide expert advice to CARIFORUM States, CRFM, and other stakeholders on suitable sustainable environmental monitoring practices, including basic contaminants to monitor (EU Directive 96/23 EC).
- Assess coordination of regional testing and reporting capabilities, including networking with other food safety-related initiatives in CAHFSA, Suriname, Jamaica, Dominican Republic, and Belize.

2. Stakeholder consultation

This task will involve conducting consultations with key national, regional and international stakeholders. KEs will visit 10 CARIFORUM countries to meet government ministries / departments (e.g., Fisheries, Environment, Veterinary, Health, Agriculture), the Competent Authorities responsible for food safety, and official laboratories responsible for monitoring. Data from countries not visited will be gathered by other methods. If visits cannot be arranged to consult with regional organizations (FAO, CAHFSA, CROSQ, Comite Nacional para la Aplicacion de Medidas Sanitarias y Fitosanitarias, CNFO) remote consultation (email, phone, and Skype) will be organized. Consultations will include but not be limited to:

- Meetings with key agencies involved in environmental monitoring;
- Visits to relevant institutions, ports of entry, fish landing sites / markets, processing plants, aquaculture farms, inspection system, and / or official laboratory(ies);
- Presentation at national consultations / technical seminars, or other method as agreed on by Countries to review and discuss: the performance of existing programmes, international environmental monitoring requirements; design, implementation, and audit of routine environmental monitoring programme; examples of best practice, and discuss national programme (as required).

The suggested eight countries are The Bahamas, Belize, Dominican Republic, Guyana, Jamaica, St. Kitts and Nevis, Saint Lucia, and Suriname (or as specified by the CRFM). During visits, Key Experts will spend a minimum of 3 working days in any country, one of which should be used for the national consultation / technical seminar (each of 1 day, indicative number of participants in each meeting is 25) as required by the State. The organization of national consultations / technical seminars should include domestic travel arrangements (land, air, sea), accommodations & payment of daily subsistence allowance (for participants requiring overnight), conference room (internet, projector, screen, coffee breaks, lunch), printing and distribution of documents, press / media coverage, and any other activities necessary to complete this activity. The Fisheries Administrations in each country will assist with facilitation, organization, and logistical arrangements for national meetings / consultations. The KEs may be accompanied by one technical officer of the CRFM Secretariat or other regional bodies (as agreed by CRFM Secretariat). Travel and subsistence cost for this officer will be covered as per section 6.5.

3. Proposal for monitoring programme

This task will involve preparation of a proposal for strengthening / establishing national and regional monitoring programmes for fisheries-related SPS, which:

- Provides stepwise guidance on establishing model national environmental monitoring programmes and protocols for fisheries and aquaculture;
- Makes detailed recommendations for a regional monitoring programme.

4. Validation of technical documents (assessment report and proposal)

This task involves activities intended to support validation of the technical documents.

The CRFM Secretariat in collaboration with IICA Country Offices and Technical National

Implementation Networking Teams[20] (TNINTs) will convene a special meeting(s) in all 15 CARIFORUM States to: (i) review and endorse the Assessment Report and the proposal for establishing national and regional monitoring programmes. Meeting(s) of the TNINT will not be financially funded by this assignment. The TNINTs should submit comments on the technical documents via the CRFM Secretariat to the KEs who are expected to finalize based on these recommendations and comments. The special meeting(s) should include at least five representatives from the fisheries and aquaculture sectors to ensure fisheries issues will be adequately addressed. To ensure uniformity across all CARIFORUM countries, in reviewing the technical outputs, the KEs will provide countries with an agreed standard format that the TNINTs should use to complete the validation. Following extensive consultations and national validation of the technical documents, the KEs will finalize the documents based on comments and recommendations of stakeholders.

5. Communication and visibility

Given the important communication and visibility potential of project activities and the national consultations for disseminating the results and activities of this project, the KEs will: (i) provide summarized information for the development of an infographic and press-releases; (ii) participate in two short video interviews; (iii) and any other media activity / event agreed on by the CRFM Secretariat.

Technical Assistance will be provided through a Key Expert team of a Senior SPS Specialist (also Team Leader) supported by a second SPS Specialist. In the conduct of this assignment the KEs will be supported by the CRFM Secretariat who will provide logistical support to the KEs, assist in identifying documents, assist in the identification of stakeholders to be consulted, make all logistical preparation for country visits, assist in the course of country missions and consultations, assist in the circulation of documents for review, and approve the finalization of the technical documents.

5.1.2.Geographical area to be covered

The project will cover Antigua and Barbuda, Barbados, The Bahamas, Belize, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, St. Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago.

5.1.3.Target groups

Target groups for this project are CARIFORUM States Fisheries Departments and their respective Ministries, Competent Authorities for SPS, and legal authorities at the national and regional levels.

[20] The Technical Regional and NationaL!mplementation Networking Teams (TNRINTs) are managed by IICA mainly through virtual means of web / network. IICA Country Offices in close collaboration with the designated National Focal Points of the CARIFORUM States are responsible for the direct support to countries for the development and implementation of the annual work-plan.

4.2 Specific work

The KEs will undertake the following activities:

(1) Initial remote contact and briefing with CRFM Secretariats and IICA regarding execution of the project.

(2) Assist with the organization of the mission(s) to the region and country visits, including dates and travel schedule. This will be done in collaboration with CRFM Secretariat and CARIFORUM States. For countries not selected for site consultations, initial contact with countries to clarify approach for gathering required stakeholder feedback and information.

(3) Briefing with IICA and CRFM Secretariat at the CRFM Secretariat office in Belize, and develop and finalize work-plan and travel schedule;

(4) Collect and review existing technical documentation on SPS guidelines / legislation, management and monitoring programmes in CARIFORUM States, and also regional / international requirements for monitoring;

(5) Consult and collaborate with CRFM and relevant national, regional and international organizations during the execution of this consultancy;

(6) In consultation with the CRFM Secretariat, organize and conduct visits to eight countries (The Bahamas, Belize, Dominican Republic, Guyana, Jamaica, St. Kitts and Nevis, Saint Lucia, and Suriname), or as specified by CRFM. The country visits may be completed in a single mission or two missions with a break of about one week between the missions;

(7) During country visits, convene meeting(s) with relevant national agencies involved in SPS monitoring related to fisheries and aquaculture e.g., Health, Agriculture, Aquaculture, and visit main ports / landing sites and aquaculture farms (as required). At the end of each visit prepare a country assessment report;

(8) In consultation with the CRFM and National Fisheries Administrations, organize and conduct national consultations / technical seminars (each of 1 day, indicative number of participants in each meeting is 25) in eight countries;

(9) Prepare summarized information for the development of an infographic and press-releases; and participate in two short video interviews;

(10) Prepare a first draft of a Regional Assessment Report on environmental monitoring in CARIFORUM countries, which incorporates assessment reports of countries visited as appendices and which incorporates information gathered through remote consultations with the remaining CARIFORUM countries not visited, and circulate to TNINTs and other relevant organizations for review and feedback to facilitate finalization;

(11) Based on the findings of the assessment activity, prepare a proposal on strengthening national and regional SPS monitoring programmes. Circulate to CARIFORUM States, TNINTs, and other relevant organizations for review and feedback to facilitate finalization;

(12) Review comments received from TNINTs, CRFM Secretariat and other stakeholders, then prepare final technical documents (country assessment reports, regional assessment report, proposal for establishing national and regional monitoring programmes), and submit final drafts to CRFM Secretariat for approval;

(13) Prepare Monthly and Final Technical Reports as required.

(14) Prepare requisite monthly and final financial reports for the expenditures incurred, to be submitted to the CRFM Secretariat by the J1h of the following month, fully supported by original invoices and receipts, as appropriate.

(15) Final Technical and financial reports should include methodologies used to deliver the various outputs / outcomes, with lessons learned and recommendations for follow up action. The report should be produced in English, in Microsoft Word for Windows format and submitted electronically to the CRFM Secretariat by the end of the contract period.

(16) Should any funds be left over at the end of the LOA, the Consulting Firm shall return to the CRFM Secretariat, unless agreed to in writing on the use of such funds.

5.3. Project management

5.3.1.Responsible body

The CRFM Secretariat, Headquarters in Belize is responsible for managing the implementation of this assignment.

4.3.2. Management structure

CRFM is implementing this project through the Secretariat's Headquarters in Belize. For the purposes of this assignment, CRFM Secretariat is the Contracting Authority and will act also as the Project Manager.

The CRFM Secretariat will closely supervise the implementation of this intervention and equally monitor its execution pursuant to these Terms of Reference. The CRFM Secretariat, will support and supervise the implementation of this assignment, monitor activities and ensure follow-up activities are completed by the Member States.

All contractual communications including requests for contract modifications or changes to the Terms of Reference during the execution period of the contract must be addressed with a formal request to CRFM Secretariat Belize Office.

4.3.3.Facilities to be provided by the Contracting Authority and / or other parties

Not applicable.

5. LOGISTICS AND TIMING

5.1. Location

The place of posting for the two KEs will be Belize City, Belize. Country visits will be carried out in Antigua and Barbuda, The Bahamas, Belize, Dominica, Dominican Republic, Guyana, Jamaica, Saint Kitts and Nevis, Saint Lucia, and Suriname (or as specified by CRFM) according to approved timeline and work-plan presented by the KEs and approved by the CRFM Secretariat.

5.2. Start date and period of implementation

The intended start date is the date of signature of the Consultant's contract and the period of implementation of the contract will not exceed 5 months from this date.

6. REQUIREMENTS

6.1. Staff

Note that civil servants and other staff of the public administration, of the partner country or of international / regional organisations based in the country, shall only be approved to work as experts if well justified. The justification should be submitted with the tender and shall include information on the added value the expert will bring as well as proof that the expert is seconded or on personal leave. CRFM Secretariat professional staff will be assigned to work closely with the KEs to guide delivery of the outputs.

6.1.1.Key experts

All the Consulting Firm's authorized key experts who have a crucial role in implementing this assignment are referred to as key experts (KEs). Their profiles are described as follows:

Key expert 1: Senior SPS Specialist and Team Leader

Qualifications and skills

- A post-graduate degree in science, technology, international marketing / trade, agriculture health, or phytosanitation ;

- High level of proficiency in spoken and written English; working knowledge of Spanish and / or French would be an asset
- Proven team leading skills

General professional experience

- At least 10 years' experience working with national / international bodies in standardizing and conformity assessment related to agriculture / fisheries health and food safety and / trade in agriculture and food products;
- Proven report-writing, communication and project management skills

Specific professional experience

- Specific experience in the process of elaboration and implementation of standards and conformity assessment procedures for agriculture / fisheries health and food safety (minimum 3 major assignments);
- Experience in establishing environmental monitoring programmes / plans (minimum 2 assignments);
- Demonstrated knowledge of sanitary standards, food hygiene, and food safety;
- Familiarity with the SPS agenda in CARICOM / CARIFORUM and internationally;
- Experience in carrying out consultancy assignments for the EU or other equivalent international development partners would be an advantage.

The indicative number of missions, requiring overnights, for this expert will be 7.

Key Expert 2: SPS Specialist

Qualifications and skills

- A degree in science, technology, international marketing / trade, agriculture health, or phytosanitation ;
- High level of proficiency in spoken and written English; working knowledge of Spanish or French would be an asset

General professional experience

- At least 5 years' experience working with agriculture / fisheries health and food safety and / trade in agriculture and food products.
- Proven report-writing, communication and facilitation skills

Specific professional experience

- Specific experience in agriculture/fisheries health and food safety (minimum 3 assignments) ;
- Demonstrated knowledge of environmental monitoring programme / guidelines for sanitary standards, food hygiene, and food safety
- Familiarity with the SPS agenda in CARICOM / CARIFORUM and internationally;
- Working experience in the Caribbean region would be an advantage.

The indicative number of missions, requiring overnights, for this expert will be 6.

Indicative number of working days by expert and task

No.	Indicative Task	Key Expert 1 (Days)	Key Expert 2 (Days)
1	Briefing and document review	2	2
2	Review and assess SPS monitoring programmes in the CARIFORUM region. Prepare assessment report of the region's monitoring programmes	7	7
3	Conduct field visits to 8 countries to meet with Fisheries Administration and relevant health and food safety agencies, and conduct National Consultations and workshop outputs. Prepare country visit repo1is.	30	30
4	Develop proposal for establishing sustainable national and regional monitoring programmes for fisheries and aquaculture products.	11	11
5	Prepare material for visibility and communication	1	
5	Prepare and submit final documents	7	7
6	Team technical repo1iing	2	2
7	Team leader task	1	
	Total	61	60

All KEs must be independent and free from conflicts of interest in the responsibilities they take on.

Additional information

a) The KEs must complete a timesheet using a template provided by the CRFM Secretariat at the start of the implementation period.

b) The KEs are entitled to work a maximum of 6 days per week. Mobilisation and demobilisation days will not be considered as working days. Only in case of travel for mobilisation longer than 24 hours, the additional days spent for mobilisation will be considered as working days.

6.1.2.Non key experts

Not required.

6.1.3.Support staff and backstopping

The CRFM Secretariat will provide support facilities to their team of experts (back-stopping) during the implementation of the contract.

Backstopping and support staff costs are included in the Consultants' fee rates.

6.2. Office accommodation

Office accommodation of a reasonable standard and of approximately 10 square meters for each key expert working on the contract will be provided by the CRFM Secretariat in Belize.

6.3. Facilities to be provided by the Consulting Firm

The Consulting Firm must ensure that their authorized key experts are adequately supported and equipped. In particular it must ensure that there is sufficient administrative, secretarial and interpreting provision to enable key experts to concentrate on their primary responsibilities. It must also transfer funds as necessary to support their work under the contract and to ensure that its employees are paid regularly and in a timely fashion.

6.4 Equipment

No equipment is to be purchased as part of this service contract. Any equipment related to this contract that is to be acquired by the Contracting Authority or partner country must be purchased by means of a separate supply tender procedure.

6.5 Incidental expenditure

The provision for incidental expenditure covers ancillary and exceptional eligible expenditure incurred under this contract. It cannot be used for costs that should be covered by the Contractor as part of its fee rates, as defined above. Its use is governed by the provisions in the General Conditions and the notes in the Service Contract. It covers:

a) KEY EXPERTS

- Travel costs and daily subsistence allowances (per diems) for **missions** for Key Experts, outside the normal place of posting, to be undertaken as part of this contract. If applicable, indicate whether the provision includes costs for environmental measures, for example CO_2 offsetting.
- Travel costs for **field visits** for the Key Experts (car or boat rental, fuel and domestic flights or other appropriate means of transport).

b) NATIONAL CONSULTATION ORGANISATION

- The cost of organisation of the national consultation includes cost for venue, communication, transport (domestic travel or car or boat rental to / from);
- The payment of a lump-sum to participants requiring an overnight stay to cover accommodation and meals must not exceed the published IICA per diem rate for the country;
- The payment of a lump sum rate for the country, in accordance with the published IICA per diem rate, to all participants not requiring an overnight stay, to cover the cost of meals and incidentals;
- In the two cases above, an attendance list signed by each participant and a separate list stating that the lump-sum was received (with an indication of the amount) shall be used to justify the expenditure.

c) FUNDING OF REGIONAL OFFICERS ACCOMPANYING KEY EXPERTS ON MISSIONS.

Exceptionally, the cost of flights, accommodation and meals for the representatives of the regional fisheries bodies accompanying the Key Experts on regional or national missions or in-country field visits, under the following conditions:

i) The payment of a lump-sum to Officers requiring an overnight stay to cover accommodation and meals must not exceed the published IICA per diem rate for the country.

ii) The payment of a per diem rate for the country, in accordance with the published IICA per diem rate, to all participants not requiring an overnight stay, to cover the cost of meals and incidentals;

iii) Ifprivate or administration's means of transport are used by the representatives of the regional fisheries bodies accompanying the Key Experts on regional or national missions, the cost will be reimbursed upon submission of the relevant official receipt.

d) OTHER

- The cost of producing and delivering up to three extra copies of the Final Technical Report.
- The cost of translating technical documents from English to Spanish and French.

The provision for incidental expenditure for this contract is USD 99,420. This amount must be included unchanged in the Budget breakdown.

The per diem is a flat-rate maximum sum covering daily subsistence costs in accordance with the published IICA per diem rate.

The Contracting Authority reserves the right to reject payment of per diem for time spent travelling if the most direct route and the most economical fare criteria have not been applied.

6.6. Expenditure verification

The provision for expenditure verification covers the fees of the auditor charged with verifying the expenditure of this contract in order to proceed with the payment of any pre-financing installments and / or interim payments.

The provision for expenditure verification for this contract is USD 1,500. This amount must be included unchanged in the Budget breakdown.

This provision cannot be decreased but can be increased during execution of the contract.

7. REPORTS

7.1. Reporting requirements

For the project, there must be a final technical report, a final invoice and the financial report accompanied by an expenditure verification report at the end of the period of implementation of the tasks.

The **Draft** Final Technical Report must be submitted to the CRFM Secretariat at least 7 days

before the end of the period of implementation of the tasks, **that is no later than the 24th June 2015.** Note that these interim and final reports are additional to any required in Section 4.2 of these Terms of Reference.

The Final Report must be submitted to IICA after receiving approval of the draft final technical report from the CRFM Secretariat. The Final Report must consist of a narrative section detailing methodologies used to deliver the various outputs, with lessons learned and recommendations for follow up action. The report should be produced in Microsoft Word for Windows format and submitted electronically to the CRFM Secretariat.

Consistent also with CRFM Secretariat's reporting obligations outlined under its LOA with IICA in respect of the 1oth EDF SPS project commitments, technical monthly reports also need to be prepared using the template approved under the agreed LOA.

To summarise, in addition to any documents, reports and output specified under the duties and responsibilities of each key expert above, the Consulting Firm shall provide the following reports:

Name of report	Content	Time of submission
Inception Report	Analysis of existing situation and work plan for the project	No later than 10 days after the start of implementation
Interim Technical Monthly Report	On a monthly basis, and using template provided by the CRFM Secretariat, provide details of work progress, constraints, and follow-up actions. Additionally, the first drafts of technical documents (assessment report and proposal for establishing sustainable national and regional monitoring programmes for fisheries and aquaculture products) should be prepared no later than 10 days after national consultations are completed.	Last day of each month of project implementation
Interim Financial Monthly repmis	On a monthly basis, and using template provided by the CRFM Secretariat, supported by original invoices and receipts, showing budgets for activities underaken , expenditures and balances.	By the 7t1' of the following month.
Draft Final Technical Report	A draft final technical report which would include methodologies used to deliver the various outputs identified in section 4.2, with lessons learned and recommendations for follow up action. The report should be produced in Microsoft Word for Windows format and submitted electronically to the CRFM Secretariat by the stipulated deadline. Also revised draft technical documents taking	No later than 10 days after review and validation by relevant organizations / groups.

Name of report	Content	Time of submission

	into account changes and comments from the CRFM Secretariat and Member States by the stipulated dead line	EDF SPS
Final Technical Report	A final technical report, taking into account comments provided by the CRFM Secretariat. The report would include methodologies used to deliver the various outputs identified in section 4.2, with lessons learned and recommendations for follow up action. The repo1t should be produced in Microsoft Word for Windows format and submitted electronically to the CRFM Secretariat by the stipulated deadline. Also revised technical documents taking into account changes and comments from the CRFM and Member States by the stipulated deadline. A final invoice.	One week after receiving approval of the Final Technical Repo1t.
Final Financial Report	A final Financial report using the template provided by the CRFM Secretariat, suppo1ted by original invoices and receipts, showing the overall budget for all activities undertaken, expenditures and balances. Should any funds be left over at the end of this LOA, the Consulting Firm shall return to the CRFM Secretariat, unless agreed to in writing on the use of such funds.	By the 20^{111} of the following month.

7.2. Submission and approval of reports

One electronic copy and two hard copies of the reports referred to above must be submitted to the CRFM Secretariat. The reports must be written in English. The CRFM Secretariat is responsible for approving the final versions of the reports in consultation with the 10^{1}

Project Management Team.

8. MONITORING AND EVALUATION

8.1. Definition of indicators

The results to be achieved by the KEs are included in Section 2.3 above. Progress to achieving these results will be measured through the following indicators:

i) Timeliness of backstopping support from the Head Office of the Firm;
ii) Technical outputs prepared and approved by CRFM Secretariat;
iii) Proposal on national and regional monitoring programme finalized and available to all CARIFORUM States
iv) Respect of project milestones, time schedule and reports timely delivery;
v) Meeting expectations of the Target Group;
vi) Level of representation at national consultations.

The KEs may suggest additional monitoring tools for the contract duration.

8.2. Special requirements

Not applicable.

* * *

Annex 2 INCEPTION REPORT

CONSULTANCY TO PROVIDE TECHNICAL SUPPORT TO DEVELOP NATIONAL AND REGIONAL ENVIRONMENTAL MONITORING PROGRAMMES RELATED TO SPS FOR FISHERY AND AQUACULTURE PRODUCTS IN CARIFORUM STATES

for the

Caribbean Regional Fisheries Mechanism

Inception Report

Submitted to
Caribbean Regional Fisheries Mechanism
Belize City, Belize

by

Matis Ltd
Iceland
July 2015

Short background

Insufficient health controls for fishery products in CARIFORUM countries has resulted in restrictions of access to the European and other international markets. Countries are working on improving the sanitary standards and strengthen their competent authorities and monitoring procedures. The region intends to gain access to the world markets by fulfilling strict Sanitary and Phytosanitary measures needed to have a free flow of fishery product to the global market. Although the Sanitary and Phytosanitary requirements within member states of the World Trade Organization (WTO) are based on the same principles, some member states of are enforcing them stricter than others and the European market has been the most stringent. Countries are allowed to set their own appropriate level of protection but must base their restriction on scientific principles. Furthermore these restrictions must not be maintained without sufficient scientific evidence and may only be applied to the extent necessary to protect human, animal, or plant life or health. The appropriate level of protection must also be based on risk assessment.

The CARIFORUM countries that have been denied access to the European market have had the possibility to trade fishery products to the United States of America (USA) but with a new Food Safety and Modernization Act that emphasizes on preventive measures, this may lead to stricter enforcement in the CARIFORUM countries on SPS measures for maintaining open access to that market.

The consultancy aims at assessing the strengths and weaknesses in SPS environmental monitoring programmes for fisheries and aquaculture in CARIFORUM countries and give recommendations for the national and regional SPS monitoring programmes.

Objective

The overall objective is to support the integration of CARIFORUM states into the world economy and specifically to increase production and trade in agriculture and fisheries which meet international standards while protecting plan, animal and human health and the environment.

The specific objective is to strengthen/establish national and regional monitoring programmes related to health and food safety in the fisheries and aquaculture sectors of CARIFORUM States, to meet domestic needs and international standards.

Comments on the Terms of Reference

Due to tight schedule of the assessment visits, that was not foreseen and improper working condition during travel, the Final Technical report will most likely not be delivered until September..

Approach to the assignment

The consultancy aims at assessing the current SPS measures in the CARIFORUM countries, strengths and weaknesses and to propose ways to address gaps observed. The assignment will be carried out in three main activities. Eight countries will be visited and is carried out as follows.

Activity 1. Literature review on SPS activities in CARIFORUM countries and especially Guyana, St. Vincent, Grenada, Suriname, Jamaica, the Bahamas, Democratic Republic and Belize

Activity 2. Assessment mission to eight CARIFORUM countries listed above. During the mission a consultation meeting with relevant stakeholders was conducted.

Activity 3. Report writing. At the end of the mission a national draft report will be delivered for each of the countries visited. This draft is intended for providing the countries visited with an opportunity to make comments and come up with suggestions for revision and additional information. The comments and suggestions will be taken into consideration before the final report is handed in.

Set up and Key experts

The technical team for this project is comprised of the following Matis staff members: Margeir Gissurarson, team leader and Dr. Helga Gunnlaugsdottir. These two key experts will ensure that the assessment of the SPS measure will be carried out and reported professionally and in cooperation with CRFM. The key experts will undertake all activities mentioned in the Terms of Reference for this project.

Key issues to be addressed

The key issues that are addressed in the consultation is the following:

a. Review and analyse existing national and regional SPS monitoring programmes, including site assessment, sample collection, sample transfer and storage, laboratory analysis, interpretation of results, and reporting.
b. Assess and advise on institutional capacity, institutional overlaps
c. Assess and advise on total supply chain process for fisheries and aquaculture products related to SPS requirements
d. Analyse farm level residual monitoring programs
e. Assess and advise on developing the necessary accredited laboratories
f. Provide advice on suitable sustainable environmental monitoring practices and
g. Assess and advise on coordination of regional testing and reporting capabilities.

Proposed work plan

The consultation is estimated to commence as indicated in Table 1.

Table 1; Work plan

		2015				
		May	June	July	August	September
1	Literature review					
2	Field mission					
3	Reports					
3.1	Inception report					
3.2	Draft assessment report [including a proposal for adressing gaps]					
3.3	Financial report					
3.4	Final report					

At the end of the field mission a draft assessment report will be delivered to CRFM for review and comments. CRFM will furthermore communicate the report to stakeholders in CARIFORUM states where they will have the opportunity to comment on the draft report. It is estimated that three to four weeks will be given for the stakeholder input. After receiving feedback on the draft report the final report will be written and delivered to CRFM.

Recommendation

Due to time constrains, the Sanitary and Phytosanitary measures in the CARIFORUM countries were assessed by visiting eight countries in five weeks. Such tight schedule leads to working days dragging into the evenings and therefore the hotel accommodation should be selected with that in mind. The hotel selection in this assignment was unfortunately in many cases not suitable as work areas for the consultants were they can compare notes, summarise findings and prepare for the stakeholders meetings were not available. In some instances the only option were bars and restaurants. It is recommended for future assignment that this should be kept in mind.