

The Overall Objective of the Programme is to increase sustainable and inclusive economic development of rural areas.

This will be achieved through a combination of two integrated outcomes:

(1) increasing the economic returns and opportunities from three selected value chains (cocoa, vanilla, fishery) while in parallel;

(2) strengthening and improving the efficiency of value chain enablers including the business environment and supporting sustainable, climate proof transport and energy infrastructure development.

Under outcome 1, major outputs will include increased volume, value and improved quality of cocoa, vanilla, fisheries products, more value addition and an increased number of people and enterprises engaging in and benefiting from improved value chain development. Benefits planned include both increased income and enhanced food security and nutrition at household level and job creation.

Under outcome 2, major outputs planned include an increased number of people employed and agripreneurs and MSMEs engaged in the selected Value Chains benefiting from reduced transaction costs and time, improved access to finance, increased availability and usage of digital tools and services. Increased availability of renewable energy, improved energy efficiency and access to rehabilitated roads, landing sites, and lower transport costs are also planned.

Target beneficiaries will include a range of Value chain stakeholders including local agripreneurs and MSMEs, farm families and their organisations. Women and youth will be prioritised as beneficiaries with set targets and specific resources to be set aside to ensure their fullest engagement and benefit from Programme activities.

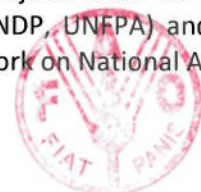
Planning for sustainability and ongoing and future climate change impacts was a key factor in the intervention logic. The target beneficiaries will receive a range of direct and indirect benefits which will motivate them to continue their engagement in the three value chains after the completion of the Programme and learn to integrate climate projections and adaptation in their operations.

Direct benefits include increased income for producers, traders, agripreneurs and local MSMEs and enhanced adaptive capacity to climate change, as well as food security and nutrition. Indirect benefits include an improved policy, regulatory, business and digital environment.

Based on lessons learned from previous EU funded programmes, substantive local government and community engagement in Programme planning and implementation is foreseen including throughout the planned 12 months inception phase. To ensure effective management, coordination and ensure timely delivery of such a large and integrated Action, a single and recognised technical lead agency, such as FAO, is required. Complementary blending actions will/can be considered under the investment window of the EU Pacific Regional Indicative Programme.

1.1.2 Alignment and Strategic Fit

In the framework of the cooperation with the European Union (EU), Papua New Guinea signed the National Indicative Programme (NIP) under the 11th European Development Fund (2014-2020) in June 2014 for € 185 million, mainly to the Agriculture sector but also to Education and WASH. The agriculture allocation in its entirety will be committed through the Support to Rural Entrepreneurship, Investment and Trade in Papua New Guinea (STREIT PNG). The EU STREIT project will be implemented in close collaboration with other EU-funded projects such as emerging SPOTLIGHT on Gender Based Violence (jointly implemented, UNICEF, UNDP, UNFPA) and strongly linked to ongoing FAO and UN Partner Agency work such as the ongoing work on National Agriculture



Policy being supported under the FAO Technical Co-operation Programme, the UNDP led GEF programme on Climate and Energy and the PFIP²¹ being implemented by UNCDF

FAO's Strategic Framework. This project is mainly linked to two Strategic Objectives: SO4 – Enable inclusive and efficient agricultural and food systems and SO2 - Make agriculture, forestry and fisheries more productive and sustainable. In addition, the project falls under the umbrella of FAO's Regional Initiative for the Asia Pacific Region 2 – Zero Hunger Challenge.

The STREIT project is mapped to the following FAO Organizational Outcome (OO):

- OO 402 - Agribusinesses and agri-food chains that are more inclusive and efficient are developed and implemented by the public and private sectors,
 - 40201 - Public sector institutions are supported to formulate and implement policies and strategies, and to provide public goods that enhance inclusiveness and efficiency in agri-food chains (10%)
 - 40203 - Value chain actors are provided with technical and managerial support to promote inclusive, efficient and sustainable agri-food chains. (65%)
- OO 201 - Producers adopt practices that increase and improve agricultural sector production in a sustainable manner. In terms of concrete outputs, the project will contribute to the following outputs:
 - 20103 - Organizational and institutional capacities of public and private institutions and networks are strengthened to support innovation and the transition toward more sustainable agricultural production systems.

The programme elements are also aligned with three of the four priority areas of Papua New Guinea's Country Programming Framework (CPF) for PNG (2016-19) i) Food and Nutrition Security; ii) Food Safety, Quality and Certification systems; and iii) Value Chain Development for Strengthening Food Systems. This programme design is also consistent with existing regional platforms and initiatives such as the two Alotau Accords and the Small Island Developing States Initiative of FAO of which PNG is a part.

1.1.3 FAO's Comparative Advantage

FAO has been identified by the Government and the EU as implementation partner for the FAO/EU programme, on the basis of its comparative advantage and specialised technical expertise in agriculture and food systems development in Papua New Guinea working with both public and private sectors and having specific competences related to inclusive and efficient value chain development, improved trade, enterprise development and productive alliances.

The comparative advantage of FAO lies in its role as the recognized agency for agricultural knowledge, integrated capacity building, technical cooperation, support to rural and agricultural investment, and the collection and dissemination of global information. FAO's broader developing country experience and wider mandate would assure success of the Project in terms of meeting wider development goals such as gender equality, equitable benefits, and indicators under the Sustainable Development Goals (SDGs) and the SIDS Accelerated Modality of Action (SAMOA) Pathway.

A more project-specific comparative advantage, developed for this project, focuses on FAO's technical support in the following areas: a) Sustainable and Inclusive Food Systems and Value Chain development; b) Development of an enabling VC environment including work at national Policy, Strategy and Regulatory level.

²¹ Pacific Financial Inclusion Programme



- a) **Sustainable value chain development:** FAO has been involved in advising on policies and strategies to improve VC competitiveness, including fostering better coordination and linkages among business partners. It has been producing training materials, in particular for small farmers and for managers of agro-food processing enterprises who need technical, managerial and business planning training.
- i. In country, the EU already supports FAO in implementing an innovative new project on Forestry/Natural Resources, “Technical support to the Papua New Guinea Forest Authority to implement a multi-purpose National Forest Inventory”. The purpose of the project is to support the Papua New Guinea Forest Authority to implement a continuous and multi-purpose National Forest Inventory to enable better future management and more effective use and benefit for the country.
 - ii. FAO provides technical support to the government in development of an Action Plan for the National Food security Policy, fisheries legislation and support for capacity enhancement for the NDC working on climate change.
 - iii. FAO is already implementing the EU funded Global wildlife Project which also covers PNG as one of the main countries of implementation.
 - iv. In addition to the EU funded projects with activities in PNG, FAO is currently implementing 165 EU funded actions with a total value of USD 1billion worldwide (data as per September 2019, including the recently signed Euro 40 million FISH4ACP project).
 - v. Throughout the last decade, FAO has been working on the promotion of Sustainable Food Value Chain Development network (SFVCD) which collaborates closely with the EU VCD groups, providing practical guidance on SFVCD by facilitating the spread of innovative solutions emerging from the field globally to a target audience of policy-makers, project designers and field practitioners, promoting and supporting the development of sustainable and inclusive food value chains.
 - vi. FAO has a long history of technical assistance to member countries in the Asia Pacific region targeted at agriculture and rural development through a range of projects covering areas related to improved market access, marketing and agribusiness, sustainable and inclusive value chain development, participatory and inclusive community engagement and development, sustainable intensification of plant production (including farmer field schools as a participatory extension approach) and digitalisation.
 - vii. Similar large scale food systems/value chain development programmes have been successfully implemented and are being up scaled in challenging and insecure situations including locations such as Afghanistan and Pakistan.
 - viii. Further afield, the FAO implemented a component under the EU funded All African Caribbean and Pacific states (ACP) Agricultural Commodity Programme (AAACP) supporting the professionalization and agribusiness skills of farmers’ organizations in the region. The aim was to strengthen the organizations’ business model. Under the AAACP, the Inclusive Business Models (IBM) approach was developed and pilot tested by FAO and will be applied in this programme.
- b) **Enabling Environment:** To facilitate local agro food enterprise development as well as trade, the FAO assisted the Government of Papua New Guinea with:
- i. Drafting the National Agriculture Development Plan
 - ii. Providing support for the development of the National Agriculture Strategy Plan in 2019.
 - iii. Food Security Policy drafting in line with the 2016 National Nutritional Strategy done by UNICEF.
 - iv. Preparing the eAgriculture Strategy for Agriculture in collaboration with DCIE. This project was implemented in close collaboration with NICTA and consultation with a



range of stakeholders from both the private and public sectors) and is now with DCIE for submission to cabinet for approval.

- v. Support for the development of the Coffee Industry Strategic plan in 2018/9
- vi. In 2017/8, FAO, through its Technical Co-operation Programme is supporting the development of a Gender Assessment in Agriculture. The first draft has been prepared and consultations are ongoing with the Women in Development colleagues of DAL as well as local governmental, civil society and the private sector. That Assessment will inform the development of new national level Gender in Agriculture policy/strategy to be developed in close consultation with the Government of PNG.

1.1.4 Stakeholder Consultation and Engagement

1.1.4.1 Stakeholders

The following stakeholders have been engaged in a consultative process during project formulation, mainly led by the EU and Government of PNG at country level which started in June 2016.

Entrepreneurs: are the main drivers of local sustainable agri-businesses development, entrepreneurs will be responsible for the success of selected actions. They are among key direct beneficiaries of the actions and will gain benefits from improved provision of services to an improved business environment and actors' capacities. Local entrepreneurs and particularly women will be supported to ensure their participation and direct benefit from the project. In addition, entrepreneurs will also benefit from certification support and enhanced access to finance and better roads and transport for improved market access and ease of doing business. The bulk of the project investments are planned with the local private sector/enterprises with an emphasis on MSME's.

Small-scale farmers: These are the end beneficiaries of the intervention. The programme aims to increase production, revenues and improved socio-economic conditions for small scale farmers (est. 30% women), including in isolated and disadvantaged communities. Farmers' groups, cooperatives and associations are few and in general very weak. Women farmers are a sub-group that will be specifically targeted by programme mechanisms.

Local Government/Office of the Governors/Provincial Administration: They are at the same time stakeholders and partners from formulation through to finalising the project scope and design. The Province has already engaged funds to prepare the ground: e.g through investments and engagements in cocoa nurseries, and other actions. The programme will continue to proactively engage with the local government structures and actions such as the SMART COCOA in the Sepiks to ensure close collaboration in implementation of activities on the ground.

Parastatals and Commodity Boards: the Cocoa Board will be an important partner for improving the productivity and efficiency along the cocoa value chain. They will also benefit from capacity development both as a service provider and recipient of specialised technical expertise, including for enhanced knowledge and market access and trade and quality improvements linked to the ongoing STDF. For Vanilla the Spice Board may be amalgamated into the DAL and can play a role in improved productivity as well as linkages to buyers and access to and contracting for international markets.

Department of Agriculture and Livestock, (DAL): Main programme counterpart, sector regulator and service provider for small-scale farmers. DAL also plays an important role in food safety capacities and standards, including responsibilities for laboratory analysis of raw products. Key services supported by the programme will be: Direction of Planning, Agricultural Production, and Extension at both central and provincial level.



Department of Communication, Information and Energy (DCIE)/NICTA: The national E Agriculture Strategy was recently approved, developed with the support of FAO. With the expanded remit of DCIE recently into energy, the department will be an important partner in both the ICT and renewable energy components which will heavily invest in solar powered renewables at project level. The programme will also link with PNG Lighting²² on solar equipment standards.

National Fisheries Authority, (NFA): with fisheries as one of the key Value Chains to be addressed, the NFA is mandated for fisheries development in PNG and will be a key partner both at the national and also at provincial level. Fisheries activities of STREIT will be integrated into the work plans of NFA.

Department of Works: In line with government policy, significant investments are planned in the maintenance and improvement of the road network and possibly also riverine basic infrastructure in the project area.

Ministry of Commerce and Industry: Responsible for trade related issues, including export of agriculture commodities as well as SME development. The Standards Bureau is a statutory body under this Ministry. The standards bureau is responsible for setting up food-related standards. The Ministry is also one of the key institutional players for standards and certification as well as SME development.

Civil Society Organizations and Associations: Direct beneficiaries of interventions across all value chains and they will play an important role in supporting disadvantaged farmers groups, traditional and isolated communities, linking them with programme mechanisms and enabling them to access expected benefits. They will also play a role in oversight and monitoring.

Academic and training institutions (The University of PNG, the newly established Sepik Rural Technology College in Maprik and local NGO's and Parastatals such as the Small and Medium Enterprise Corporation (SMEC)): National capacity development and research institutions supporting education as well as a range of services for VC stakeholders (entrepreneurs, farm families traders and exporters (including improved planting materials, training of trainers and quality control and certification services)

An in-depth review of the Key Activities developed by FAO with DAL and NFA to orient the project was held in Port Moresby in February 2019 with over 75 participants from state (central, provincial and district level) who reviewed and improved the Key Activities which were designed based on the EU defined outputs as per the EU Action Document approved in November 2018. These Key Activities then formed the basis for development of more detailed proposals from each of the participating UN Partners, including engagement of local, provincial and central government. The final Programme Validation Workshop was organized by DNPM following signature of the FA in August 2019.

Intensive stakeholder engagement will continue throughout the project including the setting up of stakeholder working groups around the three value chains and major investment areas such as roads, renewable energy and access to finance.

1.1.4.2 Targeting

This project will target the provinces of Sepik initially and pending the outcome of the Mid-term review may be expanded to Morobe after the Mid Term Review. Sepik province is currently organized in two sub provinces – East and West Sepik. The main beneficiaries will be agripreneurs and smallholder farm/fishing families which make up the bulk of the producers in the project area.

²² Lighting PNG, a WB/IFC initiative works with the government of Papua New Guinea to regulate solar products entering the market by submitting them to a quality certification process.



The roads component is expected to deliver significant benefits in terms of a high number of beneficiaries. The current EU AD indicator for roads is the number of persons living within a 2 km distance of a road which is rehabilitated or maintained by the project.

The programme will focus on the main producing areas of the three selected commodities which are cocoa, vanilla and fisheries. Most farms are smallholdings, with less than 0.5 ha, with three to four different crops as well as fruits and food gardens. Most small-scale farmers depend on their smallholder plot for their livelihood. Returns from farming are irregular, and reported to be low. According to DAL, there are currently over 700 established cooperatives registered in the project area, only a few are really functioning. There are many more informal producer groups. There are no stakeholders that may be potentially negatively affected by this project.

Specific focus will be given to women and farmers from tribal and indigenous groups (see hereunder) and specific numbers for targeting will be finalized during the one year Inception Period.

1.1.4.3 Stakeholder engagement

This project was prepared based on in depth consultations which were organized by the EU Delegation with a range of stakeholders in PNG since 2016, and which included FAO participation in five scoping and design missions, conducted in November 2017, March and May 2018, February and April 2019. Other UN Partners also undertook in country preparation missions in 2019.

A project preparation task team was assembled in RAP and PNG, with intensive consultations with the following Departments: Department of Agriculture and Livestock, Trade, Industry and Tourism, communications, Information and Energy, Roads, and the NAO (Department of Planning and Monitoring).

The EU Delegation held a series of consultations, workshops and briefing meetings during programme development with local, provincial and national government level when developing their Action Document. This included inter alia, visits undertaken to the Sepik province in November 2017 and included the following districts: Maprik, Wewak and Yangoru Saussia. The EU/FAO mission met with farmers, farmer groups (including women's sub groups), cooperatives, agro-processors and traders and exporters. In May 2018, February 2019 and April 2019, a number of the participating UN agencies fielded mission to the project target area to scope and assess the needs and issues as well as design of interventions for the Programme.

Project design also benefitted from an EU organized VC4D Cocoa value chains consultancy team (social, environmental and production) visit to PNG (including Maprik) in March 2018 and FAO also participated in their debriefing in Port Moresby. Wrap up sessions were held with representatives from the Stakeholders' task team, as well as the DAL, DAPM and additional stakeholders and development partners after each mission. Other missions and consultations were also undertaken by the UN partners involved in the programme.

More detailed Free Prior and Informed Consent (FPIC) processes will be conducted at the beginning of the project during the planned and necessary 12 months Inception Phase, and before specific activities will be implemented in the areas. Indigenous and tribal groups of farmers/ cooperatives will be specifically targeted under Component 1 through engagement in improved land use for VC development in the three selected value chains in which they are already engaged, using existing cocoa plantations and without changing in any cases the land use from current primary or secondary forests.



1.1.4.4 Grievance Mechanism

The **Project Implementation and Management Unit (PIMU)** will set up a grievance mechanism to receive concerns and complaints regarding project activities and how to improve project implementation. This grievance mechanism will consist of a phone number (hotline) and contact name and address for written communications prominently displayed in areas where the project is active, urging people to call and report grievances and complaints. Mobile phone coverage was confirmed in almost all of the project areas.

The response/contact point will be located at the Department of Agriculture and Livestock, planning section, who will relay complaints to the National Project Coordinator and the Project Co-ordinator of the PIMU, and monitor follow-up. The PIMU will record all grievances and note how these were handled. Serious allegations will be communicated to the NAO for information and possible action in consultation with the FAO PNG and RAP office and the EU Delegation.

1.1.4.5 Disclosure

Information regarding this project will be disclosed in the local media (newspaper) in English and the locally used Pidgin and Motu. FAO is leading the development and management of the communication and visibility plan of the project (see Annex 2 of the Contribution Agreement) which will adhere to the FAO and EU standards for quality of video, written and all published materials and include the agreed level of visibility of the EU²³ to be discussed and agreed in Port Moresby. By design, support to producers and producers' organizations will be demand-driven. All UN Partners will contribute to the regular communications products of the programme.

1.1.5 Knowledge Sharing and Lessons Learned

Experiences from EU and other projects carried out in PNG over the period 2010 to 2017 show that for programmes to be effective, attention must be given to strong engagement at community level and in-depth consultations at both provincial and national level. One of the largest ongoing agriculture development projects in the country the World Bank led Productive Partnerships in Agriculture Project recently provided the following key lessons learned:

- Engage communities and begin any grassroots and cocoa productivity activities such as nurseries early in the programme as these require at least 18 months after planting to be productive.
- Focus on less geographic area for impact and have transparency in beneficiary selection.
- Engage with the local institutions and private sector to build sustainability beyond the life of the project for value chains.
- Include socio-economic considerations in the design and implementation and to knowledge management for enhanced dissemination of results and greater awareness. Further, that it is important to facilitate private sector engagement and interventions.

Lessons learned during project implementation will be documented, communicated and disseminated as per the Programme Visibility and Communications Plan. This also includes substantial investment in sharing of knowledge between communities in the programme area as well as sharing and transfer of knowledge among and between enterprises and other value chain stakeholders.

²³ The programme Visibility and Communication Plan is attached to the Contribution Agreement as Annex 2.



1.2 EXPECTED RESULTS

1.2.1 Impact

The **Overall Objective** of the Programme is to increase sustainable and inclusive economic development of rural areas.

The **Specific Objectives** are:

SO1: Increased economic return from three selected value chains

With the following results:

Output 1.1: Increased sustainable production and inclusiveness of the Cocoa value chain

Output 1.2: Increased sustainable production and inclusiveness of the Vanilla value chain

Output 1.3: Increased sustainable production and inclusiveness of the Fishery value chain (coastal, riverine and aquaculture)

SO2: Strengthened, climate resilient and more efficient value chain enablers.

With the following results:

Output 2.1: Conducive business, trade, policy and regulatory environment for sustainable rural agripreneurs and MSMEs established

Output 2.2: Value chain support services strengthened and resilient to climate change impacts

Output 2.3: Increased production of, and access to renewable energy systems

Output 2.4: Improved and climate-proof rural transport infrastructure

The geographical scope of the Programme will initially be focused on the East Sepik and Sandaun provinces. After the mid-term review of the programme, cocoa value chain development activities will be considered for expansion to the neighbouring provinces of Morobe and Madang for those activities that require heavier localised investment.

In view of the recognised scarcity of data, and especially related to rural areas, a comprehensive baseline survey will be undertaken during the Inception phase in Year 1 to update the logframe and refine targets and indicators of the Programme.

Women and youth will be prioritised as beneficiaries with set targets and specific resources will be set aside to ensure their fullest engagement and benefit from Programme activities. The updated and detailed logframe will be presented to the Project Steering Committee co-chaired by NAO and EU for review and approval by month 11 of the one year Inception Period.

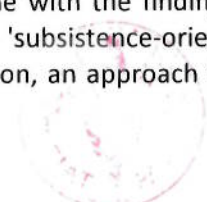
A more detailed breakdown of the planned results per output and some key activities are outlined hereunder by SO and Output.

SO1: Increased economic return from three selected value chains

Results

Output 1.1: Increased sustainable production and inclusiveness of the Cocoa value chain

Activities under this component have been developed to address the limitations to the expression of the full and inclusive potential of the Cocoa Value chain in the region of intervention. Key Activities under the Programme will promote high quality production and increase of revenue through the adoption of improved and certified sustainable practices along the value chain. Farm families and other value chain stakeholders will be the main target of support. In line with the findings of the VC4D cocoa value chain analysis, specific attention will be paid to the 'subsistence-oriented wet beans producers and rather than a 'silo' promotion of cash crop cultivation, an approach favouring



integrated production of food and commercial agriculture by farmers will be favoured as a guarantee of a healthy and sustainable basis for rural development in PNG. FAO will lead the delivery of this output with the support of the other UN Partners.

The existing VC study report will firstly be updated by FAO during inception, particularly with price data for the current economic models (see Appendix VIII) and the baseline carried out to set more detailed targets. Based on available data, scenarios and interventions to improve specific points in the cocoa value chain indicate an IRR of 72% for improved cocoa fermentaries and an IRR of 21%, up from 13% for cocoa producers from the current baseline. These scenarios appear are very positive and have been calculated based on a conservative dry bean price of 1.5 K/kg for producers and 5 K/kg dry bean price for fermentaries and will be updated during the Inception phase.

More detailed mapping of production and Value chains by FAO will further enhance programme design by the UN Partners and targeting for impact under a tailored joint M&E framework and in the development of joint Annual Workplans and Budgets.

Improving the availability of **Cocoa Pod Borer tolerant planting material** will be an essential and priority component of the action by FAO, together with improved management of cocoa plots to make them resistant to drought or other climate-related risks. This will include the expansion of **existing and some setting up of new cocoa bud gardens** as a priority based on lessons learned from the PPAP and other interventions as it takes 1.5 years to have planting materials then available for use by smallholders. In collaboration with the Cocoa Board and partners, these planting materials will be provided on a cost share basis to smallholders and their enterprises.

Support is also planned by FAO for **improvement/rehabilitation of existing cocoa plots** and the introduction of improved climate smart agriculture practices such as Integrated Pest and Disease Management, nitrogen fixation, improved water management, reduced soil erosion measures and shade management including the use of shade trees and diversification into other high value cropping trees and foods for improved family nutrition and marketing.

Substantial investments are planned by FAO in improving capacity through ToT and Farmer field Schools approaches for on **GAP as well as CS practices** and enterprise development and based on lessons from recent projects, periodic refresher training is also scheduled. Local farmer to farmer and community level learning tours to other more advanced cocoa production areas in PNG are also planned (ENDB and AROB for example).

FAO will promote and develop **improved drying and storage of beans** to ensure the **enhanced quality and eliminate smoke tainting**. The provision of improved combined solar driers to reduce smoke taint appears to be showing very promising results under the ongoing WBG-EU-IFAD project (PPAP). This may be linked/contribute to the increased availability and utilisation of renewable energy through the second component of this project but will focus on local skills and enterprise development in applying solutions such as use of stainless steel pipe/sheets by local agripreneurs in improved or combination dryers.

The option of enhancing local fermentaries/drying technology and of improving **market linkages** between producers, traders and exporters will be explored by FAO. This will include the application of renewable energy solutions for the cocoa drying and storage processes. This can represent as well an option to develop a better access to finance as well as improved agribusiness opportunities for local agripreneurs and MSMEs.

Specific resources are provided to support the **introduction and implementation of certification processes and standards** by FAO for a range of options for cocoa VC stakeholders including on food quality management such as Hazard Analysis Critical Control Point (HACCP) (ISO 22000), ISO 9000



series and also on Organic, Fair Trade, Rainforest Alliance, Carbon Neutral, Geographic Indication (GI) and territorial development and others. Some of these may require improvements in the national regulatory or policy frameworks and investments are provided for the expertise and capacity development required to improve these also.

Market coordination and improved producer capacity will be supported by FAO in the development of local MSME capacity and expansion of farmer clusters or collective marketing groups, linked to the district community resource centres and improved market information and product quality. Some support will be considered by FAO for a Business Incubation Centre, linked to the local partner SMEC which already has an operational training centre in Wewak. Options for **contract farming in cocoa** production will also be explored in collaboration with the local private sector.

Links to digitalised services (product, input and market information for example) and improved financial literacy and access to e-banking/mobile or local bank facilities and applications (due to theft risks) will also be supported through ITU and UNCDF. Through the facilitating the uptake and organization of improved market access and reducing cash transactions, security for VC stakeholders will be improved.

A local input/supplier and traders' directory will be developed to foster improved local agripreneurial development and sustainability by FAO.

Public-private partnerships are also envisaged by FAO with the local fermentaries and agripreneurs to engage with farms/groups/communities and explore and support **value addition and job creation**. This will include improved grading and quality inspection for the VC stakeholders as well as improved bagging, labelling and storage of cocoa to reduce losses and improve quality and preservation. This may include the development and set up of improved local level storage and grading facilities as well as production of cocoa powder, cocoa butter and related enterprises and include higher-level value addition such as partnerships with chocolate manufacturers, national and international. The MSME 's and the Cocoa Board will be directly supported and participate in making and ensuring delivery of these improvements.

Support through FAO for MSME's will also focus on the pull side of markets, supporting increased market opportunities for beans, semi-finished products as well as higher value added products (e.g., chocolate) in regional and international markets.

Significant investment are planned by FAO in **capacity development** ranging from improved production practices, financial literacy (relevant arrangements will be discussed during the inception phase) , cocoa sorting, quality and grading, enterprise and marketing skills HIV/AIDS, hygiene (linked to WASH) and enhancing nutrition, to reduce stunting specifically. A high level of participation by women is planned as they are responsible for many of the tasks but also in making daily important choices for family nutrition.

The Programme will also promote increased **transparency in terms of market pricing and transactions**, facilitated by digital services, including through enhanced knowledge of market demand and product quality requirements to optimise returns and market access for a range of VC stakeholders (smallholder farm families, local agripreneurs and MSMEs, traders and exporters.

Activities are also foreseen to improve local value addition and facilitate the development of certification of enhanced cocoa quality eg. Organic, Fairtrade and GI and Territorial Development. Support is also planned for organization and participation in provincial, national and international events related to cocoa industry development.



Gender issues will be strongly covered by FAO as well to ensure a fair participation of women in the benefit of increased cocoa production whilst preventing an increase of the burden of women compared to men. Women and youth will be specifically targeted and funds set aside, including for women trainers, to ensure their participation and benefit from dedicated resources for sustainable VC development.

FAO will strengthen industry and market coordination and capacity at Provincial and National level with the Cocoa Board and reinforce links between farm families and local agribusiness for improved access to market, technologies and services (e.g. through digital services and solutions).

Support for **improved labour saving technologies and practices** is planned by FAO for women and men. For women in particular, these technologies will aim to reduce drudgery at household level, including through solar pumps for water and tools and higher quality inputs for food production and marketing by women. This is linked to output 2.3 which also foresees the introduction of higher energy efficiency stoves for cooking to reduce women and girls workload in collecting firewood for daily household cooking needs. The use of renewable (solar) energy in cocoa drying at enterprise level will also be promoted among women and men in the target communities.

FAO will work with **local institutions and research organizations** such as the Sepik Institute of Rural Technology on the development and tailoring of suitable solutions in the project area. Practical and theoretical training will be provided and considered essential for P2P and B2B learning and adoption and in-service delivery.

The Programme team will also support enterprises in examining options for accessing blended financing e.g. from the EU and others for upscaling of local cocoa enterprises as well as development of higher value cocoa products in cooperation with local and international ingredient or chocolate companies.

Activities under this component **are intrinsically linked to component two** on VC support services development and national issues on access to finance, improved transport and road infrastructure, and increased access to renewable energy, ICT and national policy, strategy and regulatory development and dialogue. At local level, and from the onset of the inception period, the programme will explore collaboration with planned Provincial and district level investments (PSIP, DSIP) in the implementation of activities focused on sustainable Cocoa VC development to ensure complementarity and avoid overlapping of funding.

Output 1.2: Increased sustainable production and inclusiveness of the Vanilla value chain

The approach for this value chain will in some locations complement the support provided for the cocoa VC as some groups of farm families and VC stakeholders are involved in both VCs. The following are the Key Activities identified to deliver the above output. These Key Activities (highlighted) were developed based on the EU VC4D analysis of the vanilla VC, reviewed by DAL and then a national stakeholders workshop held in February 2019 in Port Moresby. FAO will lead the delivery of this output with the support of the other UN Agencies.

The VC study report will firstly be updated by FAO during inception, particularly with price data for the current economic models (see Appendix VIII) and the baseline carried out to set more detailed targets. Based on available data, interventions to improve specific points in the vanilla value chain indicate high Internal Rates of Return (171%) from this high value crop. Continued market access and quality improvements will be essential to not repeat past loss of valuable export markets and the reputation of PNG vanilla and have been planned by FAO.



More detailed mapping of Value chains by FAO will further enhance programme design and targeting for impact under a tailored M & E framework. Gender awareness sessions and gender trainings will be prioritised for delivery to the programme staff as well as through a TOT in the Inception Phase.

At Policy and strategic level support by FAO may be considered for the Spice Industry Board (SIB), possibly in collaboration with the emerging WB DCAP project and DFAT. This will be reviewed during the Inception phase as the scope and depth of the planned WB investment are still being refined in collaboration with DAL. Support is planned to national bodies on vanilla quality control standards, regulations and a Code of Practice may be developed in collaboration with the private sector and exporters.

At production level the provision of **improved vanilla vines** through FAO is seen as essential to enhance quality and productivity. This will be combined with improved climate smart agriculture practices such as improved water management and vanilla plot soil nutrient management (e.g. introduction of nitrogen fixing leguminous food crops) and climate proofing.

Support is also foreseen through FAO for **improved production practices** such as better tools and equipment, including labour saving devices for vine pruning and plot management for women and men to optimise production and reduce drudgery, including in water management for food crops. Some crop diversification for improved food production for household and local food markets is also foreseen.

Substantial investments are planned by FAO in improving capacity through the development of updated and detailed training materials for delivery through ToT and Farmer field Schools approaches on **Good Agriculture Practices (GAP) as well as Climate Smart (CS) practices** and enterprise development. Based on lessons learned from recent projects, periodic refresher training is also scheduled. Local farmer to farmer and community level learning tours to other more advanced vanilla production areas in PNG (NARI, Lae) and beyond are also planned (Madagascar/Uganda for example).

With the **important role of women and youth** in the essential pollination process, significant resources will be allocated by FAO to ensure that women and youth will be included and benefit from targeted and detailed technical capacity development activities on improved pollination. To address insecurity at farm level, the option of traceability and certification of farmers is to be considered as well as other measures which are applied in other large vanilla producing nations such as Madagascar where a level of local tattooing or branding of the pods is now widely practices.

Timely harvesting and curing of the vanilla is an essential part of both developing and ensuring quality for a variety of market demands. Support will be provided through FAO in the form of kits as well as training in improved curing and drying linked to the introduction of renewable energy solutions for controlled curing, drying and improved packaging processes to reduce workload and improve market options for smallholders and their enterprises. Some support can be considered for larger curing enterprise such as community level curing houses currently being tested by DAL in Maprik. This will be assessed during Inception.

Enterprise development and improved profitability for the SME's is a key part of ensuring economic sustainability within the Vanilla Value Chain. Support will be provided by FAO for a range of interventions to support improving the efficiency as well as profitability of clusters/marketing groups/SME's including on basic financial literacy (also for producers/groups), accounting, calculations for cost benefit, marketing and business planning and operations, audit, reporting, linked to UNCDF work on improved access to finance. Women and youth will be specifically targeted and funds set aside, including for women trainers, to ensure their participation and benefit from dedicated resources for sustainable VC development.



Public private partnerships with the local vanilla exporters, traders and processors will be an important part of the vanilla VC development approach of FAO with co-operation and partnerships planned in a range of activities including in vanilla grading, market quality requirements, curing and drying processes, packaging, market information and access to finance. Future contracting of vanilla production will also be explored as well as support for organization of and participation in local, provincial, national and relevant international events and trade fairs. A local input/supplier and traders' directory will be developed to foster improved local enterprise and agribusiness development and sustainability.

To reduce the **risk of loss of vanilla income through theft, provision is also made for supporting the development, availability and rollout of improved mobile or digital banking systems** in the programme area. This will include the development of tailored and bankable products for the vanilla value chain which will be developed in consultation with the local banks and financial service providers, mainly by UNCDF with support from ITU. Linking these digitalised solutions will include also exploring support for improved and upgraded access to an improved local phone/mobile network and enabling financial services environment. This will link to support for future financial planning and investments for enterprises and families including for saving and other loan products to grow sustainable local SME's which will be progressed by UNCDF with financing from this programme.

Improved market information will be provided through a low cost Market Information Systems and improved market access is planned by FAO with significant investments for improving and maintaining feeder roads which lead to the provincial market centres and ultimately for export markets. Options for long term contracting as well as future contracting will be explored. Linked to output 2.2/3, support is also planned for improved access to upgraded and more affordable mobile services (with support from ITU) and e-banking (UNCDF). This may be linked also to the planned Community Knowledge Centres where VC stakeholders will be supported to access this type of valuable market information (see also 2.3).

In recognition of the natural or "organic" nature of the current vanilla value chain, provision is also made for the testing and **introduction of certification systems** by FAO for a range of possible market and trade requirements and preferences – to include organic, GI, rainforest Alliance and also voluntary ISO standards (for example the 9000 and 14000 and other series) which are preferred and required for improved trade into some export markets.

FAO will be working with **local institutions and research organizations** such as the Sepik Institute of Rural Technology on the development and tailoring of suitable solutions in sustainable value chain development. Co-operation with these local and national institutions is planned and will be essential for P2P and B2B learning and adoption and in service delivery.

The FAO team will also support enterprises in examining options for accessing blended financing e.g. from the EU and others for upscaling of local vanilla enterprises as well as development of higher value vanilla products) e.g. vanilla extract, paste and links to chocolate companies interested in vanilla) in cooperation with local and international ingredient or chocolate companies.

Activities under this component are linked to component two on VC support services development including Provincial level investments and National issues on access to finance (UNCDF), improved transport and road infrastructure (ILO), and increased access to renewable energy (FAO and UNDP), ICT/digitalisation (ITU) and national policy and strategy development and dialogue (all partners). At local level, and from the onset of the inception period, the programme will explore collaboration with planned Provincial and district level investments (PSIP, DSIP) in the implementation of activities



focused on sustainable Vanilla VC development to ensure complementarity and avoid overlapping of funding.

Output 1.3: Increased sustainable production and inclusiveness of the Fishery value chain (coastal, riverine and aquaculture)

The fisheries VC itself is more complex since the product is highly perishable. Support for fisheries VC development will aim at sustainably increasing productivity and profitability while also contributing significantly to food security and nutrition at household level. This output will be delivered by FAO mainly. Based on available data, interventions to improve specific points in the fishery value chain indicate an IRR of 17-52% for various types of interventions and pricing for coastal, riverine and aquaculture interventions. This is quite positive and will be updated during inception to ensure best trade-offs for impact in the fisheries sector for VC stakeholders.

Development of the Fisheries VC will be based on the result of the **Fisheries VC study and analysis and will be implemented by FAO**. During Inception, the project may also work with an EUVC4D team who may implemented a more in-depth fisheries VC study in 2020. Part of the VC analysis will include work on a **Market analysis** looking at cost efficiencies in the fishery product flows in and around the Sepiks. This will also contribute to the planning of locations where improved and climate proof transportation, infrastructure and communications for fisheries development can be best targeted for future market access and accessibility (within and outside the Sepiks).

Sustainable community based management of the existing fisheries resources will be a driving objective. Based on past work and a review of available information, a Fisheries Information System at local and provincial level may be needed to establish the baseline to assess sustainability of current fishing level (preferably linked to the NFA systems) as well as to assess the plan for sustainable fishing interventions. The FIS will form the basis for a **Sepik fisheries Sustainability and Development Strategy**, to be developed by FAO in collaboration with provincial level authorities and enterprises. Capacity development for provincial level NFA specialists for both collection and updating of data are planned.

To **support smallholder fishers for improved food security and nutrition**, FAO will consider options for a hatchery and fingerling distribution centre for good food value species. The Centre would also assist fisheries MSME's to make improvements in hygienic transport, storage and feed supplies, improve climate proofing of their enterprises and improve existing and new aquaculture enterprise management. Based in the Sepiks, this centre would provide aquaculture training, technical assistance and supply of fingerlings and support the development of suitable commercial fingerlings (e.g. tilapia) and feed supply enterprises. This centre will ideally be a sister facility to the Highlands Aquaculture Development Centre managed by NFA.

These **aquaculture enterprises** may be linked to local financial service providers in priority areas to ensure sustainability, supported by the FAO programme team. The fish-poultry-feed production integrated farming approach developed by NARI will be explored and capacity building activities will be carried out to optimise returns for fisheries enterprises in local conditions.

In coastal areas, improved traditional fishing techniques and equipment will be introduced including Inshore Fish Aggregating Devices (IFADs) by FAO as well as fish traps - a proven way to increase food security, income generation and alleviate poverty. IFADs appear to also reduce the pressure on benthic fish stocks. It will also include investments in improved fishing techniques, better handling, processing, storage, marketing and trade as well as essential transport infrastructure such as river jetties, landing sites and roads. Specific efforts will be dedicated to the development of improved access to sustainable feed sources for fish production.



With a low level of human capacity, FAO will **strongly invest in improving the human capacity** in the fisheries sector including enterprise training for MSME fishers to be provided in conjunction with NFA Fisheries College and SMEC; aquaculture extension services to support to aquaculture operators with technical advice and support; aquaculture training in modern fish husbandry and health management methods and materials; training of fishers in improved fish preservation for increased nutritional benefits as well as profitability and shelf life, diversification and fish quality/packaging and marketing; training in FIS for fisheries officers and planners and Fishery Development Plan; fisheries catch documentation training for fishers, training of fishers in improved modern fishing methods; training in market information systems and product marketing and support for resource sharing initiatives and promote fisher marketing collectives (in particular women's groups).

Women and youth will be specifically targeted and funds set aside and managed by FAO, including for women trainers, to ensure their participation and benefit from dedicated resources for sustainable VC development.

Within the **traditional value chains of fish-sago/food trade** along the Sepik river and its tributaries, modernisation of product quality control and diversification will be supported by FAO. This will include improved smokers (FAO Thiaroye method), improved packaging and introduction of renewable cool storage. The application of vacuum packaging of products will enhance food safety and preservation of products and will be explored.

Provision of **solar powered cold storage facilities** by FAO will allow greater diversity of product through retention of fresh product. New generation solar freezer and ice making equipment allows for such practice in remote areas where grid-based energy supply is not available or is unreliable.

The feasibility of **fish canning and processing at SME level** will be supported by FAO to further increase enterprise opportunities for preservation and diversification of product as well as trialed at household level. The project will identify a few fishing enterprises/communities where this modernisation will take place to demonstrate and refine its application. The programme will also support the development of service enterprises that will enable ongoing maintenance and infrastructure to be provided locally for the hygienic transport of products. All infrastructure investments will be implemented by ILO under 2.4.

For riverine fisheries, activities will include **improved production, direct marketing chains, cold chain, improved traditional curing of fisheries products (drying, smoking, packaging) is planned by FAO**. Activities related to this component will constitute a possible field of experimentation for research and innovation activities to be done in collaboration with the NFA. The feasibility of other freshwater caged or pond fisheries will also be examined including for crayfish, prawns and milk fish.

Modernisation of capture fisheries materials and equipment to increase catch per unit effort will be supported through FAO. Use of improved fishing gear in riverine and inshore fisheries will lead to 10-15% increases in catch rate efficiency. This is expected to improve the value chain by reducing the unit cost per kg of fish. For subsistence fishers this will provide greater opportunity to pursue other enterprises and for commercial fishers increase overall catch for sale and trade. These improvements to decrease catch efforts and VC costs will be implemented within the biologically sustainable level of each specific fishery.

Riverine transport is increasingly difficult due to choking of waterways by exotic weeds. Waterway clearance and weed control infrastructure and actions to make improvements will be evaluated in consultation with the beneficiary communities through ILO who are handling the infrastructure elements of the project under output 2.4, which may include jetties and landing sites. Options for various uses of weeds (mulch, compost etc.) will also be explored in collaboration with the fishing and possibly cocoa agripreneurs.



In collaboration with the provincial authorities and the **Ministry of Health**, **fish consumption** will be promoted as a local sustainable source of protein to specifically address stunting as part of a balanced diet by FAO. This will include promotion and training in the role and importance of the consumption of fresh fish and fish products as part of a balanced diet to address stunting and improve household nutrition for family households in the province and possibly at national level.

Similar to the other selected VCs, activities will include increased transparency in terms of **market pricing and transactions** including through enhanced knowledge of market demand and quality requirements to optimise returns and market access for a range of VC stakeholders (smallholder fisher folk, fish markets, local agripreneurs and MSMEs, traders and exporters). Trial marketing of Sepik fisheries products to develop national trade and possibly export opportunities will be supported, possibly linked to the EU or other blended finance facility. Pending the outcome of that market study in selected markets, training in Sepik may include a product traceability scheme for export of products to high value markets.

Provision is made by FAO to work with **local institutions and research organizations such as the National Fisheries College in Kavieng in New Ireland**, in the development and tailoring of suitable solutions including training using for P2P and B2B learning and adoption approaches and in-service capacity development for enhanced delivery for enterprises and state VC stakeholders.

All activities under this component will be carried out by FAO in close collaboration with fisheries agencies at Provincial and district level mainly, including through joint planning and possible co-financing with the NFA at national level. Possible co-financing with NFA will be discussed more in depth during the Inception period.

The Programme team will also support fisheries enterprises in examining options for accessing blended financing (e.g., from the EU and others) for upscaling of local fishing enterprises (FAO and UNCDF mainly) as well as development of higher value fishery products and improved market access and trade in cooperation with local and international enterprises.

SO2: Strengthened, climate resilient and more efficient value chain enablers.

Output 2.1: Conducive business, trade, policy and regulatory environment for sustainable rural agripreneurs and MSMEs established

The Programme will support the creation and enhancement of a climate, gender and age sensitive enabling environment (comprised of legislation, regulations and quality public services adapted to local climate projections) for MSME activity and improving the ease and cost of doing business in PNG aiming amongst others at maximising the opportunities offered to PNG through the Economic Partnership Agreement (EPA) with the EU. All UN Partners will contribute to this output which will link with a variety of ongoing partner initiatives e.g. ADB and WBG/IFC, but will focus on agriculture VC stakeholder needs e.g. licensing, registration, taxation, quality service provision and improved access to national and international markets and to effectively address SPS/TBT issues and VC constraints.

Support is also envisaged for enhanced and consultative national policy and strategy dialogue and development. Hence provision of specialised assistance is envisaged to contribute to (but not limited to): a new and updated National Agriculture Development Plan, the rollout of the new e-agriculture strategy, National Food Security policy, trade and investment in agricultural VC and export/marketing, extension service provision, including through digitalisation of training materials, quarantine regulations, fisheries management, labour related legislation, including when related to



women and youth, MSME development, financial inclusion and access to capital, sustainable utilisation of PNG natural resources, PNG's Climate Change Management Act and implementation of PNG's Nationally Determined Contribution under the Paris Agreement, Energy policy and strategy as well access to and availability of ICT/telecoms/digital solutions. This will include support for the development of relevant enabling legislation and regulations and will cut across the mandates of all the UN Agencies participating in implementation.

Potential synergies with other EU instruments and initiatives and blending platforms such as AgriFI, ElectriFI, Desira which may be complementary for the creation of an enabling environment for VC stakeholders will be proactively explored as well as collaboration with other Development Partners, including from the private sector. Similarly other development partners' initiative(s) that could provide positive synergies will be considered through the consultative processes of Development Partners' regular meetings and Project Steering Committees such as the newly formed Energy Alliance, set up after the APEC 2018.

Output 2.2: Value chain support services strengthened and resilient to climate change impacts

(i) Financial inclusion, mainly access to finance and financial literacy

Activities are planned to improve VC stakeholders' access to banking by UNCDF and enhance understanding of basic financing and on enterprise development, led by FAO. This will include both at household level on calculating production costs and labour requirements (including labour and task burdens) and at agripreneurs and MSMEs level on profitability and improved financial planning and management and access to finance (see also (iii) hereunder).

UNCDF will lead the work on improved access to finance and will support awareness raising and engagement with local Financial Institutions (FIs) to encourage the provision of an expanded range of tailored and inclusive saving, loan, banking, payment products and services for cocoa, vanilla and fisheries VC stakeholders in the target area. Specific support is also planned for VC agripreneurs under the FAO managed Innovation Fund, see (iii) hereunder.

This will include also encouraging the FI's to increase their presence in the programme area, possibly through a branchless banking/ agency banking programme. Linkages to financing may include through intermediary VC stakeholders e.g. exporters/buyers/traders. Options for larger risk sharing could include collaboration with the EU PNG Investment Window Facility and other blended financing instruments.

(ii) Enabling the use of digital solutions for improved service provision in the rural areas

A comprehensive approach will ensure that rural population is benefiting from a well-developed range of support services through digital solutions, mainly with ITU as well as FAO and UNCDF support. ITU activities will therefore include promoting the expansion of the coverage of telecommunications, improved availability, speed and affordability of telecom and banking services and facilities.

Access to knowledge products related to digital financial literacy, livelihoods, value chains commodities, production techniques and approaches, extension materials value addition and market information, better household nutrition and education and other related solutions will be made available through enhanced digital solution provision, led by ITU (in developing the digital means for content delivery) in close consultation with FAO and the other UN Partners. The digital content shall be provided by all UN Partners and shared also with mandated entities of the GoPNG such as NAQIA, NARI, Cocoa Board etc.



Support is also envisaged from ITU to engage information and communication technology tools for facilitating access by VC stakeholders to improved production practices and knowledge, early warning systems for weather and disaster, local and international market and trade information as well as competitive enterprise development. ITU will support linkages to key databases and information systems related to enabling services, including advising ILO on access to high-resolution Geographic Information System (GIS) based maps/systems, including for road/transport planning and improvements.. This will enable better visualisation, analysis and interpretation of key data and improved understanding of climate projections per region and development patterns and trends for national strategy and policy makers.

At national level, ITU will provide specialised technical support and advice to DCIE/NICTA in modernising and upgrading the country's ICT standards and infrastructure for enhancing the roll out of the e-agriculture strategy and development of a provincial level e-agriculture strategy. This may include public private partnerships linking telco and banking service providers, mainly led by ITU with UNCDF and with limited FAO support. Options for collaboration and leverage through blended financing from EU (e.g. Pacific Investment and PNG Investment Window type Facilities) and International Financial Institutions will be explored by all UN partners.

(iii) Increased capacity for business and entrepreneurship

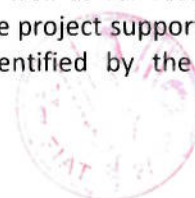
To address specifically entrepreneurship and the necessary business acumen, the Programme will support capacity development activities for agripreneurs including both women, men and youth related to:

- a) development and delivery of tailor-made trainings for enterprise development, small agricultural/VC related business creation, profitability analysis, innovation, value-addition and management, preparation of business plans and bankable proposals for agripreneurs and MSMEs including options for at least each of the three selected value chains.
- b) This will be led by the FAO project team in close partnership with established government and national partners in Wewak such as SMEC, who have a training centre in Wewak and the Women in Development NGO amongst others.
- c) This will include an Agripreneur Innovation Fund managed by FAO to support local VC agripreneurs to engage in, improve and upscale their local enterprises, through PPP arrangements with FAO providing in-kind (technical or enterprise advice, equipment, capacity development) contributions using tailored screening and conditions which will be developed and tested during inception and closely integrated into planned activities in 1.1, 1.2 and 1.3 mainly.
- d) The viability of Knowledge/Resource Centres will be explored and may be set up using a one-stop shop approach to improve access to finance by UNCDF and on enterprise set-up and development led by FAO. This may include the establishment of business incubators in collaboration with local partners such as SMEC in Wewak and will be further examined and detailed during the Inception period.

Output 2.3: Increased production of, and access to renewable energy systems

The Programme will support the provision of renewable energy for enterprise and household level activities related to sustainable VC development. It will be implemented by FAO and UNDP. The use of standalone solar photovoltaic (PV) at household and enterprise level has been pre-identified by the EU energy expert teams to be the most appropriate source of renewable energy production for the project to utilize for agro-food value chain development.

FAO will manage the provision of solar powered renewable energy for enterprise and farm level activities related to cocoa, vanilla and fisheries value chain development as well as for resources centres ideally benefitting women and youth in labour-saving technologies. The project supports and promotes the successful and well-adopted technologies and practices identified by the FAO-



INVESTA²⁴ project suitable for PNG conditions. Major applications identified include the use of improved solar dryers and renewable energy sources for value addition including the drying of cocoa, the controlled drying of vanilla to optimise quality and the drying, preservation and storage of fish and fish products using Thiaroye technology and improved solar based cooling, preservation and marketing to be applied by FAO

Fisher folk living along the Sepik River and coastline will be supported with the establishment of solar energy based drying, preservation and packaging of fish and fish products by FAO. FAO has successfully developed an innovative fish smoking technology “FAO Thiaroye Processing Technique (FTT-Thiaroye) improved fish dryer”²⁵ which it is promoting mainly in Africa. This smoking and effective drying technique also has been found appropriate and suitable for drying fish in the Pacific region to increase the shelf life of the processed fish, reduce postharvest losses and improve fish safety and quality, while retaining the market preferred “smoky” taste. The project will introduce this improved fish dryer to the fisher folks in the project areas and train artisans to manufacture this locally to ensure ready availability, maintenance and sustainability.

At the enterprise level, FAO will test, support and promote local manufacture/sourcing of improved cocoa fermentaries with a solar-cum-fuel/wood efficient dryer as successfully tested during the WB/IFAD/EU PPAP project; establish a sustainable cold chain powered by renewable (solar) energy eg. for fish, food markets and possibly controlled/modified atmosphere storage facilities to enhance market access and profitability. The cocoa fermentaries will be tested with a fan attached to a kiln pipe powered by portable solar photovoltaic for better and uniform hot air exchange in the drying area to enhance cocoa drying and improve and ensure consistent beans quality.

Vanilla beans are dried and cured at household level, resulting in large variations in drying and curing methods and variable quality. Improved farm level processing of vanilla beans will be supported by FAO through locally developed, **efficient and effective passive solar dryers** and improved curing kits. The project will review planned efforts by DAL in the project area on the establishment of community vanilla curing collective centers at enterprise level during the inception phase.

Provision has also been made for support in the testing and upscaling of a solar powered cold chain, including storage to enhance fisheries market access and options for expanding their market reach. This will include collaboration through PPP’s in the programme area with local enterprises led by FAO and link with other ICT related applications on market demand and pricing, linked to ITU.

FAO will also provide specific support for women and youth to apply renewable energy systems in the reduction of drudgery. This includes the introduction and support at large scale for the local manufacture and provision of **efficient and low labour clean cooking stoves**²⁶ at the household level and provision of solar-powered water pumps²⁷ for water supply for enterprises, household use, irrigation and fish farming that has been successfully applied by FAO in a number of countries including Bangladesh and Pakistan.

Village level Knowledge centres will also be supported through FAO to adapt and utilize renewable energy sources to power improved facilities including for market access and product quality as well as linking to e-Agriculture solutions. Support may also be provided through FAO for entrepreneur

²⁴ FAO Investing in Sustainable Energy Technologies in the Agrifood Sector (INVESTA) project supports innovative and sustainable approaches to accelerate the uptake of clean energy solutions in agri-business in developing countries and emerging regions. GIZ funded project as a contribution to the international initiative *Powering Agriculture – An Energy Grand Challenge for Development*.

www.fao.org/energy/agrifood-chains/investa

²⁵ <http://www.fao.org/3/a-i8301e.pdf>

²⁶ <http://catalog.cleancookstoves.org/stoves>

²⁷ [solar-powered irrigation system toolbox developed by FAO and GIZ](#)



level initiatives such as solar powered charging stations for enhanced ICT and internet/information access and improved market knowledge and e-commerce, linked to the provincial level e agriculture strategy being led by FAO supported by ITU.

Solar photovoltaic units will be installed for electricity generation at enterprise and household level for enhancing the livelihood of VC beneficiaries, powering food/agriculture needs, lighting, charging phone/radio and village resource centres, including market centres for improved cooling, storage and lighting, led by FAO.

UNDP will lead the provision of specific technical **support at policy and strategy level on renewable energy** to the Government of PNG. This will include an increased focus and inclusion of food and agriculture needs for, and applications of, renewable energy development based on project experiences to be provided through the project team in Wewak.

UNDP will lead on setting up **solar power generation at select public facilities** in the programme area such as schools and health centres to promote awareness of sustainable and renewable energy. During the inception phase, a feasibility study will be conducted on the improvement of Sepik Institute of Rural Technology with access to quality digitally enhanced knowledge and training facilities powered by appropriate renewable energy systems. This will link with the ongoing UNDP implemented, GEF funded project, which already partners with the same college in the delivery of training on energy efficiency.

Each of the UN agencies will explore and support the development of proposals for linking enhanced uptake of renewable and more efficient energy resources through EU and other blended financing mechanisms.

Output 2.4: Improved and climate-proof transport infrastructure

Linked with the VC activities planned in the first component, this component, implemented by ILO will support the rehabilitation, climate-proofing (e.g. against landslides or floods), maintenance and upgrading of existing so called 'ring roads', branching from National Highways. National Highways are under the responsibility of the State and will not be supported. Further, support focusing on feeder roads, leading to the 'ring roads' will originate from the District Service Improvement Programme (DSIP) and possibly also the Provincial Service Improvement Programme.

Selection of the ring roads will be done by ILO according to those prioritised for improving market access and accessibility for the selected value chains, based on the main production areas and prioritising improved access to markets as a guiding criterion. This support may also include works on improving riverine access for cocoa transport and storage for example and will be implemented in close consultation with FAO and other UN partners.

As per the most recent guidance of the Department of Works to embed sustainability in road development and maintenance programmes, provision is foreseen to engage in community-based maintenance rather than focusing on one-off action with specialised companies. Communities will be trained by ILO to carry-out routine maintenance, with a high level of involvement and benefit accruing to women and youth, including capacity development for local contractors for long term involvement and engagement in labour intensive infrastructure works.

Support from the Programme is also foreseen for improved and new jetties and landing sites as may be required and sustainable for local communities and the level of river accessibility will also be reviewed in the Inception phase. This will link with the planned work on improving safety in transport (including boats) and efficiency in market access with local enterprises being implemented under 1.3 on fisheries VC development by FAO.

