Food and Nutrition Security Impact, Resilience, Sustainability and Transformation
(FIRST)

Policy support mechanism of the FAO and European Union

LVV PROJECT DIRECTORY

Overview of closed, proposed and ongoing projects

of the

Ministry of Agriculture, Animal Husbandry and Fisheries
(MAAHF/ LVV)

Suriname

version
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FIRST FNS- Suriname

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Dear Reader,

It is the pleasure of the Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/LVV) to present this Directory which brings together concerted information about our activities in the food and agricultural sector in Suriname.

This overview is produced within the framework of the global program *'Food and Nutrition Security Impact, Resilience, Sustainability and Transformation (FIRST)*'. With appreciated funding by the European Union, the project FIRST FNS-Suriname is implemented by FAO and LVV focused on capacity building of stakeholders to implement the Food & Nutrition Security (FNS) agenda in Suriname in the period 2018 - 2019.

The Directory provides an overview of the activities supported by various development partners, including the EU, FAO, IDB, in the area of Food and Nutrition Security and Sustainable Agriculture (FNSSA). It is compiled by Information & Knowledge Management (IKM) focal points of the Ministry and updated online in the FNS-Suriname platforms.

Information and Knowledge Management (IKM) and use of online platforms makes information e.g. on policies, projects, expertise, best practices, progress and events more easily and rapidly accessible, reaching a wider audience in a timely manner. Once integrated in the business processes of stakeholders, IKM will underpin planning, coordination and foster synergy and learning between stakeholders. IKM is essential for enhancing FNSSA and hence a core component of the FIRST FNS-Suriname workplan.

Producing the Directory is considered a first step of a collaborative process involving the government, private sector, academia, civil society and producer organizations. Capacity development of key stakeholders is the core of FIRST FNS- Suriname and I'm happy to note the interest of colleagues and partners to participate in the endeavor of strengthening IKM capacity. I also herewith invite others to join in the coming period.

Wishing you informative reading and much inspiration for further collaborative work!

H.E. Lekhram Soerdjan

Minister

Ministry of Agriculture, Animal Husbandry and Fisheries

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On-line sources:

- FNS- Suriname Social Media platform: *https://lvv.getopensocial.com/*
- FNS-Suriname Repository platform: *www.share4dev.info/fns-suriname/index.asp*
- FAO/EU global program FIRST: *www.fao.org/europeanunion/eu-projects/first/en/*

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Details of projects

LVV-ODPO

Project 1: (IDB) Agricultural Competitiveness Program

Project ID: IDB SU-L1020 – 4097/OC-SU

Project period: 31/01/2016 to 31/01/2021

Budget: US$ 17,500,000

Organizations:
Lead:

- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV)
  LVV-Onderdirectoraat Planning & Ontwikkeling
  LVV-Onderdirectoraat Veeteelt

Funding:

- Inter-American Development Bank (IDB)

Objectives: The Inter-American Development Bank (IDB) and the Suriname Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/LVV) aim to increase competitiveness of the agricultural sector by supporting improvements in animal health, plant health and food safety and by promoting agricultural innovation through research and technology transfer projects.

Background:
The status of pest and disease control of Suriname's agriculture and livestock is extremely vulnerable, as the laws, regulations, protocols, equipment and staff needed to enforce surveillance and control are not currently in place. Progress with Suriname's agricultural innovation is also lacking. While there is a history of a solid plant breeding program in rice, the system as a whole does not have a good record of collaborative research and extension activities and limited linkages across national research entities and with international research centers. Moreover, apart from some past success in rice breeding, there is little evidence of publicly-funded transfer of new agricultural technologies. In addition, Suriname needs assistance to improve its pesticide management, control of imported pesticides, pesticide vendors, health safety issues, and disposal of obsolete or unused pesticides and empty containers. This approach combines the government's priorities, feasibility of interventions, empirical evidence on the potential impact of these areas for agricultural productivity and competitiveness, and the need to diversify the agricultural sector in Suriname.

Project outline and structure:
The program has 2 main components:
a) Strengthening Animal Health, Plant Health, and Food
b) Strengthening Agricultural Innovation.

Details are as following:

Component 1. Strengthening Animal Health, Plant Health, and Food Safety

a. Animal Health
The proposed actions are to maintain and verify Suriname's sanitary status through a) the establishment of a disease surveillance system, b) improvement of animal quarantine procedures, c) formulation of protocols, d) staff training in risk assessment, new protocols, health and safety, e) improvement of public/private interactions and f) acquisition of equipment and supplies for the veterinary laboratory at the LVV headquarters (which will include a specialized wastewater treatment unit for liquid biological wastes, a treatment for solid pathological wastes and operation of an incinerator for other biological wastes).

Specifically, this sub-component will:

- Install an integrated information system
- Equip the veterinary laboratory and train staff - these actions will increase capability for monitoring such diseases as Brucellosis, Leishmaniasis, Newcastle, and Foot and Mouth. The necropsy unit will enable LVV to carry out more in-depth diagnoses of animal diseases.
- Strengthen the disease surveillance system through inspections, disease monitoring, and risk assessment
- Establish protocols for transport of animals to importer's in-situ quarantine facilities
- Establish an animal identification and traceability system (this will involve LVV tagging all cattle initially, while the farmers will do so in the future)
- Create and early detection and response system, which will include training of inspectors
- Update regulations

- Develop education campaigns aimed at maintaining the country's diseases free status by preventing exotic diseases and motivate the notification of suspicious event; and Organize and operate an accreditation system for private veterinarians and inspectors.

b. Plant Health

This part of the Program proposes to strengthen plant health through reorganization of the plant health service, establishment of a pest surveillance and traceability system (including a risk assessment to identify potential pests; and emergency response plans); improvement of plant import regulations and export certification; improvement of plant quarantine facilities at the airport; establishment of integrated border controls; formulation of protocols; staff training; and acquisition of equipment and supplies for the plant health/quarantine laboratory (already constructed in the Paramaribo port area). An incinerator for destruction of materials confiscated at the Johan A. Pengel Airport will be installed. Small consignments that are confiscated at the Nickerie and Albina border posts will be transported in secure containers to the incinerator at the airport. Large rejected consignments that arrive at the seaport will be returned to the exporting country, thus eliminating the need for quarantine or disposal facilities at this location. Some minor construction and rehabilitation of existing facilities for border controls will be funded. Aerial photos of the areas where new construction will take place and that show surrounding land use (Nieuwe Haven Seaport and J.A. Pengel Airport). These facilities are for control of plant material, processed foods as well as animals/animal products.

Other activities for plant health are:

- ***Establishing two "low pest prevalence" for carambola fruit flies in citrus producing areas***
  Fruit fly control will be accomplished through use of traps. The initial area to be established will be at Alliance Plantation in Commewijne. A possible second location in the interior is being evaluated.

- ***Improving rice quality***
  LVV will operate a rice quality and certification laboratory within the newly constructed "cluster laboratory" in Paramaribo. This Program will equip the laboratory.

- ***Equip the Plant Quarantine Laboratory and train staff***
  The new laboratory will have increased capacity in detecting diseases and pests and in determining the presence of genetically modified organisms in plant materials. It will have improved capabilities in entomology, nematology, microbiology and mycology.

- ***National pesticide management program***

The Program will finance pesticide regulation formulation; development of a registration and tracking system and institutional support to the LVV Pesticide Division for carrying out its activities, including inspection, training, licensing and enforcement of pesticide distribution and storage facilities; developing multi-media pesticide awareness campaigns; and developing internal protocols for its operations. The Plant Health Sub-Component has included $284,000 (US) in its budget for this support, including equipment and a national consultant to work under the LVV Pesticide Division Director. The institutional support may lead to the establishment of a Pesticide Management Board which would receive applications for importation of pesticides, review pesticides information and labels, grant import licenses, register pesticides imported as well as the importers, set procedures for use, disposal and application of approved pesticides, train pesticides users, applicators and distributers and, promote and monitor compliance at all stages from application to disposal.

c. Food Safety

The goal of the subcomponent is that food safety services be improved, supported by a national Food Safety Policy, updated legal framework and a coordinating mechanism at the ministerial level. Strengthening food safety will be done through the establishment of a surveillance, inspection and monitoring system, establishment of a monitoring system for agricultural inputs, improvement of the good agricultural practices program, formulation of protocols, staff training, equipment and inputs for the pesticide residue laboratory, and an assessment of the institutional framework of the agricultural health and food safety system.

Specific activities include:

- ***Creation of a food safety entity in LVV*** that would be responsible for inspecting plants, meat and fish. Food safety legislation will include: registration of farms; slaughterhouse procedures; and hygiene, transport and storage of meat; standards for import and export of fresh meat; and appointment and requirements for official veterinarians (meat inspection) and meat inspection auxiliary staff.

- ***Development of national GAP standards and manuals*** (for crops, poultry, livestock, and aquaculture) that will become mandatory for producers and the development of a code of hygiene for fresh fruits and vegetables, meat processors and fish processors. Primary producers and processors will be trained in developing and implementing their food safety assurance system based on the GAP or hygiene codes.

- ***Development of procedural manuals for inspection of primary producers and processors.*** New meat and plant inspection staff will be hired and trained and 3 inspection units (plant, meat, and fish) will be equipped. The development of a quality assurance system (ISO 17020) for 2 inspection units and accreditation of the inspection units (meat and plant) are also proposed.

- ***Strengthening of the food safety laboratory*** (to be located in the newly constructed laboratory building at LVV headquarters in Paramaribo) through purchase of equipment and supplies as well as training for laboratory staff (including occupational health and safety training). Certification in ISO 17025 for relevant analyses, accreditation and validation of laboratory methodologies is also proposed. These actions will enable the laboratory to carry out more pesticide residue testing and testing or pesticide formulas to be imported into the country, as well as testing for antibiotics, among other analyses.

- ***Development of public awareness activities to educate the general public about food safety***, as well as informing the private sector about different food testing services.

Component 2. Strengthening Agricultural Innovation
This component will fund strategic adaptive agricultural research projects, with emphasis on validation and technology transfer implemented in collaboration with national and international research and technology transfer centers.

The Program will fund seven projects:

- ***Project 1: Strengthening of the rice sector***
  To reduce yield losses and production costs, as well as the widespread misuse of pesticides, this project, to be carried out by Anne van Dijk' Rice Research Organization (ADRON) and LVV, will develop IPM strategies for managing weeds, fungal diseases, insect pests and pests that are problematic during storage. The IPM strategies will be tested in farmer's fields and once they are validated, farmers will be trained in the implementation of IPM.

- ***Project 2: Strengthening of open-field vegetable production***
  Yields of eggplant (boulanger), bitter gourd (sopropo), okra (oker), yard long beans (kouseband), chili peppers, tomatoes, and sweet potatoes will be improved by replacing the current, deteriorated seed stock with cleaner seed. At the same time farmers will be trained in how to save good quality seeds in order to slow down future deterioration. Improved production practices based on integrated crop and pest management will be developed, tested and promoted and may include validation of the use of bio- pesticides. This project will work with a Maroon women's cooperative in Brokopondo in the production of chili peppers.

- ***Project 3: Strengthening of protected vegetable production***
  In order to counterbalance the impact of climate change, agricultural production under protected circumstances (i.e. shade houses or semi - open greenhouses) will be an important solution. At the same time, the technology also helps to secure a more equal local supply of good quality vegetables year-round. 'Protected agriculture' technology is still relatively new to Suriname and requires a substantial amount of testing to determine what works best and is most cost-efficient under Surinamese conditions. The project will develop a "model" structure for use in the country and will test year - round production of lettuce and tomatoes. It will also develop Good Agricultural Practices (GAP) protocols for various crops and test heat tolerant varieties of certain vegetables. Farmers and greenhouse manufacturers will be provided with information about research results through meetings and publications.

- ***Project 4: Strengthening citrus production***
  This project aims at raising yields and spreading the supply of citrus production more evenly throughout the year. Yields will be improved by developing a supply of good quality planting material; validating and introducing new, improved varieties; and by informing and training farmers in appropriate production management techniques, including planting and proper pruning. Among the production management techniques will be validation of: (a) compost formula for citrus nurseries; (b) irrigation to facilitate out of season production; and (c) the use of legume species to control weeds and capture nitrogen.

- ***Project 5: Strengthening minor tropical fruit production***
  This project aims to test and validate improved varieties and seeds of passion fruit and soursop, and in-vitro slips of pineapple varieties. In addition, it will promote and publish improved production techniques and provide training to farmers in organic production and will test the use of biological pest control in passion fruit and the use of fruit bags in soursop. This project will target Maroon pineapple farmers the Marowijne district and Amerindian pineapple farmers in the Para district. The main soursop producing areas are the districts Saramacca, Wanica, and Coronie.

- ***Project 6: Institutional capacity building***
  This project aims to: (a) introduce a project planning, management and evaluation culture within the Agricultural Research Sub-Directorate of LVV; (b) provide support to the newly established National Agricultural Innovation Board; (c) establish a modern media unit at the agricultural extension division; and (d) train staff. In addition, the project will provide support to LVV to improve its internal pesticide management practices at LVV extension facilities, ADRON and other institutions that participate in the Agricultural Innovation Component.

- ***Project 7: Funding window for small agricultural innovation projects***
  Part of the budget of the Agricultural Innovation Component will be invested in a funding pool for future small agricultural innovation projects. A selection mechanism will be established to secure an appropriate and efficient selection process.

Online Information:

- Project description and documents: *https://www.share4dev.info/fns-uriname/project_view.asp?projectID=694*
- Project progress: *https://fns-suriname.getopensocial.com/node/92*

Expected results:

1. Improved use of natural capital
2. Increase in exporting ability
3. Improved provision of Plant Health Services
4. Improved provision of Animal Health Services
5. Improved provision of Food Safety Services
6. Improved Agricultural Research and Extension Services

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Project 2: (EU) Suriname Agriculture Market Access Project (SAMAP)

Project ID: GCP/SUR/003/EC

Project period: 15/12/2017 to 15/12/2021

Budget: US$ 13,696,000

Organizations:
Lead:
- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/LVV)
  LVV-Onderdirectoraat Planning & Ontwikkeling

Collaborator:
- FAO- Trinidad & Tobago

Funding:
- European Union (EU)

Objectives:
The project Suriname Agriculture Market Access Project (SAMAP) will enhance sustainable agricultural development for inclusive growth and employment. The main impact indicator is to increase the level of assets/income of targeted smallholders by at least 15% in real terms. The project aims at increased, more competitive and safer production of selected crops (particularly fruits and vegetables) through an enabling environment and enhanced capacities of private sector and institutions.

Background:
Suriname is an upper-middle income country with a per capita income of USD 9.500; GDP for 2015 totaled USD 5.15 billion (World Bank). Agriculture is the second sector of the economy, accounting for 10% of total export earnings and employing approximately 8% of the labor of the total force. Rice and bananas are the main crops, followed by fish & shrimps, vegetables and fruits. The agricultural sector consists of approximately 10.000-12.000 small holders (rice, bananas, poultry, cattle, pigs, and small ruminants), providing employment and income to some 17% of the economically active population.

Between 2010 and 2014, Suriname's ranking in the International Trade Centre's General Index of Export Performance fell from 132nd to 139th out of 180 in terms of fresh food competitiveness (ITC, 2015). Annually 16,700 ha of forest are being cleared for agricultural purposes, representing almost 0.3 ha of forest per inhabitant of the interior (CELOS, 2012). Poverty headcount is estimated to be 8.2% in 2006 (UNDP).

In the framework of the cooperation with the European Commission, the National Indicative Program (NIP) under the 11th European Development Fund (2014-2020) of € 13 million was entirely allocated to the Agriculture sector. During its November 2016 meeting, the EDF Committee approved an Action Document (FED/2016/039-784), detailing the main areas to be covered. The project, initially called Suriname Agriculture Development Project, aims at increased more competitive and safe production of selected crops through an enabling environment and enhanced capacities of private sector and institutions.

The FAO has been identified by the Government and the EC as implementing partner. Main institutional partners will be the Ministry of Agriculture, Animal Husbandry and Fisheries (LVV), as lead counterpart, the Ministry of Health, the Ministry of Trade and Industry, the Ministry of Finance (National Authorizing Officer), the Ministry of Regional Development, the Bureau of Standards. Additional non-Government counterparts are the Suriname Business Forum, the Chamber of Commerce, the Agriculture Federation of Suriname, and academic and training institutions.

Project outline and structure

The project has three components:

1) Sustainable production and value chain development with three sub-components:
a) Improved market access to market (export) standards for small-scale farmers and agribusinesses with targeted investments and loans;
b) Business and financial management skills for farmers & agribusinesses improved;
c) Quality production supported through introduction of improved technologies and effective extension services to farmers;

2) Strengthening food safety capacities and standards and **their application to the private sector**, with three sub-components:
a) Inter-institutional coordination, dialogue and legislative and regulatory framework for national food safety standards;
b) national laboratories capacity for food safety monitoring and certification;
c) sustainability of food safety investments and enabling environment;

3) Project coordination, management and implementation.
The FAO will provide assistance to small-scale farmers (individuals and groups) to increase productivity and competitiveness using improved technologies and innovative approaches along the value chain. SAMAP will stimulate and support win-win partnerships between small-scale farmers and agribusinesses to ensure sustainable market access. Emphasis will be placed on fruits and vegetables, as well as non-timber forest products (NTFP) and processing of root crops in selected interior communities. The FAO will include strategies to ensure inclusion and strengthening capacities of women, small farmers, youth, farmer groups and cooperatives, as well as strengthening the capacity of extension officers in provision of services related to value creation, marketing and financial management.

Expected results:

Two main results are expected:

a) Increased horticultural production and sustainable market-access achieved for 1000 small-scale farmers
- Component 1 of SAMAP aims at: a) working with at least 1000 small farmers (directly or through farmer groups), of which at least 30% will be women; b) assisting 100 farmer organizations and agri-businesses in improving their market access by achieving quality production and, processing and improved competitive position and c) supporting at least 15 agribusinesses with obtaining a bank loan.

b) Improved food safety capacities and standards for private sector and public institutions.
- Component 2 aims at: a) setting up a food safety coordination mechanism for national dialogue to support decision-making and developing food safety standards, in accordance to Codex Alimentarius guidance; and b) enhancing food safety laboratory operations.

Online Information:
- Project description and documents: *https://www.share4dev.info/fns-uriname/project_view.asp?projectID=693*
- Project progress: *https://fns-suriname.getopensocial.com/node/249*

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Project 3: (EU) Food and nutrition security Impact, Resilience, Sustainability, Transformation (FIRST)-Suriname

Project period: 01/11/2017 to 31/12/2019

Budget: US$ 200.000

Organizations:
Lead:
- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/LVV);
  LVV - Onderdirectoraat Planning & Ontwikkeling

Collaborator:
- FAO- Trinidad & Tobago

Funding:
- European Union (EU)

Objectives: FIRST -Suriname aims to build capacity of the Ministry of Agriculture, Animal Husbandry and Fisheries (LVV) and key stakeholders to implement the national Food & Nutrition Security (FNS) Agenda.

Background:

About 815 million people still suffer from chronic hunger. The human, social and economic costs to society are huge in terms of lost productivity, health, well-being, decreased learning ability, and reduced fulfilment of human potential. The food price crisis in 2007–2008 and the subsequent period of food price volatility sparked a global rethink on food and nutrition security and sustainable agriculture (FNSSA).

The 'Food and Nutrition Security Impact, Resilience, Sustainability and Transformation (FIRST)'program is a global effort of funded by the EU and implemented by FAO in 32 countries. FIRST provides policy assistance and supports capacity development at country level to improve food security, nutrition, and sustainable agriculture in selected countries and sub/regional organizations. FIRST is funded by the European Union and implemented through FAO and currently active in 32 countries.

During recent years, governments have increased their commitment to achieve food security and nutrition for all. Sustainable Development Goal 2: "End hunger, achieve food security and improved nutrition, and promote sustainable agriculture" is at the heart of FAO and EU mandates. The EU invests nearly €8 billion in over 60 countries during the 2014–2020 period to improve FNSSA. FIRST is a strategic partnership between FAO and the European Union (EU) to create an enabling policy and institutional environment so investments by governments, EU, and other partners have a tangible and sustainable impact.

Suriname depends to a large extent on imports for its food supply, some 8% of the population is undernourished, 24 % of women have iron deficiency whilst 25% of the population are overweight. This poses short and long-term challenges for the National Food & Nutrition Security (FNS).

In 2015, the Government of Suriname with the support of FAO, prepared the FNS policy for sustainable improvement of the production, access and consumption of adequate and healthy food.

The FNS agenda deals with cross-sectoral themes such as sustainable agricultural, employment, health, education and social programs and distinguishes 4 components:
a) '*availability'* focusing on sustainable agriculture production
b) '*accessibility'* addressing infrastructure, employment, safety nets
c) '*utilization'* including lifestyle education and food safety
d) '*sustainability'* relating to all threats including economic shocks and climate change

The Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV) requested FIRST to support the implementation of the FNS-Agenda, which was granted for the period 2018-2019.

Project outline and structure:

Components of FIRST- Suriname are:
a) developing an institutional mechanism at high- and program level
b) strengthening capacity for strategic planning
c) multi-stakeholder workgroup facilitation

d) Information & Knowledge Management as well as e) M&E and Learning.

A systematic approach is promoted with attention for all steps of the production- consumption value chain whilst engaging key stakeholders including producers, private sector, Ministries and other government agencies, civil society, academia and development partners. For each step, policies, programs and solutions will be identified to address the challenges. This requires coordination of cross-sectoral policies and programs, multi-stakeholder dialogues, research and investment by government and the private sector

Expected results:

- An institutional mechanism for governance and coordination with a high-level steering committee, a technical coordination group and multi-stakeholder groups for key areas of the 4 pillars implementing the F&NS agenda in a systematic manner.
- A coherent policy framework for food and nutrition security, fostering multi-stakeholder interaction and synergies, identifying bottlenecks along the production-consumption value chain whilst providing guidance for investments, research and policies.
- Strengthened capacities of the government and national stakeholders for planning, monitoring and implementing the FNS agenda and using Information & Knowledge Management tools to improve the F&NS situation.

Online Information:

- Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=653*
- Project progress: *https://fns-suriname.getopensocial.com/node/10*

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Project 4: (IsDB) Reverse Linkage Project between the Republic of Suriname and Malaysia in Rice Production

Project period: 01/10/2016 to 01/10/2019

Budget: US$ 7,728,000

Organizations:

Lead:

- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/LVV);
  LVV- Onderdirectoraat Landbouw (LVV-ODL)
  LVV- Onderdirectoraat Planning & Ontwikkeling

Collaborator:

- MARDI Corporation- Malaysia

Funding:

- MARDI Corporation- Malaysia
- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/LVV)
- Islamic Development Bank (IsDB)

Objectives:
The aim of the project is to enhance the capacity of Suriname in rice production in order to maintain self- sufficiency and increase the export of high quality rice.
The objective of the project is to produce high quality rice varieties and increase the rice yield per hectare from 5 to 7 ton. This will be done through:

a. The introduction of new area-specific rice varieties with disease and pest resistant characteristics, together with their appropriate breeding programs and support systems
b. The strengthening of soil fertility
c. The development of an integrated water management system.

These are considered the 3 pillars of engagement that will be undertaken by MARDI/MCSB to the development the rice subsector in Suriname.
This would go a long way in achieving one of the Bank's goal of poverty reduction. The increase of the rice subsector will contribute greatly to the overall GDP of the country.

Background:
The 'Reverse Linkage Project between Suriname and Malaysia in Rice Production' is a collaborative Project between the Government of Suriname (GoS), MARDI Corporation and the Islamic Development Bank (IsDB) to enhance the capacity of Suriname in rice production in order to maintain its self-sufficiency and increase the country's capability to export high quality rice. Three Agreements were signed in order to facilitate the implementation of the Project. Activities for the Project started officially on the 1st October 2016 and are planned to continue for 3 years, which will be divided into 6 Seasons (2 Seasons per Year).

Expected results:

- Necessary improvement of varieties, breeding and production methodologies, infrastructures and human resources to maintain Suriname's long-term self-sufficiency in rice production to cater for the expected increase in per capita consumption in the country.
- The Certified Seed Production Facility in ADRON will transform Suriname into a 'Centre of Excellence (CoE)' for neighbouring countries in the CARICOM regional group and IDB member countries.
- Transformed role of the Ministry and the recipient research centre to develop a sustainable and competitive industry, which will benefit directly at least 1,500 farmers and indirectly 5,000 people.
- With the increased rice production efficiency, Suriname can become a major supplier of rice for IDB member countries.

Online Information:

- Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=708*
- Project progress:

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Project 5: (FAO/TCP) Pilot testing and validating the revised Food Based Dietary Guidelines (FBDGs) for Suriname

Project ID: FAO/TCP/SUR/3602/C1

Project period: 01/08/2017 to 01/12/2018

Budget: US$ 71,000

Organizations:
Lead:

- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/LVV); LVV- Onderdirectoraat Planning & Ontwikkeling

Funding:

- FAO- Trinidad & Tobago

Objectives: (i) to support the Government of Suriname to pilot test the FBDGs messages with focus groups; (ii) to analyze the results and incorporate the changes into the FBDG messages; and (iii) to validate the revised FBDGs with different stakeholders through interactive sessions to ensure their clarity, cultural appropriateness and usability for meal planning and choosing healthy food options and lifestyles.

Background:
According to the World Health Organization (WHO), non-communicable diseases (NCDs) accounted for over 60% of all deaths in Suriname in 2014. Chronic conditions such as cardiovascular diseases, malignancies and diabetes are among the ten leading causes of mortality. Factors such as smoking, obesity and changes in diet enhance the risk of morbidity related to these diseases at an increasingly younger age, particularly among population groups that traditionally had a healthier diet. The WHO global report for 2014 on NCDs estimates obesity levels at 19.4 % for men, 32.9 % for women compared with 10% and 23 %, respectively, in 2011. Data from the national NCD action plan 2012 – 2016 shows that the priority should be given to the prevention and control of NCDs in Suriname.
Based on these findings, Suriname in their Country Programming Framework (CPF) 2016-2019 indicated Food and Nutrition Security as one of their government's priority areas of focus. A request was made to the FAO to assist in phase 4 of a National Food Based Dietary Guidelines (FBDGs) project, focused on pre-testing the draft guidelines with the general population. The FAO supported previously, in phase 2, recruitment of a nutrition expert for guiding the national technical team with the development of technical recommendations for the guidelines. Additionally, the expert along with the project team provided an indicative work plan with respect to phases 4-6.
Through the Bureau of Public Health under the Ministry of Health Suriname, phase 4 will see the technical recommendations translated into consumer-friendly nutrition messages. The translation will be based on pre-established criteria. In this process, the strategy used has been to formulate a preliminary set of concept nutritional messages, pilot-test the messages and present these to representatives of relevant stakeholders in interactive workshops.

Project outline and structure:
The project will use a variety of methods and approaches including:
Focus group sessions, in depth interviews and training of field workers to pilot-test the revised FBDGs; analyses of the results and refining of the messages as necessary; Food guide graphic designed, pilot-tested and finalized according to communication and behavioral change principles and best practices; A set of FBDGs dissemination materials (i.e. brochures, booklets technical document, posters, educational materials; A multi-sectorial plan to implement the FBDGs drafted in collaboration with relevant stakeholders.

Expected results:

- food Messages and graphics that are understood by all ethnicity groups living in Suriname and applied to some extent to daily food preparation and intake
- revised and new FBDGs to support the Suriname population on choosing, preparing and eating healthy foods;

Online Information:

- Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=662*
- Project progress:

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Project 6: *Proposed*: (IDB) Sustainable Agricultural Productivity Program

Project ID: IDB SU-L1052

Project period: tbd

Budget: Inter-American Development Bank: US$ 30,000,000

Organizations:
Lead:

- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/LVV);
  LVV-Onderdirectoraat Planning & Ontwikkeling
  LVV-Onderdirectoraat Landbouw

Funding:

- Inter-American Development Bank

Objectives:
The objective of the proposed Program will be to increase agricultural productivity in Suriname through investments in infrastructure and management of Irrigation and Drainage (I&D) systems in the main production areas in the country; and to improve the quality of available agriculture statistics for decision and policy making in Agriculture.

Background:
The Government of Suriname requested the Inter-American Development Bank (IDB) support for the preparation and financing of a Sustainable Agricultural Productivity Program. The Government recognizes that the country has the potential to significantly increase agricultural output, become a provider of food to the Caribbean Region and reduce food imports.

The program will focus on 2 areas:

Irrigation and Drainage (I&D)
Rice, Suriname's most important agricultural crop and staple food, has an average yield of 4.8 t/ha, while current potential is 6 t/ha, according to the rice research center in Nickerie, SNRI/ADRON. Compared to best performers in the region, yield gaps are 75% for rice, 101% for tubers and 150% for oranges. Poor agricultural performance is aggravated by weak irrigation and drainage management. Approximately 85% of the land deemed suitable for agricultural production is in the coastal plains, mainly in the Districts of Nickerie, Coronie, Saramacca, and Commewijne. These areas face two challenges:

(1.) a dry season with water shortages
(2.) a rainy season causing excess water on agricultural land, thus requiring I&D infrastructure for commercial agriculture. Large sections of the I&D infrastructure are in disrepair, absorbing constant government resources to keep a minimum level afloat. Adding to these challenges are the potential effects of climate change), particularly rising sea levels causing seawater intrusion in I&D systems. Furthermore, climatic events, such as changes in precipitation patterns, have been linked to lower productivity in the sector.

A key constraint to improved I&D management lies in users not participating in managing the systems and covering operation and maintenance (O&M) costs. O&M costs of I&D primary and secondary infrastructure (outside farmers' plots) have been traditionally covered by the Government, causing a significant and unsustainable fiscal burden. Following international best practices and considering budgetary restrictions, the Government seeks to transfer the O&M of the secondary infrastructure to farmers organized in Water Boards. The proposed operation will provide key support to this important reform.

Agricultural Statistics and Information
Availability of relevant agriculture statistics and information for policy-making and investment promotion is limited. Institutional strengthening, data collection, analysis and dissemination plans need to be drafted and implemented. Improved statistical information are fundamental to manage and make better decisions on public and private sector agricultural investments in Suriname, particularly regarding production within I&D systems where most of the country´s grain production takes place. The last agricultural census was conducted in 2008. FAO 2015 highlights the importance of periodic up-to-date information on the agricultural sector, while the Governments Policy Development Plan (PDP) 2017-2021 reflects on the need to upgrade agricultural information systems for improved decision making. The Agriculture Programmatic Policy Based Loans (PBP series) supported the drafting of some of the methodologies, plans and manuals for data collection as well as initial staff training. To fully implement these measures, amongst other investments, the Government of Suriname needs to update its information base through a new agricultural census.

Project outline and structure:
The IDB loan will structure its operations along 2 components:

Component 1: Irrigation and Drainage (I&D)
The component seeks to improve water management in the Nickerie irrigation district in order to contribute to increased agricultural productivity and reduced government expenditures. The program will finance:
1. Irrigation and drainage infrastructure works, including the rehabilitation of current structures (primary and secondary structures, including those within Water Boards
2. Institutional strengthening of Water Boards
3. Co-finance in first three years the costs of O&M costs of eligible Water Boards
4. Incentive for technology adoption by Water Board farmers, including land levelling, pesticide and fertilizer management
5. Capacity building in I&D management
6. A study on the environmental characterization of the Nani swamp and a hydrological model of the water basin related to the Nickerie irrigation district.

Component 2: Agricultural Statistics and Information
The component seeks to strengthen the Division of Agricultural Statistics (DAS) of the LVV by supporting its efforts to improve its existing information system and analytical capabilities. This component will include financing for:
1. The execution of an Agricultural Census
2. Two probabilistic-sample surveys, based on the sample frame that the census will provide
3. Institutional strengthening activities.
4. Annual update of the estimates of the public support to the agriculture sector.

Expected results:
The expected results are:
a. increased agricultural productivity in I&D areas
b. improved water management within I&D areas
c. operating water boards (WB) contributing to operation and maintenance (O&M)
d. improved statistics and information systems

Online Information:
- Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=687*
- Project progress: *https://fns-suriname.getopensocial.com/node/93*

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Project 7: *Proposed* (World Bank) Agric. Investment Promotion

Project period: expected mid 2019

Budget: est. 25 million US$

Organizations:
Lead:
- Ministry of Trade, Industry & Tourism
- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/LVV); LVV-Onderdirectoraat Planning & Ontwikkeling

Collaborator:
- Ministry of Natural Resources

Funding:
- World Bank

Objectives:
Strengthen critical areas of the extractive and agricultural sector.

Background:
This loan is in its preparatory stage.

Project outline and structure:
The loan addresses 2 sectors namely the extractive and agricultural sector.
- For the extractive sector the focus will be on mapping soils of the entire country
- For the agricultural sector the emphasis will be on addressing constraints for investments in the agricultural sector.

Online Information:
- Project description and documents:
- Project progress**:**

Contact: R. Nojodimedjo, LVV-ODPO; Email: raymon.nojodimedjo@yahoo.com

Project 1: (FAO/GCP) Cassava Industry Development –Market Assessment and Technology Validation and Dissemination

Project ID **:** FAO GCP /SLC/010/CDB

Project period :01/03/2016 to 01/02/2019

Organizations*:*
Lead:
- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/LVV); LVV-Onderdirectoraat Landbouw

Collaborator:
- FAO- Trinidad & Tobago

Funding:
- Caribbean Development Bank

Objectives:
Assist selected Suriname, Belize, Trinidad and Tobago to:
(a) demonstrate improved crop management practices that increase cassava yields in a sustainable manner.
(b) disseminate new cassava production technologies using farmer participatory extension methodologies.
(c) strengthen their capacity to conduct farmer participatory research.
(d) assess the market potential for cassava and its by-products.

Background: The Food and Agriculture Organization (FAO) estimates that the Caribbean Community (CARICOM) has an annual food import bill in excess of four billion United States dollars (USD 4 bn) with imports nearly doubling over the last ten years. A high percentage of these imports are semi-processed and highly processed staples. Two of the top ten imports by value are corn and wheat flour which combined account for approximately 10% of the Region's food import bill. High rates of consumption of processed foods have been linked to an increase in the incidence of diet-related, non-communicable diseases (hypertension and diabetes) across the Caribbean.

Regional agricultural support institutions, including the CDB, are committed to supporting the Region in pursuit of these policy objectives by facilitating the provision of public goods, and creating an enabling environment to facilitate the operations of private sector interests.

In this regard, CDB is supporting BMCs in the following key areas:
(a) agricultural research and development, stakeholder capacity building and information dissemination.
(b) measures to build resilience against the projected impact of natural hazard events- including those associated with climate change.
(c) support systems for small farmer risk management and transfer mechanisms.

Project outline and structure:
Activities are the following:
- practical field demonstrations, to conduct applied research cassava production using improved varieties- high yielding, early maturing, disease and pest resistant and assess the market potential for cassava and its byproducts.
- conduct applied research in cassava production using improved varieties - high yielding, early maturing, disease and pest resistant - sourced from agricultural support institutions in Colombia (CLAYUCA) and/or Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA) Brazilian Corporation for Agricultural Research. These research stations have long-standing experience in the development of cassava varieties suitable for tropical conditions. CLAYUCA is an affiliate of the International Center for Tropical Agriculture (CIAT) which has global responsibility for the improvement of cassava.

Online Information:
- Project description and documents: *https://www.share4dev.info/fns-suriname/noidentifiers.asp?myID=Project&key=648*
- Project progress: *https://fns-suriname.getopensocial.com/node/89*

Contact: Chanderdew Kesharie, LVV-ODL; Email: kesharie@live.ca

Project 2: (FAO) Sustainable Approaches to Agro-processing and Value Chain Development of Root and Tuber Crops in the Caribbean

Budget: US$ 491.000

Organizations:
Lead:
- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAFH/LVV); LVV-Onderdirectoraat Landbouw

Funding**:**
- FAO- Trinidad & Tobago

Objectives: Development of inclusive agribusinesses/enterprises and creation of employment and income opportunities to improve the food and nutrition security status of the countries involved.

Background:
Processing of raw materials into intermediates that are food safe, meet quality standards and are cost effective is a crucial aspect in the further development of value-added food chains, but is often overlooked. The further development of this link will create additional opportunities for the marketing of consumer end products as well as direct the further development of the agronomic practices and selection of appropriate and high-yielding crop varieties by farmers.

The currently situation in the Caribbean countries is as following:
- import, on average, approximately 456,000 MT of wheat for flour, and 380,000 MT of corn, mainly for poultry feed, and 68,000 MT of potato annually.
- roots and tubers are exported in small volumes outside of the region, mainly as a fresh product, with varying volumes being traded intra-regionally.

Traditionally, root and tuber crops are utilized for food (fresh root or processed) and animal feed at the farm level.

The project will address critical bottlenecks of root and tuber value chains:
- after-production issues such as the identification and supply of suitable equipment for farmers and small-scale processors to reduce the laborious work associated with harvesting and processing of roots and tubers.
- It will also support product development along the value chain and marketing assessment
- the provision of best practice information in the form of technical packages to enable producers to provide a constant and consistent supply of raw material for processors.

Expected results:
- Selected Cassava value chains commercially developed, and actors cooperate to some extent with a positive effect on the value chain

Online Information:
- Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=660*
- Project progress: *https://fns-suriname.getopensocial.com/node/368*

Contact: Chanderdew Kesharie, LVV-ODL; Email: kesharie@live.ca

Project 3: (India) Water pump rehabilitation Nickerie

Budget: US$ 8,640,000

Project period: 01/09/2017 to 01/09/2019

Organizations*:*
Lead:

- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/LVV); LVV-Onderdirectoraat Landbouw

Funding:

- Exim bank of India

Objectives: The focus in this project is the restoration of the civil and electrical /mechanical works in the existing pumping station and the sluices including the infrastructure around the building of the pump, other drainage and irrigation works that are connected to the pumping station and the required rehabilitated infrastructure for the existing cultivation area of rice in the area of Wageningen.

Background:
One of the main objectives of the Ministry of Agriculture Animal Husbandry and Fisheries is to create the circumstances for agriculture production.
With a rehabilitated and the expansion with a new pump station agriculture production will be guaranteed which will also mean less stoppage hour and less maintenance.
The small, middle and large farmers will have access to irrigation water and do not need to use their small inefficient pumps anymore. All farmers will be able to irrigate their field by gravity and plant two crops a year.

If the pumping station, including the drainage and irrigation is renewed, the Ministry of LVV shall achieve one of its main policies which are to create framework conditions for the agricultural sector. It will facilitate the work of LVV, because everything will be new and this will reduce complaints about flooding and water deficits. It will also mean less Civil Technical works that have to be performed. Further, it will have an impact on 10.000 to 15.000 hectare of agriculture land. Over 500 people who make their living directly from rice culture. The availability of irrigation water will encourage farmers to utilize an additional 4.000 ha, which at this stage is fallow land.

Project outline and structure:

Expected results:
1. Rehabilitated and upgraded existing pumping station (pumps and building works)
2. Improved infrastructure around the pump station
3. Improved irrigation and drainage system connected to the pump station and supplying water tot de agriculture area.
At least one of the three pumps will have to be installed by the end of December 2018

Online Information:

- Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=708*
- Project progress:

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Project 1: Closed: (FAO/TCP) Sustainable poultry production a way to improve nutrition in Apetina, District Sipaliwini

Project period: 01/09/2016 to 01/09/2017

Budget: US$ 9.444

Organizations:
Lead:
- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/LVV); LVV-Onderdirectoraat Veeteelt

Funding:
- FAO- Trinidad & Tobago
- UNDP-Suriname

Objectives:
- improve the food security and food safety of the villagers in a sustainable manner by enabling the community to produce more food, predominantly animal proteins, since their traditional source is heavily contaminated with mercury from gold mining activities up-stream.

Background:
Apetina is a village in the resort Tapanahoni of the district Sipaliwini in Suriname. The village on the Tapanahoni River can be reached by boat, about six hours traveling from Drietabbetje. By plane, Apetina is one hour away from Paramaribo. A study of mercury in the body of the villagers in the Indigenous village has yielded alarming results. The mercury poisoning is mostly due to the large-scale consumption of fish and the use of contaminated water resources.
At the head of the village council is a Granman which cooperates with the Kuluwajak foundation for the sustainable development of the village and the surrounding areas. The foundation promotes tourism by operating a guesthouse in which members of the community find employment. There is a project for the education of 100 school children since 2007. Besides a primary school there is also an airstrip. Because of mercury contamination in many rivers in Sipaliwini by gold mining, their diets are endangered, and the health of the villagers is seriously threatened.
The Wayana's diet consists mainly of cassava, from hunting (mainly peccary) and fruit (bananas and oranges) as well as fishing. Depending on the season they collect nuts and other protein-rich plant foods from the surrounding forest. Because of their close contact with Western society (Paramaribo), however, there is an increasing demand for gardening equipment, outboard motors, clothes, gasoline, sugar, salt, etc. These products cannot be bartered, like food and other supplies, but need to be bought, which makes a financial income a necessity. To meet this need, hammocks, baskets, bows and arrows and jewelry are some of the crafts made from materials harvested in the forest.

The local chicken breed (Oso Fowru) is selected because it can adapt perfectly to the local climatological-, feeding- and management circumstances and practices. The domestic chicken has a natural resistance to most infectious diseases and is also hardened against the most extreme weather conditions. Furthermore, they are able to hatch their own eggs. The project was implemented over a period of 12 months with interested clans.

Results:
- 10 chicken pens operated by 10 clans according to poultry management and biosecurity rules for sustainable poultry farming.

Online Information:
- Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=657*
- Project progress: *https://fns-suriname.getopensocial.com/node/54*

Contact: Ronnie Kranenburg, LVV-ODVE; Email: ronnykranenburg@hotmail.com

Project 2: (FAO) Development of an Animal Identification and Traceability (AI&T) System in Suriname; Institutional and human strengthening in Livestock information system – farm registration and animal identification

Budget: US$ 475.000

Organizations:
Lead:
- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/LVV); LVV-Onderdirectoraat Veeteelt

Funding:
- FAO- Trinidad & Tobago

Objectives:
The aim of this project is to a) prevent and control the potential introduction of TADs and zoo noses and b) improve food safety and public health and at the same time, meet international standards in order to allow the export of Suriname's livestock sector commodities.

The objectives of the project are:
- to support the Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF) of Suriname to develop a national strategy, action plan and regulations for animal identification and traceability (AI&T)
- to design the information technology (IT) system required and develop the necessary software for data collection, storage and exchange.
- as a pilot experience, the project will implement the system in the national cattle sector.

Background:
Within the sector the main organized farmers groups are the Cattle Breeders Association of Suriname, the Association of Poultry Producers of Suriname and the Dairy Association of Suriname.
The 2008 livestock census recorded 45,000 heads of cattle, 35,000 pigs, 25,000 small ruminants and approximately 1.1 million poultry; however, the present estimations by the DAPH are higher.
Import figures for 2010 show that in that year alone the country imported 3.2 million kg of dairy products, over 18 million kg of poultry products and 1.7 million kg of meat and meat products to feed its population.
There is virtually no export of animal or animal products, except for fish and seafood exports to Europe and other countries; however, there is a potential for livestock exports within the CARICOM region.

The main trans-boundary animal disease (TAD) threats for Suriname are foot and mouth disease and classical swine fever which are present in neighboring countries. Important zoonosis such as rabies, brucellosis, tuberculosis, highly pathogenic avian influenza and leptospirosis are also a potential threat to animal and public health.
other points:
- Animal welfare legislation passed by parliament.
- Other legislative products prepared, to be approved by parliament.
- No AI&T system present.

An AI&T system would be a key component for any plan for improved livestock statistics, control and eradication of animal diseases including zoo noses, enhanced management of livestock production and pasturelands, livestock genetic improvement and general management of animal genetic resources. These improvements will increase the quantity, quality and safety of all livestock products, not only for those destined for export markets, but also those marketed internally, meaning that all Surinamese citizens would have the potential to reap benefits. Furthermore, improved production of animal products will benefit the entire country through increased food security.
An AI&T system would be a key component for any plans for improved livestock statistics, enhanced management of livestock production and pasturelands, livestock genetic improvement and general management of animal genetic resources.

Expected results:
- Operational AI&T system to track and manage selected livestock.

Online Information:
- Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=651*
- Project progress: *https://fns-suriname.getopensocial.com/node/87*

Contact: Gerald Tjon a San, LVV-ODVE; Email:g_tjonasan@hotmail.com

Project 1: (New Zealand/ Brazil/ Suriname.) Trilateral Project: Support to the improvement of Upland Rice Cultivation in Suriname

Project period: April 2016-August 2018 (Initially 1 Year - Extended with 1 year)

Budget: US$ 302,294.00

Organizations:
Lead:
- Ministry of Foreign Affairs of Suriname
- Ministry of Agriculture, Animal Husbandry and Fisheries, Suriname;
  LVV- Onderdirectoraat Landbouwkundig Onderzoek, Afzet en Verwerking

Collaborators:
- Landcare Research New Zealand Institution, New Zealand
- EMBRAPA Rice and Beans, Brazil

Funding:
- New Zealand – Brazil – Suriname

Objectives:
- Strengthening the upland rice cultivation techniques in order to improve the production and productivity of the upland rice in local communities of Suriname.
- Evaluate and characterize upland rice cultivars (4 from Brazil and 3 from Suriname), under favorable conditions of Suriname (plant types; lengths; growing periods; grain quality; resistant of diseases and pests; tolerance of drought and unfavorable soil types and high yield potential).
- Evaluate the effects of rates of N, P and K sowing fertilization on the upland rice grain yield.
- Supporting the practical guidance for upland rice cultivation and training for technicians to have the knowledge to implement innovative techniques.

Background:
The project is a Trilateral Technical Cooperation project between Brazil-New Zealand-Suriname. The government of the Republic of Suriname, especially the Cabinet of The President, has given unrestricted support to develop innovative practices for intensified production of Upland Rice for rural development of the maroon population of the inner land of Suriname.

The traditional economy of the Maroon Culture is in a transition phase and will be no longer the same in the future. Through a development policy of economic activities, the government is creating possibilities in which the Maroon Culture can develop a dignified social security. A part of the economy of the Maroon Culture is cultivation of Upland Rice for daily consumption. Food security has a crucial role in this. The production of food in the Inner land will have the possibilities to make use of new technology. Farmers, especially women (gender), will be involved in partnership with researchers and the extension service of the Ministry of Agriculture. Some of these groups have already been identified as part of existing upland rice activities and will be trained by the extension service to start their own innovative practices. The technicians from the Ministry of Agriculture will be trained by researchers from Brazil. This means there will be a focus on the quality improvement in areas with the common 'shifting cultivation' of Upland Rice as the main food.

Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=692*
Project progress: *https://fns-suriname.getopensocial.com/node/168*

Expected results
- Upland rice cultivation has been strengthened and varieties have been selected to provide the most improved, developed and suitable upland rice production under favourable conditions for Suriname.
- Rates of N, P and K sowing fertilization of upland rice have been evaluated and the proper rate of each nutrient to promote the highest upland rice grain yield has been identified.
- Upland rice cultivation techniques have been demonstrated and strengthened at local and/or national levels in order to train technicians in best practice technical cultivation techniques, knowledge and practical guidance.
- A communication strategy has been developed to promote knowledge exchange to technicians on best practices and overcome main challenges for improving the production and productivity of upland rice production.
- Monitoring, evaluation and technical missions have been carried out to evaluate the project implementation goals.

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Project 2: IDB-comp. 2-1: Strengthening of Open Field Vegetable Production

Project ID : IDB SU-L1020-4097/2.1.1.1

Project Period : 5 years (project approval 27 October 2017)

Budget : 883,488 USD

Organizations:
Lead:
- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV);
  LVV- Onderdirectoraat Landbouwkundig Onderzoek, Afzet en Verwerking

Collaborators:
- IICA
- Producer associations & cooperatives; Vegetable exporters

Funding:
- IDB (loan)

Objectives:
Main objective: Strengthening of the vegetable sector in Suriname
Intermediate objectives:
1. Enhanced productivity of the vegetable crops
2. Improved compliance with food safety and GAP standards.

Background:
The main vegetable production areas targeting the market are concentrated in the districts: Saramacca, Wanica, Para, and Commewijne. According to the Agricultural Census of 2008, there are 10,188 family farms of which 4,189 are in the above-mentioned districts. Most of them are part-time farmers active in the horticulture sector. On average, they have some 1600-3200 m2 in production for vegetables. They typically focus on monoculture of a specific vegetable crop during several growing seasons. Most of the labor input is coming from family members or day laborers. Except for land preparation, hardly any mechanization is being used. The education level of most of the farmers is low and production activities are funded with mainly own capital. Produce is usually sold to traders. Risks in vegetable production are relatively high – crops are relatively sensitive to weather conditions, pests and diseases. Nevertheless, vegetable production is attractive because of its relatively short production cycle and high value of output per square meter.

Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=691*
Project progress: *https://fns-suriname.getopensocial.com/node/179*

Summary of results after project closure

- **Better quality vegetable seeds (or tubers in the case of sweet potato) made available to farmers**
  1.1 Refer farmers to good quality, imported varieties in the case of chili pepper, tomatoes, and okra. CARDI sells chili pepper seeds.
  1.2 Undertake the production of "clean" seed from the present seed stock for the local varieties of eggplant, yard long beans, okra, and bitter gourd. Produce in the case of sweet potato, clean tubers.
  1.3 Training of farmers in how to retain good quality vegetable seed for eggplant, yard long beans, okra, bitter gourd and chili pepper, and tubers in the case of sweet potato. Eight one-day training events for 25 farmers each have been budgeted.
  1.4 Production of five YouTube videos of how to produce good quality vegetable seed for eggplant, yard long beans, okra, bitter gourd, and tubers for sweet potato.
  1.5 Setup of a gene bank for yard-long beans, eggplant, okra, chili pepper, bitter gourd, and sweet potato; and
  1.6 Test the germination of bitter gourd seed.

- **Selected new production recommendations validated**
  2.1 Validation of fertilizer recommendations for all seven vegetable crops on two different soil types.
  2.2 Validation of traditional composting technology versus the bocashi method.
  2.3 Validation of different irrigation and drainage technologies.
  2.4 Validation of the efficiency and effectiveness of different spraying techniques for (bio) pesticides.
  2.5 Validation of crop rotation to keep the root knot nematode population under control.
  2.6 Validation of the impact of the active ingredient in Crotalaria striata on root knot nematodes.

2.7 Validation of the use of (bio) pesticides against insect pests in the selected vegetables.
2.8 Validation of the use of (bio) pesticides against fungal and bacterial diseases in the selected vegetables.

- **New production manuals for open- field vegetables released and promoted**
  3.1 Literature review, with a specific emphasis on ICM, IPM and GAP.
  3.2 Consultation with international experts on: ICM, compost for organic production, improvement of seed quality, identification of economic pests and diseases, economic threshold of pests and diseases
  3.3 Consultation with local experts on statistical analysis and development of crop manuals
  3.4 Drafting of the production manuals
  3.5 Testing of the manuals with farmer panels
  3.6 Production of the manuals (text, layout, etc.) both in printed form as well as electronically
  3.7 Promotion campaign around the production manuals among vegetable growers

- **Vegetables growers informed of and trained in best production practices**
  4.1 Four different training courses will be offered to the vegetable growers in the main production areas during years 1-4. In the first year, two training sessions per district are planned each targeting 20 farmers. In years 2-4, one training session per district is planned each targeting 30 farmers;
  4.2 On-station or on-farm demonstrations of three best practices (i.e., composting, spraying pesticides, and water management) in four different locations (one per district), preferably in collaboration with vegetable growers' associations.
  4.3 Production of 14 YouTube instruction videos highlighting specific good practices
  4.4 Use of social media and text messaging to reach out to farmers

- **Key data collected for the production manual, the result matrix and the impact study**
  5.1 Survey of the seven selected vegetables, covering: (a) current production practices and problems; (b) production costs and yields; (c) pesticide use; and (d) adoption of good practices and new technologies. This survey will be conducted at the beginning and the end of the project in the 4 targeted districts as well as in the Nickerie district, which will function as the control group for the impact evaluation. Increased productivity

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Project 3: IDB-comp. 2-2: Strengthening of Citrus Production

Project ID: IDB SU-L1020-4097/2.1.1.2

Project Period: 5 years (project approval 27 October 2017)

Budget: US$ 616,505

Organizations:
Lead:
- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV);
  LVV- Onderdirectoraat Landbouwkundig Onderzoek, Afzet en Verwerking

Collaborator:
- EMBRAPA, Brazil
- Local collaborators: Alliance Company, Citrus growers, Citrus nurseries

Funder:
- IDB (loan) - Ministry of Agriculture, Animal Husbandry and Fisheries, Suriname

Objective:
Strengthening of the citrus fruit sector in Suriname by:
- improving productivity of the citrus fruit sector
- A more evenly, local supply of citrus fruit throughout the year

Background:
This project aims at raising citrus yields and spreading the supply of citrus production more evenly throughout the year. Yields will be improved by working on a better supply of good quality planting material, by testing improved production techniques, and by informing and training farmers in appropriate production management techniques. This project is a part of component 2 "Agricultural Research & Technology Transfer" and subcomponent 2.1 "Agricultural Innovation Projects" of the "Agricultural Competitive Programme" which is financed by the IDB.

The citrus fruit industry is a sizeable economic activity in Surinam, spread out over many farmers for which it is a small additional activity, while for 300-400 farmers it is their principal source of income. According to the 2008 Agricultural Census2, 2841 farmers (or 28% of the total) are reported to grow oranges.

Since the mid-1990s, the area under citrus production has been on the decline. If this trend continues, Surinam could be destined to become a net importer of citrus fruit. This would be completely unnecessary (and highly undesirable) as Surinam has good conditions to grow citrus fruit. Hence this innovation project aims to give the citrus industry a boost by: (i) improving the quality of the planting material supplied by the nurseries; (ii) introducing better-performing foreign varieties; (iii) changing the composition of citrus species and varieties planted so that (potential) local demand is better met (this may also require the introduction of irrigation); and (iv) improving production practices and compliance with standards

The Ministry of Agricultural, Animal Husbandry and Fisheries will be the executing institution. The Ministry of LVV will collaborate with EMBRAPA with regard to new citrus varieties and improved production practices, and Citrolima Citrus Nurseries with regard to professional nursery practices. The local collaborators will participate in the survey & training which will identify the problems they encounter with citrus and provide capacity building for the local collaborators.

Expected results:

- **Citrus nurseries equipped and strengthened in order to produce better quality planting material**

  1.1 Study tour to a private Brazilian citrus nursery
  1.2 Development of a protocol for the propagation of citrus planting materials to guarantee planting material of good quality
  1.3 Training of nursery staff in propagation and composting techniques
  1.4 Establishment of composting facilities at the nurseries in order to secure a good growing medium for plants
  1.5 Production of three YouTube movies highlighting best nursery practices
  1.6 Production of information brochures for the buyers of the plants
  1.7 Production of YouTube movie explaining how best to plant and treat a new citrus plant.
  1.8 Upgrade facilities of 6 citrus nurseries (Houttuin, Tamansari, Boma, Dirkshoop, La Poule and SLOC)

- **Better-performing citrus varieties identified, imported and screened**
  2.1 Study tour to Brazil in order to identify citrus varieties that could be imported;
  2.2 Acquisition and importation of new varieties;
  2.3 Screening of the imported varieties and description of their main characteristics;
  2.4 Selected varieties made available to the nurseries for multiplication.

- **Harvest period of citrus species and varieties identified**
  3.1 Complete research on the seasonality of citrus species and varieties
  3.2 Develop and release a seasonality chart

- **Selected recommendations testing**
  4.1 Validation of the compost formula for growing medium to be used by nurseries
  4.2 Validation of the use of irrigation for out-of-season citrus production on experimental garden Dirkshoop
  4.3 Validation of which legume species could be used in citrus orchards (other than kudzu) in order to control weeds and capture nitrogen

- **New citrus production manual released and promoted**
  5.1 Survey of current production practices and problems, yields, pesticide use, and technology transfer and adoption.
  5.2 Literature review
  5.3 Study tour/ training to the citrus research institute of EMBRAPA in Brazil to consult with Brazilian researchers on ICM and IPM solutions in citrus production
  5.4 Drafting of a citrus production manual
  5.5 Production of the manual (text, layout, etc.) both in printed form as well as electronically
  5.6 Promotion campaign among citrus farmers (leaflets, posters, etc.)
  5.7 Production of short YouTube movies to highlight specific good practices (such as pruning of trees)
  5.8 Use of social media and text messaging to reach out to farmers

- **Citrus farmers informed of and trained in best practices**
  6.1 Training courses for some 120 citrus farmers in the main production areas (Commewijne, Saramacca and Wanica) on 'best crop management' practices' and 'business management'.
  6.2 On-farm demonstration of best practices such as pruning of trees, production and use of organic fertilizers, and weed control.

Online Information:
- Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=690*
- Project progress**:** *https://fns-suriname.getopensocial.com/node/178*

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Project 4: IDB-comp. 2-3: Strengthening of the Production of Passion Fruit, Pineapple and Soursop

Project ID: IDB SU-L1020-4097/2.1.1.3

Project period: 5 years (project approval 27 October 2017)

Budget: US$ 810,812

Organizations:
Lead:

- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV);
  LVV- Onderdirectoraat Landbouwkundig Onderzoek, Afzet en Verwerking

Collaborator:

- IICA
- EMBRAPA, Brazil
- Costa Rica
- Pineapple growers
- Soursop growers
- Passionfruit growers

Funding:

- IDB (loan)

Objectives:
Strengthening of the production of passion fruit, pineapple, and soursop in Suriname by:
- Enhanced productivity of the fruit crops targeted; and
- Organic production techniques promoted as an alternative and adopted by some farmers in niche markets.

Background: Farmers in Surinam grow a wide range of tropical fruits, which are consumed fresh or are processed into drinks, pulp or conserved fruit. Most of the fruit production is for local consumption (except bananas), but some export opportunities (all still very small) have emerged lately. Import substitution is another opportunity, which, with the devaluation of the Surinamese dollar, has become more attractive. This project aims at:
(a) improving and/or maintaining the genepool of the three selected fruits.
(b) improving the production techniques practiced by farmers, with a specific emphasis on organic alternatives.
This project is a part of component 2 "Agricultural Research & Technology Transfer" and subcomponent 2.1 "Agricultural Innovation Projects" of the "Agricultural Competitive Programme" which is financed by the IDB.

Maintaining some level of competitiveness in producing fruit crops is essential in order to:
(a) Withstand import from elsewhere.
(b) Offer the consumer in Surinam a wide choice of healthy fruits, and
(c) Keep a diversified portfolio of potential export opportunities open.
For all three fruits, fresh export in large quantities seems to be out of reach because of high transportation costs, small volumes and inadequate cooling infrastructure. The export of processed fruit is for all three fruits a more plausibly option and several initiatives along these lines are currently being implemented or explored (i.e., export of passion fruit pulp by Carifruits, dried pineapple by SCF, pineapple pulp by LVV/Amea Cashew company, and soursop pulp/concentrate by LAL Farms). However, in order to produce for export, farmers have to:

(i) adhere to international quality standards; and
(ii) raise their productivity in order to compete internationally.

Moreover, exporters see in particular opportunities for organically produced fruits, which adds to the quality and production standards farmers have to adhere to.

The interventions proposed for all three crops comprise:

(i) a strengthening of the genetic base by introducing improved, imported varieties
(ii) an update of the production manual (including organic production methods)
(iii) promotion of best practices.

Together this package should lead to higher yields per hectare and better profitability. In turn, this may also lead to an expansion of the area under production if demand can be secured. As past experiences have shown, the local market can get easily saturated and hence securing an export market outlet before significantly expanding production is important.
For all three crops, small farmers will be the primary beneficiaries of the project.

Overall budget of the project is just over US$ 811,000, of which roughly US$ 532,000 will be financed by the IDB loan and US$ 279,000 by LVV (mostly salaries).

The Ministry of Agricultural, Animal Husbandry and Fisheries will be the executing institution. In the case of passion fruit, local partners will include passion fruit farmers and passion fruit processors such as Carifruits and Surifruits. IICA will be an important

partner as it has worked with passion fruit producers in the past and could help with establishing international contacts. EMBRAPA's fruit division (or other Brazil-based entities) is the international partner for this project. The current passion fruit varieties and many of the new soursop varieties have their origin in Brazil. In the case of pineapple, Costa Rica may also come into the picture as a partner that could provide clean, in-vitro planting material of the MD2 variety.

Online Information:
- Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=688*
- Project progress: *https://fns-suriname.getopensocial.com/node/165*

Expected results:
For all three crops, the project aims at three interventions:
1. Provide farmers access to better varieties
2. Promote better production practices
3. Offer alternative organic solutions for those farmers aiming that market

A. Passion fruit

1. High-yielding, disease-free passion fruit seed made available to farmers
- 1.1 Importation of high-yielding and disease-free passion fruit seed from Brazil
- 1.2 Screening, characterization, and validation of the imported seed
- 1.3 Validated seeds multiplied and distributed among farmers as a one-off exercise to replace the current genepool

2. **New passion fruit production manual released and promoted**
- 2.1 Survey of production practices and problems
- 2.2 Literature review
- 2.3 International consultation/study tour to Brazil
- 2.4 Drafting of the production manuals (including recommendations for organic production)
- 2.5 Testing of the manuals with farmer panels
- 2.6 Production of the manuals (text, layout, etc.) both in printed form as well as electronically
- 2.7 Promotion campaign around the production manuals among fruit growers
- 2.8 Production of short YouTube movies to highlight specific good practices
- 2.9 Use of social media and text messaging **to reach out to farmers**

3. Farmers made aware of and trained in best practices
- 3.1 Training of farmers in best practices (two courses of three days, 25 participants each)
- 3.2 Training of farmers in hand pollination (two courses of one day, 25 participants each)
- 3.3 Training of farmers in seed selection (two courses of one day, 25 participants each)
- 3.4 Training of farmers in organic production practices (two courses of three days each, 25 participants each)
- 3.5 Demonstration of best practices on-station or on-farm

4. Biological bugs control mechanism tested
- 4.1 Literature review
- 4.2 Design trial
- 4.3 Setup and implementation of trial
- 4.4 Production research report

B. Pineapple

1. Two new pineapple varieties validated and existing varieties characterized
- 1.1 Acquisition of the MD2 and Montserrat pineapple varieties in vitro
- 1.2 Screening, characterization, and validation of imported varieties
- 1.3 Characterization of existing varieties

2. Small pineapple nursery/gene bank established and operational
- 2.1 Acquisition of land
- 2.2 Construction of the nursery and gene bank
- 2.3 Construction of composting facility in order to produce a good growing medium
- 2.4 Drafting of a pineapple propagation protocol
- 2.5 Appointment/assignment of staff
- 2.6 Training of staff
- 2.7 Acquisition of disease-free planting material to start the nursery and gene bank
- 2.8 Production and sale of both new and old pineapple varieties

3. Artificial induction of flowering of pineapple tested
- 3.1 Artificial induction of flowering trial
- 3.2 Drafting research report

4. New pineapple production manuals released and promoted

4.1 Survey of production practices and problems
4.2 Literature review.
4.3 International consultation/study tour (Brazil)
4.4 Drafting of the production manuals (including recommendations for organic production)
4.5 Testing of the manuals with farmer panels
4.6 Production of the manuals (text, layout, etc.) both in printed form as well as electronically
4.7 Promotion campaign around the production manuals among farmers
4.8 Production of short YouTube movies to highlight specific good practices
4.9 Use of social media and text messaging to reach out to farmers

5. Farmers made aware of and trained in best production practices

5.1 Training of farmers in good agricultural practices (two trainings of three days each, 25 participants per training)
5.2 Training of farmers in organic pineapple production (two trainings of three days each, 20 participants per training)
5.3 Training of farmers in artificial induction of flowering (two trainings of one day each, 25 participants per training)
5.4 Training course on postharvest quality management of pineapple (two trainings of five day each, 25 participants each training)

6. Organic solutions tested

6.1 Depending on soil type, research the possibility of sustaining soil fertility cost-efficiently by using 'organic' fertilizer in pineapple production
6.2 On-farm trials of organic pineapple production
6.3 Given the availability of organic inputs, determine the optimal formula for 'organic' fertilizer for pineapple production
6.4 Conduct research into appropriate rotation crops to restore the soil fertility after pineapple production

C. Soursop

1. Most popular newly planted soursop varieties described and characterized. \

1.1 Survey of soursop trees planted by farmers
1.2 In situ monitoring of the production characteristics of the most popular varieties
1.3 Publication of soursop variety characteristics and 'how to' recognize a variety

2. New soursop production manual released and promoted

2.1 Survey of production practices and problems
2.2 Literature review.
2.3 International consultation/study tour (Brazil)
2.4 Drafting of the production manuals (including recommendations for organic production)
2.5 Testing of the manuals with farmer panels
2.6 Production of the manuals (text, layout, etc.) both in printed form as well as electronically
2.7 Promotion campaign around the production manuals among farmers
2.9 Production of short YouTube movies to highlight specific good practices
2.10 Use of social media and text messaging to reach out to farmers

3. Farmers made aware of and trained in best production practices

3.1 Training of farmers in best production practices (3 days, 4 locations, 25 participants each)
3.2 Training seed selection (1 day, 4 locations, 25 participants)
3.3 Training nursery (1 day, 4 locations, 25 participants each)
3.4 Training course on postharvest quality management of soursop (5 days, 4 locations, 25 participants each)
3.5 On-farm demonstrations of best practices in soursop production

4. Use of 'bagging' tested to control pests in soursop production

4.1 Test the use of fruit bags to control pest infestation (in particular wasp) in an organically accepted manner

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Project 5: IDB-comp. 2-4: Strengthening of Protected Vegetable Production

Project ID: IDB SU- L1020-4097/2.1.1.4

Project period: 5 years (project approval 27 October 2017)

Budget: US$ 632,953

Organizations:

Lead:

- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV);
  LVV- Onderdirectoraat Landbouwkundig Onderzoek, Afzet en Verwerking

Funding:

- IDB (loan) - Ministry of Agriculture, Animal Husbandry and Fisheries, Suriname

Objectives:
Strengthening of vegetable production under protected conditions by
- Increased area under protected vegetable production
- Better quality vegetables adhering to food safety and GAP standards.

Background:
Nowadays, there is increased interest in Suriname in the production of vegetables under protected conditions. Simple open shade houses have been in use in Surinam for decades. Tannia leaves, for example, are mostly grown under structures covered with shade mesh to protect them from the high light intensity of the sun and to some extent also from the impact of heavy rainfall. It was only around 2005 that semi-enclosed structures covered with polyethylene (i.e., greenhouses) were introduced in Surinam together with hydroponic technology for the production of mainly lettuce and tomatoes. This has become the main production technology for lettuce, enabling production in even the urban areas of Paramaribo. Other crops such as cucumbers, sweet peppers, celery, species of Chinese cabbage and herbs are also being grown in Surinam under greenhouse conditions.
Over the past decade, the construction of semi-closed greenhouses has been far faster than that of open shade houses – between 2012 and 2015, for example, the area under greenhouses in the districts Paramaribo, Wanica, Commewijne and Saramacca increased with 59%. Many new greenhouses are currently under construction. It is expected that greenhouses will soon become the dominant 'protected' agricultural technology. Although still rather small in area at the moment, the total area under greenhouse production is expected to increase at least 10-fold over the next five years, if not considerably more if affordable financing can be secured. This according to the participants of the stakeholder meeting held at LVV on July, 11th, 2016. In that sense protected agriculture is a highly dynamic part of the vegetable industry, which may change the outlook of the industry quite dramatically over the next few years as it has the potential to deliver better quality vegetables, at competitive prices, year-round.

Greenhouse production is rather capital-intensive, but can give high returns as:
(a) It can produce year-round
(b) Capture good prices during the off-season
(c) Is substantially less affected by weather conditions.
Moreover, it allows for a more controlled use of pesticides, which saves costs as well as avoids negative externalities such as pollution of the environment and exceeding maximum residue levels set by food safety standards. There is, therefore, considerable merit to extending the area under protected agriculture, for the benefit of both producers and consumers.

Despite this upbeat outlook, there are quite a number of challenges to be overcome. Most importantly, most imported as well as locally-designed greenhouses have turned out to be suboptimal for vegetable production in Surinam. The main problem is that the temperature in nearly all greenhouses is getting too high (above 30 to 35 0C) if no measures are taken (such as ventilation, shading, misting, etc.) and hence placing a constraint on production. To date, no research has been conducted into what would be an optimal greenhouse structure in combination with climate control measures under Surinamese conditions. For example, passive ventilation may work well in one place, but not in another depending on the exposure to wind. Providing better information about how to select/construct the right greenhouse structure in combination with climate control measures is very crucial to the ultimate success of the enterprise. Another possible answer to relatively high temperatures is the use of vegetable varieties that are relatively heat-tolerant. Again, this requires research to identify suitable varieties that will do well in the market.

Protected vegetable production requires more advanced (and to Surinam relatively new) production techniques such as using alternative growing media, irrigation and misting, and precision agriculture. There is a great demand for information and a better understanding of the different greenhouse production techniques and their cost implications. In particular there is much demand for low-cost solutions that are durable and efficient and are adapted to Surinamese circumstances.

The greenhouse production value chain is still very much in its early stages of development. Both the pre- and post-harvest parts of the chain are also very much underdeveloped and the linkages between the different stakeholders rather weak. For example, post-harvest quality management of fresh produce is still very much problematic. This is a problem that also affects open-field vegetables.

The application of technology for the production of vegetables seems to stimulate interest in the agricultural sector even among the young population. The ministry and some of the privately-owned enterprises get often visits of groups of students and this area is often selected for educational projects. With ageing of farmers and the loss of interest in agriculture being considered as a global issue, protected cultivation is a mean to encourage the predominantly young population of Suriname to develop the agricultural sector.

This innovation project is a part of the Agricultural Research and Technology Transfer component of the Agriculture Competitive Programme, which is financed by the IDB-Project research activities will include a research study on the management of environmental factors in greenhouses in a cost-effective way, a research study on the year-round production of tomatoes and lettuce under alternative greenhouse conditions and using different technologies, a testing of heat-tolerant vegetable varieties, and a

marketing study on the potential of greenhouse vegetables. Activities focusing on technology transfer will include the organization of a National Horticulture Congress, the development of production manuals specifically for greenhouse production, training of farmers and extension officers in greenhouse production practices and post-harvest quality management, and information dissemination by using modern media.

The Ministry of Agricultural, Animal Husbandry and Fisheries will be the executing institutions. The project will seek partnership with the Caribbean Agricultural and Development Institute (CARDI) as the main international partner for this project. Other partners could be the Wageningen University Research (WUR) and Applied Plant Research (PPO) in the Netherlands.
The Suriname Greenhouse Growers Association and the Cooperative 'Hydroponic Suriname' are organizations in which some of the growers are already organized, but both organizations are still in development. The project team will work closely together with them.

Online Information:
- Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=696*
- Project progress: *https://fns-suriname.getopensocial.com/node/166*

Expected results

1. *Criteria developed for cost effective "Model structure" with the ability to effectively manage climatic conditions of Suriname.*
   1.1 Evaluation of protected structures and production practices at the beginning and the end of the project
   1.2 Contract research on the management of environmental factors in greenhouses in a cost-effective way and to develop "Model structure" for Suriname
   1.3 Disseminate results of study, including a simple guideline of criteria to be considered when buying and/or setting up a greenhouse

2. *Year-round production of tomatoes and lettuce evaluated in 'new model greenhouse' and 'old model greenhouse' using different technology packages*
   2.1 Set up of model structure at LVV's headquarters
   2.2 Evaluation of climatic factors (T, RH)
   2.3 Evaluation of the performance of lettuce year-round in new and old model greenhouse under the following technologies: hydroponic (NFT and deep-water culture) and in the soil with drip irrigation
   2.4 Evaluation of the performance of tomatoes year-round in new and old model greenhouse under the following technologies: hydroponic (NFT and coco coir substrate culture) and in the soil with drip irrigation
   2.5 Economic analysis of production
   2.6 Dissemination of results and recommendations

3. *Performance of selected heat-tolerant varieties of lettuce, tomatoes, sweet pepper, cauliflower, and broccoli tested*
   3.1 Selection of heat tolerant varieties of lettuce, tomatoes, sweet pepper, cauliflower, broccoli
   3.2 Import of seed of heat tolerant varieties of selected crops
   3.2 Evaluation of the performance of heat tolerant varieties of crops in 'new model greenhouse' and 'old model greenhouse'
   3.3 Economic analysis of production
   3.4 Dissemination of results and recommendations

4. *Better insight into market opportunities*
   4.1 Contract research on market opportunities for selected greenhouse crops on the local market

5. *Linkages between the different stakeholders of the value chain strengthened*
   5.1 National Protected Horticulture Congress with all stakeholders including existing and emerging growers, suppliers of equipment and other inputs, buyers, retailers, national, regional and international experts, researchers and extension officers, to share knowledge, experience and information on protected horticulture and to provide inputs for further developments in this area.
   5.2 Establishment of an "Innovation platform for protected agriculture"

6. *Production manuals developed for the five most important vegetables grown under protected agriculture conditions and disseminated to farmers*
   6.1 Literature review and consultation with regional experts, with a specific emphasis on ICM, GAP, IPM, environmental control, operation management, cost and returns.
   6.2 Regional Study tour to 2 countries in the region with mayor developments in protected agriculture production and research (Dominican Republic and Trinidad and Tobago)
   6.3 Drafting of the production manual
   6.4 Production of the manual (text, layout, etc.) both in printed form as well as electronically
   6.5 Promotion campaign among farmers

7. *Capacity building of key staff and growers in best practices for protected vegetable production and postharvest quality management*
   7.1 National Training course on best practices for protected production for existing and emerging growers.
   7.2 National Training course on postharvest quality management of selected crops

8. *Modern-media-based information products on protected horticulture production developed and distributed*
   - 8.1 Production of instruction videos to highlight specific good practices
   - 8.2 Dissemination of videos through television, You Tube and DVD's
   - 8.3 Use of social media and text messaging technologies to reach out to farmers

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Project 6: IDB-comp. 2- 5: Strengthening of the rice sector by better controlling weeds, pests and diseases

Project ID: IDB SU-L1020-4097/2.1.1.5

Project period: 5 years (project approval 27 October 2017)

Budget: US$ 1,570,564

Organizations:
Lead:

- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV);
  LVV- Onderdirectoraat Landbouwkundig Onderzoek, Afzet en Verwerking
- Anne van Dijk Rice Research centrum Nickerie

Collaborators:

- LVV Western Region office
- students from ADEKUS
- Revival of the farmer fields schools (FFS)
- Rice research station in Guyana
- International Network for the Genetic Evaluation of Rice (INGER) of the International Rice Research Institute (IRRI), the Philippines
- Fondo Latinoamericano para Arroz de Riego (FLAR)

Funding:

- IDB (loan)

Objectives:
Improvement of the rice sector

Background:
Yield losses in rice due to weeds, pests and diseases run up to 30-40% of the attainable rice output. This project will develop and introduce better coping strategies based on Integrated Pest Management (IPM). Training farmers in those strategies will not only raise yields, but also reduce pesticide costs and negative externalities of widespread mis- and over-use of pesticides in the rice sector. This project is a part of component 2 "Agricultural Research & Technology Transfer" and subcomponent 2.1 "Agricultural Innovation Projects" of the "Agricultural Competitive Programme" which is financed by the IDB.
In total, about 55,000 ha have been developed for rice production in Suriname. Double cropping is in principle possible, but in practice shortage of irrigation water limits the sowing intensity to 1.5 at best (which is equivalent to 82,500 ha).

Rice production in Suriname is for local consumption (principal staple food) as well as export (59% of the rice production in 2014).

Major bottlenecks in the rice production in Suriname are: (a) The lack of proper maintenance of the irrigation and drainage systems; (b) Lack of coordination and cooperation within the rice sector; (c) Lack of transparency regarding price setting within the sector; (d) Lack of affordable credit; (e) Rather old machinery park. Machinery renting services underdeveloped; (f) High dependency on imported inputs; and (g) Given the importance of the crop (and despite the fact that it is the only crop in Surinam with its own dedicated research institute), rather limited rice research and extension services; and (h) Lack of expertise and research staff which can offer problem solving techniques to the rice farmers.
According to the strategic plan 2015-2020[1] of the Foundation for National Rice Research (SNRI), which is ADRON's supervising body, four critical interventions are needed to raise the productivity of the rice sector, namely:

- Improved rice varieties. The focus is on high quality, high yield and resistance or tolerance against pest and diseases;
- Improved soil and water management (including soil fertility);
- Improved control of weeds, pests and diseases;
- Improved post-harvest processing and storage

The overall budget of the project is approximately US$ 1,570,000, of which roughly US$ 1,149,000 will be financed by the IDB loan and the remainder by ADRON (US$ 326,000) and LVV (US$ 96,000).

The Anne van Dijk Rice Research centrum Nickerie (ADRON) will be the executing institutions. Five senior extension officers from LVV Western Region office will be trained in IPM by ADRON and spend, for the duration of the project, 50% of their time on extension activities related to IPM in rice. Students from ADEKUS will be recruited to assist with the survey in years 1, 3 and 5 A revival of the farmer field schools (FFS) could be a good starting point for also jointly identifying possible other themes for on-farm research. Eventually farmer field schools could evolve into farmer research groups that participate actively in ADRON's research. Since 1996, ADRON collaborates with the International Network for the Genetic Evaluation of Rice (INGER) of the International Rice Research Institute (IRRI) in the Philippines. This collaboration ensures that the breeding program of the ADRON

actively participates in the network and annually receives seed collections for review under Surinamese conditions. Likewise, varieties from Surinam were tested in 2004 and 2008 in about 30 places in the world. ADRON also aims to become a member of the 'Fondo Latino-americano para Arroz de Riego' (FLAR), which is a regional alliance of organizations in support of irrigated rice production, dealing with research, technology adoption, institutional strengthening and knowledge management. Membership would provide ADRON access to the gene bank of FLAR. FLAR is based at CIAT in Colombia, which is one of its founding members.

Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=695*
Project progress: *https://fns-suriname.getopensocial.com/node/167*

Summary of results after project closure

1. *IPM strategies developed for weeds in rice, with a specific emphasis on barnyard grasses (Echinocloa species) Better-performing citrus varieties identified, imported and screened*
   1.1 Characterization of weeds in rice fields
   1.2 Literature review on weed-control mechanisms in rice
   1.3 International consultation of weed control experts
   1.4 Formulation of IPM strategies for the most common weeds in rice
   1.5 On-station testing of possible control strategies for 'vogelzaad'
   1.6 Technical as well as economic analysis of test results and formulation recommendations
   1.7 Development of an IPM training module for controlling weeds in rice

2. *IPM strategies developed for diseases in rice, with a specific emphasis on leaf and neck blast Selected recommendations validated*
   2.1 Literature review on control of diseases in rice
   2.2 Development of a system for evaluating fungal infestations, including rating scales and counting methods
   2.3 Formulation of IPM strategies for the most common diseases in rice
   2.4 On-station testing of possible control strategies for neck and leaf blast in rice
   2.5 Technical as well as economic analysis of test results and formulation recommendations
   2.6 Development of an IPM training module for controlling diseases in rice

3. *IPM strategies developed for pests in rice, with a specific emphasis on seed bugs*
   3.1 Literature review on control of pests in rice
   3.2 Development of a system for evaluating pest infestations, including rating scales and counting methods
   3.3 Formulation of IPM strategies for the most common pests in rice
   3.4 On-station testing of possible control strategies for seed bugs in rice
   3.5 Technical as well as economic analysis of test results and formulation recommendations
   3.6 Development of an IPM training module for controlling pests in rice

4. *IPM strategy developed to reduce pesticide use during storage*
   4.1 Literature review on pests during rice storage
   4.2 Evaluation of the damage of primary and secondary post-harvest insects
   4.3 Investigation of the efficacy of bio-pesticides on post-harvest insects
   4.4 Development of bio-control measures for storage insects
   4.5 Development of an IPM training module for controlling postharvest in rice

5. *IPM strategies validated in farmer fields*
   5.1 Conduct a survey in years 1, 3 and 5 to monitor the adoption and impact of IPM (see outcome indicators)
   5.2 Conduct two on-farm trials per year to test IPM recommendations
   5.3 Review, analyze and interpret collected trial data and publish results and recommendations

6. *Known as well as newly tested/validated IPM strategies promoted*
   6.1 Publicity campaign using modern media
   6.2 Production and distribution of an IPM guide for farmers
   6.3 Organization of 2 on-farm demonstrations of IPM measures per year
   6.4 Organization of 1 Farmer Field School per year
   6.5 Organization of training courses for farmers on IPM strategies

7. *Farmer advisory service regarding pests and diseases implemented*
   7.1 Joint ADRON-LVV plant health extension program for rice
   7.2 Operation of diagnostic service for weeds, pests and diseases

8. *Weeds, diseases and pests in rice growing areas monitored*

8.1 Set up of a monitoring system for weeds, diseases and pests in rice
8.2 Seasonal data collection and database update
8.3 Analysis and evaluation of the collected data, which may lead to specific recommendations for the next season and/or adjustments of IPM strategies

9. *Capacity building*
9.1 On-the-job training of 3 research technicians working for the plant health division of ADRON
9.2 Training of 5 senior extension officers of LVV in rice plant health and IPM strategies
9.3 Training of research and extension staff in spraying technics for (bio-)pesticides
9.4 Training of research and extension staff in data collection based on GPS Technology
9.5 Upgrade staff members

10. *General project costs*
10.1 Project management
10.2 Vehicles
10.3 Plant health laboratory
10.4 ICT equipment
10.5 Stationary

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Project 7: (NZ) Common Beans project

Period: December 2016 – December 2018

Organizations:
Lead:
- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV); LVV- Onderdirectoraat Landbouwkundig Onderzoek, Afzet en Verwerking
- Embrapa

Funding:
- New Zealand – Brazil - Suriname

Objectives: To make observations on the performance of the imported beans varieties.

Background:
For 2 years evaluation trials are being carried out on 10 imported Brazilian bean varieties. For the first year the trials with these varieties were set up in Brokopondo and Klaaskreek. At Brokopodo Centre 4 of the 10 varieties survived the rainy season and for Klaaskreek this was 9 of the 10 varieties. The production was reasonable. These trials were repeated on the fields of ODLOAV, which failed. The second time on these fields also failed due to waterlogging. For this year trials are again set up in Klaaskreek and on the sandy soils of Dirkshoop, an experimental garden of the department of research. This year the evaluations are prolonged**.**

Upon request of the ministry of Agriculture, Animal Husbandry and Fisheries 10 Brazilian beans varieties, together with the expertise of Embrapa came to Suriname.

Project description and documents: *https://www.share4dev.info/fns-suriname/noidentifiers.asp?myID=Project&key=669*
Project progress: *https://fns-suriname.getopensocial.com/node/125*

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Project 8: (FAO/CGP) Assisting Small Island Developing States (SIDS) to Integrate the Agricultural Sectors into Climate Change Priorities and Nationally Determined Contributions (NDCs)

Project period: January 2017 – June 2019

Budget: US$ 2,000,000

Organizations:
Lead:
- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV); LVV-Onderdirectoraat Landbouwkundig Onderzoek, Afzet en Verwerking

Funding:
- FAO- Trinidad & Tobago (FAO-TT)

Objectives:
The goal of the project is to ensure that the agricultural sectors are prioritized for adaptation action to safeguard food and nutrition security. This will help to reduce the vulnerability of SIDS populations and responds to the global calls for assistance to countries that are highly exposed to adverse effects of climate

Background: There are a numbers of United Nations Framework Conventions on Climate Change (UNFCCC) related commitments through which SIDS have prioritized the needs to address the impacts of climate change. However, evidences show that there are still gaps and significant opportunities to enhance the response to climate change in agricultural sectors (includes crops, livestock, fisheries and forestry). For example, based on UNFCCC decision 1/CP.19, countries have voluntarily submitted their Intended Nationally Determined Contributions (INDCs), and analysis shows the need for technical support in the areas of adaptation, mitigation and financing. Some of the explicit needs prioritized in INDCs include strengthening of climate change work especially on mainstreaming into sectoral plans, policies, support to adaptation/mitigation planning processes, implementation of mitigation and adaptation practices and relevant capacity development with in a broader objective of food security and nutrition.

Key points:
- SIDS together emit less than 1 percent of global greenhouse gases.
- Comparative projections of climate change scenarios suggest a median annual increase in surface temperature of 1.2-2.3°C in the Caribbean, Indian Ocean and Pacific Ocean small island regions by end of the century compared to the pre-industrial baseline.

Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=704*
Project progress: *https://fns-suriname.getopensocial.com/node/124*

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Project 9: (FAO/TCP) Improving technical and institutional capacities for disaster and climate risk management and sustainable agriculture in Jamaica, Guyana and Suriname (ADRM)

Project ID: TCP/SLC/3603

Project period: January 2017 – December 2018

Budget: US$ 495,000

Organizations:
Lead:

- FAO Trinidad & Tobago
- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV);
  LVV- Onderdirectoraat Landbouwkundig Onderzoek, Afzet en Verwerking

Collaborators:

- Suriname NIMOS (National Institute for Environment and De National Coordination Center for Disaster Management Development in Suriname)
- NCCR (National Coordination Center for Disaster Management).
- Ministry of Regional Development (RO)

Funding:

- FAO

Objectives:
The objective is to contribute to reducing the impact of climate-related disasters on agricultural livelihoods and improve household's food security.

The Agricultural Disaster Risk Management (ADRM) Plan for sustainable agriculture in Suriname will be prepared with 3 sections:

1. A policy analysis section outlining the key threats of climate change and disasters, the expected economic and social costs and proposed measures with anticipated costs and the institutional setting to address the threats with inclusion of a gender sensitivity analyses.

2. Practical steps to address frequent natural disasters in the coastal plains and in the hinterland for distinct groups of people (women, man, elderly, etc.)
   - Coastal plains: Flooding, saltwater intrusion, drought
   - Hinterland: Flooding and drought

3. Outline for a 3-year action with priorities to address ADRM related concerns

Background:
Caribbean SIDS share common constraints to their agriculture sector arising from the threats posed by both climate and disaster risk. Hurricanes, floods and droughts that have traditionally threatened agriculture producers now combine with new hazards such as rising sea level, increasing air and sea surface temperatures, ocean acidification and increasingly erratic rainfall patterns linked to climate change. The degradation of natural resources such as land, coastal and marine ecosystems linked to both human action and natural processes further compound the vulnerability of the sector.

The project will address the identified needs through (i) supporting the implementation of climate resilient agriculture practices that reduce risk and are socially, economically and environmentally suitable ii) evaluating the performance of the good agriculture practices in order to measure how much loss and damages can be avoided and iii) ensuring functional inter-sectorial mechanisms and planning processes at national level to promote the necessary conditions for up scaling good practices through informed and coordinated policy decision-making and planning processes.

The SIDS Jamaica, Suriname and Guyana identified common areas in which they want to make progress: the sustainable management of natural resources such as land, water, forest and fisheries as well as building the resilience of livelihoods to disasters and climate change is a key priority. Within that, countries prioritized the implementation of resilient approaches, practices and technologies for enhancing resilience that are gender sensitive and strengthening of the national capacities to reduce the vulnerability of agriculture to climate and disaster risk and promote the sustainable management of the resources on which the sector depends.
The short title is Agricultural Disaster Risk Management (ADRM) project. Suriname faces effects of climate change in the form of increased drought, flooding, wind as well as salinization due to rising sea-level. The government of Suriname is trying to address these threats through activities listed in the national development plan 2017-2021.

However, in order to identify solutions and better respond to these threats for the agricultural sector, FAO is supporting the Ministry of Agriculture (LVV) in the preparation of an Agricultural Disaster Risk Management (ADRM) Plan. The document will outline effective response interventions and assist in identifying and attributing roles and responsibilities to respond to the effect of natural hazards with particular attention to the gender dimension.
At present the information on the threats, damages and losses caused and relative cost together with potential solutions is scattered amongst various stakeholders.

Two national-level workshops will be held with stakeholders.

The FAO will be the executing institution. The Ministry of Agriculture, Animal Husbandry & Fisheries will collaborate with the Ministry of Rural Development, NIMOS (National Institute for Environment) and The National Coordination Centre for Disaster Management Development in Suriname (NCCR) for executing the objectives.

Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=698*
Project progress: *https://fns-suriname.getopensocial.com/node/139*

Expected results:

- Good local practices for climate change adaptation (CCA) and disaster risk management (DRM) will be identified, evaluated and effectively scaled-up through intersectional mechanisms and instruments in Suriname, Guyana and Jamaica.

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Project 10: (FAO/GCP) Disposal of Obsolete Pesticides including POPs, Promotion of Alternatives and Strengthening Pesticides Management in the Caribbean

Project ID: FAO GCP/SLC/204/GFF

Project period: April 2015 to March 2019

Budget: USD 24,928,207

Organizations:
Lead:

- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/LVV)
  LVV- Onderdirectoraat Landbouwkundig Onderzoek, Afzet en Verwerking

Collaborators:

- FAO-Trinidad and Tobago & Global Environment Facility (GEF)
- Coordinating Group of Pesticide Control Boards of the Caribbean (CGPC):
- Ministries of Agriculture, Environment and Health
- Inter-American Institute for Cooperation on Agriculture (IICA)
- The University of the West Indies (UWI, Trinidad and Tobago)
- Caribbean Agricultural Research and Development Institute (CARDI)
- Basel Convention Regional Centre (BCRC):
- Regional Research Organisations
- Farmers organizations and farmers groups
- Industry:

Objectives: The project objective is to promote the sound management of pesticides in the Caribbean throughout their life-cycle in ways that lead to the minimization of significant adverse effects on human health and the global environment.

Specific objectives of each component are to:

- safely destroy POPs and obsolete pesticides (Component 1);
- remediate pesticide-contaminated sites (Component 2);
- establish mechanisms to deal with empty pesticide and other waste plastic containers (Component 3).
- prevent wastes by interventions at earlier life cycle stages, strengthen the institutional and regulatory framework for managing pesticides through their life cycle (Component 4);
- increase the successful uptake of alternatives to the most hazardous chemical pesticides on key crops (Component 5)
- These five components are supported by a horizontal project management, Monitoring and Evaluation (M&E) and awareness/communication component (Component 6) which will inform project execution decisions and create the necessary conditions for beneficiary knowledge and participation in project activities.

Background:
The Caribbean Region consists largely of Small Island Developing States (SIDS) in which tourism and agriculture are major revenue earners and important sources of employment. Shifts away from commercial production of commodities (sugarcane, bananas) have contributed to an estimated 200 tons of stockpiles of obsolete chemicals belonging to former commodity farms, which are beyond the capacity of the governments to dispose of in an environmentally sound manner. Of the 46 total stores already inventoried 14 present 'High' or 'Higher' hazard and environmental risk– these stores may be located near environmentally sensitive areas, near human settlements, or contain extremely toxic products. A number of these sites present contamination of soils in addition to the stocks of obsolete products, which governments have only recently begun to inventory and prioritize for remediation. The use of pesticides in the region is characterized by use of older, hazardous products including many that are classified as "Highly Hazardous Pesticides" according to the FAO definition. Combined with the inappropriate conditions of use, including use of illegal or restricted products, pesticide application poses an important risk to the fragile island ecosystems, which are included in the Critical Ecosystem Partnership Fund listing of the world's 35 diversity 'hotspots'. The Global International Waters Assessment has noted that "the use of agro-chemicals within the agricultural sector is a source of significant damage to both surface and groundwater resources" and highlighted indiscriminate and improper disposal of agricultural wastes as a priority issue. The legislation and regulations for the management of pesticides during their life-cycle in the Caribbean and participating countries are fragmented and at various stages of development and enactment. Some make provision for the implementation of requirements for international chemical management conventions. In some countries, legislation and regulations are non-existent. Pesticide regulatory authorities of Caribbean countries are coordinated through the CGPC, the main implementing partner for this project. The CGPC was established in 1987 to improve regional coordination, communication and action on pesticides management issues, and has repeatedly called for a harmonized legal framework f**or** pesticides, including registration and inspection.

The mandate of FAO includes prevention and management of agricultural pests; safe distribution and use of pesticides including their disposal as governed by the International Code of Conduct on Pesticide Management (2013); and the control of international

trade in particularly hazardous pesticide formulations as governed by the Rotterdam Convention on Prior Informed Consent. A specific mandate from the FAO Council instructed FAO to assist countries in reducing risks from pesticides. In addition, the Plant Production and Protection Division of FAO (AGP) provides guidance on the Sustainable Production Intensification of Crops with a particular focus on ecological approaches as embodied in Integrated Pest Management (IPM), which is able to reduce reliance on chemical pesticides, and on migratory pest control, which has been a major cause of obsolete pesticide stockpiles. FAO has operated a programme for the prevention and elimination of obsolete pesticides since 1994. The experience gained by AGP in the area of obsolete pesticide prevention and disposal is unique among the Intergovernmental Agencies. The FAO programme, that supports countries to deal with obsolete pesticides, is currently supporting activities in 60 countries. AGP has been advocating IPM for over three decades through the FAO Regular Programme and extra-budgetary funding from various financial support sources. The Global IPM Facility, established in collaboration with the World Bank in the 1990s, was hosted in AGP and significantly boosted the dissemination and uptake of IPM in many countries. FAO is therefore ideally and uniquely positioned to support its member states in the development and implementation of projects for the comprehensive, safe and effective management of pesticides, disposal of obsolete pesticides, and promotion of alternatives to hazardous pesticides.

Components and Sub-components of the project Disposal of obsolete pesticides including POPs, promotion of alternatives and strengthening pesticide management in the Caribbean

Component 1: Safe disposal of POPs and other obsolete pesticides and PCB	1.1 Regional risk reduction and disposal strategy 1.2 Safeguarding, centralization and destruction of obsolete pesticides
Component 2: Technology transfer of methodologies for identification and remediation of contaminated sites	2.1 Capacity building of national authorities in remediation of contaminated sites 2.2 Remediation strategies and environmental management plans for pilot sites 2.3 Demonstration of implementation of remediation strategies for pilot sites
Component 3: Development of systems for the management of empty containers	3.1 Pesticide container management options identified 3.2 Container management practices improved
Component 4: Strengthening the regulatory framework and institutional capacity for sound management of pesticides	4.1 Model harmonized regulations provided to countries 4.2 Regional harmonized pesticide registration mechanism 4.3 Common system for inspection and control of imported pesticides 4.4 Sustainable financing for regional pesticide lifecycle management
Component 5: Promotion of alternatives to chemical pesticides	5.1 Regional HHP use and risk reduction plan 5.2 Field demonstration of alternatives to HHP 5.3 Promotion of IPM
Component 6: Monitoring and evaluations	6.1 Project monitoring system 6.2 Dissemination of project lessons learned

Partners role:

- **Coordinating Group of Pesticide Control Boards of the Caribbean (CGPC):**
  The members of CGPC are the main executing partner with responsibility of delivery of most of the components in the participating countries. The project will coordinate regional training and Project Steering Committee workshops at the CGPC Annual Meetings and coordinate closely with related baseline projects including the FAO EC and IICA projects to maximise efficiencies in meetings and workshops.
- **Ministries of Agriculture, Environment and Health:**
  These national institutions will work closely with the CGPC in the implementation of activities at the national level. The link will be through the nominated National Focal Points, who will coordinate effective provision of inputs and dissemination of project information and events**.**
- **Inter-American Institute for Cooperation on Agriculture (IICA):**
  Support the regional cooperation activities of the project, particularly in relation to increased collaboration on pesticide registration, promotion of sustainable agriculture and alternatives to HHP, and support to the CGPC. The IICA is both a co-financing as well as implementation partner and will be invited to send a representative to participate in project Steering Committee meetings to ensure a high level of involvement and coordination with their related activities.
- **The University of the West Indies (UWI, Trinidad and Tobago):**
  Coordinate the delivery of training and technology transfer and participate in the management and implementation of assessment and remediation of contaminated sites. Also assist in regional coordination through satellite facilities that may increase efficiencies by delivering training courses through distance learning rather than only at regional face to face meetings. The UWI

will be guided by an international consultant to further increase capacity in the region and ensure effective links with other FAO contaminated land projects in other regions.

- **Caribbean Agricultural Research and Development Institute (CARDI):**
  Cooperation with CARDI (as well as UWI) will focus on alternatives to chemical pesticides, with sample proposals already submitted for field testing of alternatives to chemical pesticides (e.g. entomopathogenic fungi or Plant Growth Promoting Rhizobacteria, or a rational pesticide use approach on vegetable amaranth and white potato). These (or others) will be selected based on the prioritisation of HHP to be replaced or specific pest / issue to be addressed.
- **Basel Convention Regional Centre (BCRC):**
  Partner in technology transfer and demonstration of assessment and remediation of chemical contaminated sites including pesticide contamination. The project will also cooperate on the disposal of POPs wastes, seeking to include PCB wastes from the BCRC project in order to improve both human and resource efficiency.
- **Regional Research Organisations:**
  Regional organisations will assist in delivery of training and facilitate dissemination of technical information and political engagement. Consultations are on-going with the following national authorities and regional agricultural research bodies such as the Caribbean Agricultural Research and Development Institute (CARDI, Trinidad), and UWI, Mona Jamaica, the Inter-American Institute for Cooperation on Agriculture (IICA), among others.
- **Farmers organizations and farmers groups:**
  The Caribbean Farmers Network (CaFAN), formed in 2004, is a regional network of Farmers' Associations and Non-Governmental Organisations (NGOs) in the Caribbean, aiming to foster linkages, training and information sharing amongst Caribbean farmers. CaFAN organises training workshops, advocacy, study tours, information sharing, regional planning sessions, and produces a variety of publications. CaFAN and its members will be engaged in field testing alternatives to pesticide use, as well as other farmers groups already identified in project preparation including Orange Grove farmers, Puzzle Island Farmers and Caroni farmers in Trinidad and Tobago. In addition, farmers groups and other non-governmental organisations will be involved in the communications activities at grassroots level on empty containers and adoption of alternatives, including conducting baseline and final KAP surveys to target these activities and monitor their impact. These will all be coordinated and implemented through CaFAN**.**
- **Industry:**
  The project will continue to seek to engage pesticide manufacturers and distributors in the region, particularly relating to pesticide life cycle management initiatives and through the CGPC. The project will also involve other industries including plastic recycling and waste management companies in developing sustainable container management pilots and networks, as well as importers and distributors of alternative pest control products and services.

Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=703*
Project progress: *https://fns-suriname.getopensocial.com/node/152*

Expected results: To achieve the objectives indicated above, the project has been structured into six components and various subcomponents with their respective outputs as presented in Table 3 and described in more detail below. The Project is planned till august 2019. Therefore component 2, 3, 4 and 5 is implemented in accelerated speed. Progress of the different components is in table

Component #	**Progress**
Component 1: Safe disposal of POPs and other obsolete pesticides and PCB	This component is terminated. The ministers of Agriculture of the participating countries where provided with the certificates of destruction by the FAO Sub-regional coordinator, during the 71e Coted meeting in Guyana. A total amount of 319 metric ton of obsolete pesticides and other contaminated material has been shipped to England and incinerated on a sound manner. 96.4 ton is obsolete from Suriname. FAO is now looking whether there is a need for expansion because different countries have reported to have left overs of obsoletes from this project. Suriname has already made an inventory of what is left behind but through a public communique the people will be asked whether they still have more obsolete pesticides.
Component 2: Technology transfer of methodologies for identification and remediation of contaminated sites	In June 2017 two (2) technicians of Suriname were trained on the job in soil sampling. This is done on three (3) locations (Mariënburg, Peperpot and an airstrip in Nickerie), samples were taken and sent for analysis to UWI in Trinidad And Tobago. While waiting for the results of these analysis Suriname has to make preparations for remediation techniques. On at least one (1) site remediation techniques will be demonstrated for 18 months.
Component 3: Development of systems for the management of empty containers	In January of 2017 a working group was installed to implement a pilot project in one district. The district of Nickerie (with the highest pesticide use) is chosen for this purpose. This pilot project is pre-financed by the importers of pesticides. The management of the budget is with Nimos. The launch of the project will be on June 7, 2018 and will last one (1) year. Fourteen (14) importers have signed a wok agreement with Nimos and more than seven (7) have already made their contribution. On different locations in Nickerie it is possible to deposit the empty containers. A KAP survey and a training has been organized on behalf of this component.

Component 4: Strengthening the regulatory framework and institutional capacity for sound management of pesticides	In February two (2) technicians of LVV were trained in Trinidad & Tobago in working with the Pesticide Toolkit Registration. In March 2017 one (1) custom officer and one (1) technician of LVV were trained in a train the trainer workshop regarding the Multilateral Environmental Agreements (Basel, Rotterdam & Stockholm Convention). Suriname is member of these agreement. The follow-up of this workshop has already been in Suriname. Thirty-two (32) persons were trained in the implementations of the three (3) agreements and in the inspection of pesticides. Due to a high demand this training workshop is planned for eight (8) more groups over the country. A FAO consultant is also comparing the legislation on Pesticides of the participating countries and are also identifying the gaps in the different laws with regard to pesticides.
Component 5: Promotion of alternatives to chemical pesticides	With regard to this component the UWI are performing trials with alternatives for Highly Hazardous Pesticides (HHP). Pepper, tomato and cabbage are used in these trials. Information is provided about the Crotalaria for research. The results will be shared with the different countries.
Component 6: Monitoring and evaluations	Is ongoing by FAO

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Project 11: (Mexico) The development of Habanero Pepper Industry in Suriname

Project ID: TRT18/01088

Project period: January 2017 – December 2018

Organizations:
Lead:
- Ministry of Foreign Affairs
- Ministry of Agriculture, Animal Husbandry & Fisheries (MAAHF/ LVV)
  LVV-Onderdirectoraat Landbouwkundig Onderzoek, Afzet & Verwerking

Collaborator:
- Mexican Ministry of Agriculture

Funding:
- Mexican Government

Objectives:
-to build capacity in the area of cultivation (especially selection and disease monitoring (antracnose)) of pepper.
-to share their experience with the ministry through some presentations: the production
of Habanero pepper in the open field (Agronomic Management, Fertilization and Phytosanitary)

Background:
This project is a continuation of a mission of 3 Mexican experts in December 2017. Mexico is looking for possibilities for the introduction of the Habanero pepper in Suriname. The habanero is a pepper of Mexico. Within this variety different lines where selected. The result of this mission was that the climatological circumstances in Suriname are not so favorable for the cultivation of the Habanero pepper. Therefor the objective of the mission is changed into working with a local variety of Suriname.

Online Information:
- Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=670*
- Project progress:

Project 12: (UNDP) Global Climate Change Alliance Suriname Adaption Project "Reducing Farmer Vulnerability to Climate Change Impacts through the Promotion of Climate Smart Agricultural Technologies in Suriname"

Project period: 1 December 2016- June 2018

Budget: US$ 266,087

Organizations:
Lead:

- Inter-American Institute for Cooperation on Agriculture (IICA)
- Ministry of Agriculture, Animal Husbandry & Fisheries (MAAHF/LVV)
  LVV- Onderdirectoraat Landbouwkundig Onderzoek, Afzet en Verwerking

Collaborators:

- Ministry of Natural Resources
- CELOS
- ADEK
- NIMOS
- SURAFY
- Umbrella production organization of Suriname which body represents members of nine producers' organizations

Funding**:**

- United Nation Development Programme (UNDP)

Objectives:
Main objective: Knowledge & skills of farmers, agricultural technicians & tertiary level agricultural students increased in the use of protected agriculture water harvesting & irrigation system in response to climate change risk.

Background:
Climate change related events particularly excessive rainfall events and extended droughts are having a severe impact on agricultural production in Suriname. This project seeks to strengthen the capacity of crop farmers and agricultural technicians in the use and management of protected agriculture and low-cost water harvesting technologies to mitigate the negative impacts of erratic and excessive rainfall and extended drought periods. This will be achieved primarily through the establishment of training demonstration units for protected agriculture technologies and rain water harvesting, as well as theoretical and practical sessions on sustainable crop production and agronomy, with emphasis on cultural practices to mitigate the impacts of climate change events. The project will also seek to strengthen cross border collaboration to develop complimentary knowledge areas to build the capacity of public sector institutions for improved service delivery to the agriculture sector.

In recent decades, the negative impacts of Climate Change have become more apparent with particularly detrimental effects for the agriculture sector. The more common effects for the Caribbean Region have been more intense storms, unusual excessive rainfall events, emergence of pest & diseases & extended droughts many falling outside of the historical periods of their occurrences. These have resulted in severe loss of agricultural productivity, with resulting reductions in household incomes for many farmers and in many cases total loss of ability to sustain their livelihoods. Many of the traditional crops & cropping systems in Suriname do not respond favourably under these erratic weather extremes & farmers for the most part lack the knowledge & technologies to mitigate these impacts. New technologies such as protected structures for crop production & rain water harvesting systems coupled agronomic cultural practices in soil & water management can go a long way in reducing the impact of these extreme weather events but also boost crop productivity and lead to a more sustainable agricultural sector. This project aims to build the knowledge as skills capacities of crop farmers in Suriname in the use & management of protected agricultural structures & rain water harvesting systems for sustainable commercial vegetable production.

The IICA will be the executing institutions for this project but will work in close collaboration with the Ministry of Agriculture, Animal Husbandry & Fisheries, Ministry of Natural Resources, NIMOS, ADEK, CELOS, SURAFY & Vereeniging Belangen Behartiging Weg naar Zee.
IICA & Belangen Behartiging Weg naar Zee will be responsible for site selection for the demonstration units. Training activities will be done in collaboration with Ministry of Agriculture, Animal Husbandry & Fisheries, Ministry of Natural Resources, NIMOS, ADEK & CELOS. Engagement with the youth will be done in close collaboration with SURAFY.

Expected results:

- Increased knowledge & skills of farmers, agricultural technicians & agricultural students in the production of vegetable crops using protected agriculture technology to mitigate the effects of climate change (excessive rainfall events, pest & disease, excessive temperatures)
- Increased knowledge & use of water harvesting & micro irrigation technologies by vegetable farmers particularly in the Weg naar Zee area for drought mitigation & ensure year-round production.
- Increased sensitization & awareness in the agricultural sector, schools and among national authorities on the actual & potential impacts of climate change, particularly on the agricultural sector & alternatives for adaption and mitigation
- Governance, management & operational processes of producer group Vereeniging Belangen Behartiging Weg naar Zee strengthened for improved service delivery to its members

Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=699*

Project progress: *https://fns-suriname.getopensocial.com/node/177*

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Project 13: (FAO/ UNIDO) Accelerated Agriculture and Agro-industry Development Initiative PLUS (3ADI+)

Project ID: SAP 170093

Project period: 20 December 2017 till 31 December 2021

Budget: 100.000 €

Organizations:

Lead:
- Food and Agriculture Organization-HQ
- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/LVV);
  LVV- Onderdirectoraat Landbouwkundig Onderzoek, Afzet en Verwerking

Collaborator:
- Ministry of Trade, Industry & Tourism

Funding:
- United Nations Industrial Development Organization (UNIDO)

Objectives:
Suriname is one of three pilot countries, alongside Bangladesh and Tanzania for the inception phase. The initial work in Surinam will focus on a thorough value chain analysis for pineapple for a period of some 3-6 full months. This will give recommendations for further action.

Background: 3ADI+ Suriname will work with value chain actors to identify systemic problems and provide advice on investments and policies to foster an enabling environment for agribusiness and agro-industry.

The Food and Agriculture Organization of the United Nations (FAO) and the United Nations Industrial Development Organization (UNIDO) are jointly launching the Accelerated Agriculture and Agro-industry Development Initiative Plus (3ADI+).

3ADI+ is an integrated development programme which brings together technical assistance, public finance and private investment through coordination and linkages to develop inclusive and sustainable value chains and market systems. It is based on four pillars related to knowledge, coordination, funding and policy.

The wider aim of 3ADI+ is to develop innovative and sustainable value chain and market system development. Programmes will be rolled out in three pilot countries and 3ADI+ institutions and funding mechanisms for agricultural and agro-industrial development and investment will be set up.

Specifically, the 3ADI+ support would bring additional high-quality resources to assist in the early analytical stages of the Suriname Agriculture Market Access Project (SAMAP). The International Trade Centre (ITC) was identified as an important partner with good knowledge of the Caribbean context. 3ADI+ diagnostics bring the combined technical expertise of FAO, UNIDO, ITC, the International Labour Organization (ILO) and the German Organisation for Technical Cooperation (GIZ). Additionally, the Caribbean Development Bank (CDB) is likely to play a key role in de-risking investment linked to 3ADI+ technical assistance in light of their recent partnership with FAO.

3ADI+ will work with value chain actors to identify systemic problems within businesses and in the enabling environment to provide guidance on public and private investment and policies to foster an enabling environment for agribusiness and agro-industry.

FAO, UNIDO, and ITC want to initiate a dialogue on
a) Identification of focal points in LVV and HIT
b) Value chain selection
c) Timing to support SAMAP in 2018.

Both 3ADI+ and SAMAP will collaborate and operate within the wider framework of national Food & Nutrition Security (FNS) agenda in terms of the overall policy framework and multi-stakeholder institutional mechanism. The activity will focus on the pineapple value chain.

Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=709*
Project progress: *https://fns-suriname.getopensocial.com/node/182*

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Project 14: Proposed: Support for the reduction of postharvest losses in yard long beans and papaya in Suriname

Project period: *Pending approval by FAO*

Organizations:
Lead:

- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV)
  LVV- Onderdirectoraat Landbouwkundig Onderzoek, Afzet en Verwerking

Funding:

- FAO- Trinidad & Tobago

Objectives:

- strengthening capacity within the post-harvest sector to contribute to food security and nutrition, and trade by improving produce quality and safety, and reducing post-harvest losses.
- enhancing the income of farmers and particularly women who are actively engaged in post-harvest activities. (The project aims to further implement the results for Suriname from the regional PHL project).

Background: This project will measure losses at the field level, pilot the implementation of good post-harvest management practice to manage quality, assure safety, reduce losses and add value in two prioritized fruit supply chains, and measure the impacts of the interventions. Simple, practical, and appropriate post-harvest technologies and post-harvest management practices will be introduced and piloted with stakeholders. Successes, failures and lessons learnt through the implementation of the pilots will be analyzed, documented and disseminated. Extension brochures, specific to the two crops addressed, will be produced for widespread dissemination across the country.

Post-harvest losses in Suriname are largely the result of improper handling, transportation and packaging, poor storage and weak basic and post-harvest specific infrastructure and result in seriously diminished returns to producers and limiting opportunities for trade. An underlying cause of these losses is the limited awareness and knowledge base of stakeholders in the traditional supply chains where these losses occur. Improving postharvest storage infrastructure and introducing and enforcing grades and standards for agricultural produce are among the main challenges for agriculture, particularly for intra- and extra-regional trade. Suriname has identified post-harvest loss reduction as one of the priority areas for FAO cooperation in relation to strengthened application of technology innovation, research and development.

All actors along the food chain for papaya and long yard beans adopt to some extent the calculated PHL for these crops.

Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=689*
Project progress: *https://fns-suriname.getopensocial.com/node/162*

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Project 15: Proposed: (China) Agricultural Technology Demonstration Center in Suriname (ATDC)

Period: 2017 – 2022

Budget: Start-up costs from the Chinese side: US$ 350.000. Total budget: US$ 10.4 mln

Organizations:
Lead:
- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV);
  LVV-Onderdirectoraat Landbouwkundig Onderzoek, Afzet en Verwerking
  LVV-Onderdirectoraat Landbouw
  LVV-Onderdirectoraat Veeteelt

Funding:
- China - Suriname

Objectives:
- Setting up a modern demonstration center for agricultural technology with advanced applicable technology experiments, demonstrations, promotion, training and demonstration of new varieties, agricultural machinery and fish feed processing.
- improvement of the safe food production capacity in Suriname and to accelerate the transformation from traditional to modern agriculture with the help of technical training, service and the leading effect of the Demonstration Center.

Background: In June 2017 a diagnostic mission consisting of different experts from China visited Suriname.
This mission conducted field visits and stakeholder's meetings within the agricultural sector. The conclusion at the end of the mission was that there is potential for the establishment of a demonstration center with accommodation, greenhouses, packinghouse and hatchery/nursery for aquaculture. For this purpose 33 ha at Tawajari-polder in district Wanica has been identified.

There are indications for the possibilities for a demonstration center in Suriname. Therefore a feasibility study will be perform in this year.

Project description and documents: *https://www.share4dev.info/fns-suriname/noidentifiers.asp?myID=Project&key=705*
Project progress:

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Project 16: Proposed: (IICA/ Brazil) Support to Future Actions to Control and Eradicate Carambola Fruit Fly in Suriname

Project ID: BRA 13/008

Project Period: March 2017 – July 2018; Project document is under revision; the actual starting date of the project depends on the result of the revision. At this moment we are waiting for correspondence from Brazil.

Budget: US$ 113,714.00

Organizations:
Lead:
- Ministry of Foreign Affairs
- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV)
  LVV-Onderdirectoraat Landbouwkundig Onderzoek, Afzet en Verwerking; ODLOAV

Collaborators:
- Brazilian Government
- Inter American Institute for Cooperation on Agriculture- Suriname

Funding:
- Brazilian Government –Inter American Institute for Cooperation on Agriculture- Suriname

Objectives:
- review and update the results and activities to be carried out, per agreement between MAPA, IICA and LVV, in order to reformat Result 3 activities and suppress activity A4.3

Background:
This project is a review to adapt the previously Project work plan and activities to the current juncture of the technical cooperation program with Suriname to control carambola fruit fly. Considering that all activities described in this project are part of the enterprises carried out by the ministry of Agriculture, Livestock and Food Supply (MAPA) and the Inter-American Institute for Cooperation on Agriculture (IICA), as well as other initiatives pertaining to the matter by the Surinamese Ministry of Agriculture, Animal Husbandry and Fisheries (LVV), training as hitherto foreseen in this initiative must be updated to avoid duplication of efforts and the work plan must be adapted to the current needs and availability of partner institutions.
This project is a follow-up of a previous project; no activities are undertaken so far.

Project description and documents: *https://www.share4dev.info/fns-suriname/noidentifiers.asp?myID=Project&key=700*
Project progress: *https://fns-suriname.getopensocial.com/node/181*

Expected results:
- R1: Survey conducted with Surinamese technicians to know the capacity building they have identified as important to control and eradicate Carambola fruitfly in the country
- R2: Stronger phytosanitary defense system implemented in Suriname
- R3: Technical Capacity building plan prepared based on information resulting from R1.
- R4: Surinamese technician trained in the Amazon region Fruit Fly research network and other field activities in the scope of the national Carambola Fruit Fly Eradication Program
- R5: Final bilateral cooperation report prepared and validated by the involved parties.

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Project 1: Closed: (FAO/TCP) Updating Suriname's capture fisheries legal framework

Project period: 2014-2017

Budget: FAO US$ 116.000

Organizations:
Lead:

- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV)
  LVV-Onderdirectoraat Visserij

Collaborator:

- FAO- Trinidad & Tobago

Objectives:
Fisheries are managed more sustainably and efficiently on the basis of strong legal frameworks, which leads to better food security and income generation in a manner that is inclusive of stakeholder interests. The project also contributes to the meeting of obligations deriving from international instruments that Suriname has ratified.

Background:
The project provides assistance to Suriname in the development of an efficient legal framework for capture fisheries management in line with international best practices and obligations arising out of international legal instruments for fisheries. The project addresses the substantial shortcomings in the current legal framework for fisheries. These shortcomings relate to the absence of clear licensing procedures for marine capture fisheries, the inadequate framework for carrying out effective monitoring, control and enforcement, and the lack of a sufficiently detailed legal framework for inland fisheries, with conflicts of resource users and misinterpretation of existing legislation as a result.
• FAO (2014) reports that fish remains among the most traded food commodities worldwide, worth almost $130 billion in 2012 with a highly likely probability that the upward consumption trend will continue.
• Approximately, US$ 81 million (96% of export earnings in agriculture) is generated by four commodities: rice, bananas, fish and shrimps.
• The Government's facilitation approach prioritizes and actively promotes fishery and associated market clusters.
• Suriname's fisheries sector contributes between US$ 31-50 million per annum to foreign exchange; 5% to GDP
• The sector provides employment for 10,698 persons (2% of the population) and contributes to income and protein needs of indigenous communities.
• The country is the second largest fish producer from among the 17-member states of the Caribbean Regional Fishery Mechanism, producing 21% of marine fish production (or 28,483 metric tons meat weight) within the period 2006-2010.
• Suriname exports to markets with high food standards such as Japan, the USA, the EU (Netherlands, Belgium, France, United Kingdom and Spain) and to the Caribbean.
• In 2010, Suriname finalized a management plan for Atlantic Seabob (Xyphopenaeus kroyeri) and the fishery obtained Marine Stewardship Certification (MSC) in 2011.
• Recognizing that the high global demand for fish and fishery products cannot be met from marine fisheries, the Government of Suriname has placed high priority on the development of aquaculture. Aquaculture is mainly focused on the cultivation of tilapia, shrimp and native swamp fish. Also, the Government is actively promoting interests in ornamental fishery.
• Existence of a Fisheries Whitepaper 2011 and a Fisheries Management Plan 2014 – 2018.
• Current legislative framework encompasses the Fish Stock Protection Law (1961) and the Fish Stock Protection Decree 1961, the Sea Fisheries Law (1980), the Fish Inspection Act (2000) and a draft law on capture fisheries (2011).
• There are Regulations regarding the Vessel Monitoring System (VMS), and Regulations to prevent Illegal, Unreported and Unregulated (IUU) fishing.
• The current fisheries law: does not sufficiently address monitoring, control and surveillance; fails to establish a transparent licensing system; does not provide clarity on behavioral measures, which leads to tension among officials and fishers and among fishers; does not provide a clear cut division of powers and mandates of institutions; fails to address inland fisheries, save for a limited number of size limits and closed seasons; does not address the co-management for small fishing communities.

Results:
National authorities adopt and make use of updated National Fisheries legislation to control and manage fisheries activities and resources.

Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=654*
Project progress: *https://fns-suriname.getopensocial.com/node/102*

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Project 2: Closed: (FAO) ACP Fish II Programme

Project Period:01/06/2009 to 31/12/2013

Organizations:
Lead:

- ACP Fish II Coordination Unit
- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV); LVV-Onderdirectoraat Visserij

Objectives:

- Goal: contribute to the sustainable and equitable management of fisheries in ACP regions, thus leading to poverty alleviation and improving food security in ACP States.
- The specific objective of the Programme is to strengthen fisheries sectoral policy development and implementation.

Background:
The ACP Fish II Programme, entitled Strengthening Fisheries Management in ACP Countries is funded under the 9th EDF and is primarily designed to improve fisheries management in ACP countries and to reinforce regional cooperation for the management of shared stocks.

Weak and ineffective governance of the world fisheries has led to the widespread degradation and depletion of the natural resource base, resulting in greater poverty among fishing communities, a decline in food security and, in general, in sub-optimal use of fisheries resources. Weak policies and institutional arrangements and ineffective legal frameworks, combined with a lack of sectoral strategy, have been widely acknowledged as being a fundamental obstacle to effective fisheries management, and therefore to poverty alleviation and food security. Ineffective governance has also resulted in high incidence of Illegal, Unreported and Unregulated (IUU) fishing depriving ACP countries of substantial economic revenues.

Given that millions of people in ACP countries are dependent on fisheries for livelihood and nutrition, it is crucial that ACP countries strengthen fisheries management, both at the national and regional levels, by developing, implementing and enforcing sound fisheries management measures so as to ensure availability of fish to local communities, fish processors and exporters. Effective and sustainable management of fisheries resources is thus the most important pre-condition to continue harvesting social and economic benefits from fisheries and fish trade.

Project outline and structure:

The 5 components of the Programme are:
1. Improved fisheries policies and management plans at regional and national levels
2. Reinforced control and enforcement capabilities
3. Reinforced national and regional research strategies and initiatives
4. Developed business supportive regulatory frameworks and private sector investment
5. Increased knowledge sharing on fisheries management and trade at regional level.

The ACP FISH II Programme will facilitate the organization of relevant workshops and meetings on request by ACP countries or regional fisheries bodies. In order to define concrete projects within the framework of the programme, the ACP FISH II Programme will, through its Regional Facilitation Units, assist ACP countries and RFBs in the formulation of relevant projects.

Results:
1. Improved fisheries policies and management plans at regional and national levels
2. Reinforced control and enforcement capabilities
3. Reinforced national and regional research strategies and initiatives
4. Developed business supportive regulatory frameworks and private sector investment
5. Increased knowledge sharing on fisheries management and trade at regional level.

Project description and documents: *https://fns-suriname.getopensocial.com/node/104*
Project progress: *https://www.share4dev.info/fns-suriname/organisation_view.asp?organisationID=2343*

Contact:
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Project 3: Closed: (FAO/TCP) Fish Disease Monitoring

Project period: 01-02-2014/12-11-2016

Budget: USD 200,000

Organizations:
Lead:
- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV)
  LVV-Onderdirectoraat Visserij

Funding:
- FAO

Objectives:
- Design of a histopathological laboratory for the analysis of diseases in aquaculture species
- Aquaculture development strategy and disease monitoring plan are prepared and approved by the Ministry of LVV
- Updated Aquaculture Act

Background:
Strengthening aquatic animal health protection systems in Suriname – this TCP (June 2012 to December 2014) has 4 major outputs, namely:
(1) an updated Aquaculture Development Strategy and action plan finalised and approved by the Competent
(2) a National Strategy on Aquatic Animal Health Management in Suriname approved;
(3) a surveillance system for aquatic animal pathogen established and functional including an aquatic animal health information system; and
(4) capacity of aquaculture and aquatic animal health professionals in both public and private sectors strengthened through trainings and workshops.

Expected results:
- Purchase of laboratory equipment
- Analysis of parameters in aquaculture species

Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=667*
Project progress: *https://fns-suriname.getopensocial.com/node/100*

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Project 4: (GEF) Catalyzing Implementation of the Strategic Action Programme for the Sustainable Management of shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems (CLME+)

Project period:01/11/2017- 31/12/2019
Recipient Countries: Brazil, Guyana, Suriname, Trinidad & Tobago, Venezuela.

GEF Total Budget: USD 1,352,400
Budget for Suriname: USD 50,000

Organizations:
Lead:

- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV)
  LVV-Onderdirectoraat Visserij

Collaborator:

- FAO-WECAFC

Objectives:

1. Improving (fisheries resources) governance at the global, regional and national levels using internationally developed instruments and building on experiences carried out elsewhere in the world
2. Developing baseline assessment reports, regional status reports and strategies/action and investment plans for sustainable fisheries management
3. Developing and implementing sub-regional and national fisheries EAF management plans
4. Implementing improved data collection protocols, and regular analysis of fisheries data
5. Introducing plans and measures to address IUU fishing in line with international standards and agreements currently under negotiation
6. Developing web portals and relevant communication tools

Background:
The project will operate within the UNDP/GEF "*Catalysing Implementation of the Strategic Action Programme for the Sustainable Management of shared Living Marine Resources in the Caribbean and the North Brazil Shelf Large Marine Ecosystems*" (2015-2020) overall project (CLME+), FAO being one of the co-executing partners.

Fisheries are a highly significant provider of food (protein), livelihoods and income in the Caribbean and North Brazil Shelf Large Marine Ecosystems. The specific nature and direct causes of the problem and the required on-the-ground management solutions may vary depending on the ecosystem type, the species being fished, the type of fishery, and/or the gear being deployed.
It is perceived by regional stakeholders that Illegal, Unreported and Unregulated (IUU) fishing is a particularly important threat to the sector, and is a key contributor to social injustice and to the unsustainability of fisheries in the CLME+. The scope and magnitude of the IUU fishing problem in the region is not well known, but encompasses fishing and related activities by both nationals and foreign fishers in waters under national jurisdiction and on the adjacent High Seas.

Expected results:

- improved fisheries governance and sustainable exploitation of fisheries resources through the implementation of Ecosystem Approach to Fisheries-related activities,
- improved fisheries governance, higher quality data and information,
- guidance to combat IUU fishing.

Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=656*
Project progress: *https://fns-suriname.getopensocial.com/node/101*

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Project 5: (GEF) Sustainable Management of by-catch in Latin America and the Caribbean Trawl fisheries REBYC II LAC)

Project period:01/03/2015- 01/02/2020
Recipient Countries: Brazil, Columbia, Costa Rica, Maxico, Suriname and Trinidad&Tobago

Budget: GEF/FAO; USD 22.998.491
Budget for Suriname: USD550,000

Organisations:
Lead:
- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV); LVV-Onderdirectoraat Visserij

Collaborator:
- FAO-WECAFC

Objectives:
(i) Ensuring that enabling institutional and regulatory frameworks are in place
(ii) Encouraging effective management of bycatch through improved information, participatory approaches and appropriate incentives
(iii) Supporting enhanced and equitable livelihoods

Background:
Tropical and subtropical shrimp/bottom trawl fishing is highly multispecies, and the quantity of bycatch amounts up to 10-15 times more than the quantity of the targeted (shrimp) catch (in quantity). This bycatch is composed mainly of juveniles of targeted species of other fisheries and non-targeted species, small-sized fish species and incidentally caught turtles. Furthermore, the shrimp trawling may cause destruction of sensitive seabed habitats which is a concern. In general, shrimp and other key target species in the project countries are overexploited. Because of generally decreasing catches and increasing costs of operation, many fishers find it difficult to maintain the profitability of their operations. The root causes of these problems include the economic reality of the fisheries sector and global drivers such as growing demand for fishery products. While the project cannot easily change the macroeconomic context, it can address the barriers to better management of bycatch and in this way support the sustainable development of the trawling sector and the people who depend on and are influenced by it..

The Suriname seabob fishery has MSC certification and REBYC-II LAC will support the country's efforts to continue to improve management in that fishery. In fact, the seabob working group created for MSC Certification will be a model to follow during implementation of REBYC-II LAC. In this context, Suriname has already been working to test BRDs during first-year activities under Outcome 2 and will focus on continuing these tests to achieve better results. These activities will also include training fishers to successfully use new gear. While Suriname has an extensive fleet its fisher and fish worker organizations are rather weak. For this reason, activities under Component 3 will include meetings with fisher organizations and representatives of fishing communities to promote the creation and strengthening of fisher organizations and jointly explore potential alternative livelihoods

Expected results:
- Bycatch Reduction Device testing (BRD testing) are performed on all trawl fishing types
- Establishment and strengthening of fishersfolk organization;.Galibi, Visserscollectief, Boskamp, Coronie and Nickerie. SUNFO was founded as an umbrella organization for artisanal fishers.
- Awareness about MAS regulations and the Coastguard for fishing communities and others.
- Training of Coastguard personnel regarding fishing inspection at sea.
- Effect of MSC Seabob trawl fishery labeling on artisanal fykenet fishery.
- Updated Fisheries management plan.
- Gender equality in trawl fisheries and the role of women

Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=655*
Project progress: *https://fns-suriname.getopensocial.com/node/56*

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Project 6: (WWF) Training on Cooperative management skills and methodology, Value Chain Analyses and development, business plan development, food safety, for the small-scale fisheries sector in Suriname

Project period: 02/01/2018 to 31/08/2018

Budget: World Wildlife Fund Guianas: USD 20,000

Organization:
Lead:

- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV)
- LVV-Onderdirectoraat Visserij

Objectives:
Small- and Medium scale fishermen and their families (wife and children) need targeted education to become better businessmen/women and to strengthen their respective cooperative. It is necessary to implement a training program in the field of business planning, administration (planning and management), in practice, on food safety and quality issues related to fishery products.

Training of board members and members of the fisheries cooperatives. Therefore, we choose to focus to embed management methods, skills and knowledge to execute the role and duties of a Fishermen's association in representing the interests of its members. Development of the (local) fishery value chain management systems to meet food safety and quality responsibilities that will enable fisherman/women to increase their income to enable opportunities to further develop their companies

Background:
The artisanal fisheries is of significant value to our country in terms of total fish production and the provision of protein and employment for our people. Furthermore, the different types of fishing methods within the artisanal fishery are taking place within the coastal area and estuaries which are acknowledged as the breeding and nursing areas of the fish stocks. Taking a closer look at this subsector, we see that many of the activities including catch, processing and sales are still being carried out in a primitive and less organized way, despite efforts by the government together with partnering countries and organizations to improve the infrastructure and boost organization among the fishers since the 1980's. Overall, there is a significant level of uncertainty for operators due this dependency along with the increased and excessive fishing pressure leading to falling catches per vessel and the increase of exploitation costs.

Further, on national and community level, 5 separate fishers organizations have been formally established within the ongoing project "The strengthening of fishers associations c.q. cooperatives within the artisanal fishing communities Galibi, Commewijne, Paramaribo, Boskamp, Coronie and Nickerie" in partnership with WWF Guyanas and the Dutch Embassy in Suriname. The outputs include the formation and formal establishment of an overarching fisher's organization. Based on the information of the organizations we have identified the need for support in the areas of leadership and participation, management and organizational skills, as well as diversification, value adding, alternative livelihoods and quality control.

Expected results:
Building capacity of the Board members and leading members of the fisher's cooperatives on fishery association management practices, effective gender-sensitive member representation and extension services, fishery value chain development and entrepreneurship. As result of the training, participants will be able to represent the interest of the association's members towards other stakeholders in the chain and develop in the fishery sector in Suriname. This training will strengthen the knowledge and skills of the board members and leading members to explain and implement the concepts of:

- Skills and Methodologies to manage a fishery association.
- Representation of members' interest.
- Sustainable Development activities in Suriname Fish Value Chain.
- Sustainable Entrepreneurial Development.
- Develop strategies, Awareness Creation and Critical Thinking.

Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=697*
Project progress: *https://fns-suriname.getopensocial.com/node/146*

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Project 7: Proposed: Fisheries information technology innovation for resource management and climate change adaptation in the Caribbean (FT4CC)

Period: 31/01/2018 to 31/01/2023

Budget: FAO: EUR 10.000 000

Organizations:
Lead:

- Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF/ LVV); LVV-Onderdirectoraat Visserij

Objectives:
Increased resilience and reduced vulnerability to climate change impacts, thanks to increased decision-support knowledge generated through inclusive, modern and sustained fisheries information systems in the Caribbean fisheries sector.

Background:
Fisheries for states of the Western Central Atlantic Fisheries region, in particular for African, Caribbean, Pacific (ACP) countries and the Small Islands Developing States (SIDS) from the Caribbean are important for food security and nutrition, as source of livelihoods, income earnings, and also source of foreign exchange for national governments. However, the Caribbean region data deficiencies and limited statistical information hamper national policy-making and fishery management in a regional context of shared marine resources. The availability of data and statistics for stock assessment, fishery management and responsible development is a prerequisite to a functional Regional Fisheries Management Organization (RFMO). Clearly, data and statistics are also needed for national decisions on conservation and management as well, even more in the context of decisions required for Climate Change adaptation. Despite some regional European Union (EU) and Food and Agriculture Organization (FAO) programmes aiming at improving statistics supply chain in the Caribbean region, a lack of capacity to collect and exchange data and information, analyze state and trends of fishery resources and regional data policies remains.

The Fisheries Sector is proven to be strategically important in the region (up to 8% of the GDP for some countries like Guyana) and in particular for ACP (African, Caribbean and Pacific) countries and SIDS; this importance is anticipated to increase in the future. With catches having halved since the 1980s, there are strong concerns and likelihood of many commercially targeted fish stocks being overexploited or depleted in the WECAFC region. The sector has however the potential to make enhanced contributions to the region's economic and social development of major constraints facing the sector are addressed, such as the continued illegal, unreported and unregulated (IUU) fishing, overfishing, overcapacity in the sector, unsustainable practices, limited cooperation between countries and fleets, and inadequate attention to climate change impacts on stocks and fisheries. There is an immediate need for enhanced resource conservation and management, concerted rebuilding of depleted stocks, collaboration to combat IUU fishing, while addressing gender inequality, and focusing attention on the challenges posed by rising sea temperature and other climate related changes, improving sanitary and phytosanitary systems as well as the capacity in fish trade.

Expected results:
1) Strengthened CARIFORUM countries' (mostly Caribbean Small Developing States (SIDS)) capacities in producing science-based evidence for sound management decision making in both fishery and aquaculture sub-sectors.
2) Enhanced regional collaboration, data and information sharing among Caribbean countries and their integration in a regional governance context.
3) More integration of climate change information into fishery management decision-making processes.

Project description and documents: *https://www.share4dev.info/fns-suriname/project_view.asp?projectID=658*
Project progress: *https://fns-suriname.getopensocial.com/node/103*

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