

COCOA SUB-SECTOR GROWTH STRATEGY DOCUMENT

IN PAPUA

OCTOBER 2015

BEING UPDATED

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Abbreviations

AIP-PRISMA	Australia-Indonesia Partnership for Promoting Rural Income through Support for Markets in Agriculture
ATJ	Alternative Trade Japan
AUD	Australian Dollars
CAGR	Compound Annual Growth Rate
CDC	Cocoa Development Center
GAP	Good Agricultural Practices
GNK	Gerakan Nasional Kakao (Cocoa National Movement)
GPP	Good Postharvest Practices
Ha	Hectare
IDR	Indonesian Rupees
ILAF	Intervention Logic Analysis Framework
MT	Million Tons
NGO	Non-governmental organisations
NPK	Nitrogen, Phosphor, Kalium
NTB	Nusa Tenggara Barat (West Nusa Tenggara)
NTT	Nusa Tenggara Timur (East Nusa Tenggara)
PT Purni	PT. Purni Papua Perkasa Jaya
WWF	Worldwide Fund for Nature

1. Executive Summary

International demand for cocoa is predicted to rise but the global production of cocoa is estimated to be decreasing. By 2020, global demand for cocoa is forecasted to rise by 30% (4.5 million tons), because of rising incomes in emerging markets like India and China and anticipated economic recovery in the western economies.

Cocoa has been one of main sources of income and employment for farmers in Indonesia. According to the latest agriculture statistics, around 1.5 million households are engaged in cocoa production and around 1.74 million ha land was under cocoa production in 2013. 0.72 million tons of cocoa was produced in 2013. Cocoa is the third major export earning product of Indonesia, after palm oil and rubber.

Regulation of increased export tax created strong potential for local processing and value addition in Indonesia. Because of the increased export tax on raw beans, most of the companies are now producing semi-processed or completely processed cocoa. In the last 2 and half years export of raw cocoa bean has declined by around 62%, while 10 new processing plants have been established at the same time and 4 more will be established in this year. Growth in processing capacity is outpacing the production growth. Hence there is huge potential of expanding cocoa production (both by improving productivity and by bringing in new area under cocoa production).

Cocoa is an important cash crop for farmers in Papua, around 32,000 ha land was under cocoa cultivation in 2012. Most of the cocoa farmers in Papua are subsistent farmers and production lacks commercialisation. Approx. 50% of the household income is generated from cocoa and this is largely used to meet basic expenditure needs of the household, with very little reinvestment in commercialisation of cocoa farming.

For lack of commercial orientation of farmers, traditional production techniques and limited to no use of fertilisers and quality seedlings production is at very subsistence level. Absence of strong traders and direct procurement channel of the large companies have further weakened the incentives and ability to invest in more intense Cocoa farming in Papua. The input markets and information channel related to cultivation techniques are largely dominated by public agencies and farmers' incentives are driven by subsidies. Cocoa sector in Papua revolves around a low productivity-low return and low investment cycle.

The vision of change at the sector level: To increase the income of Papuan cocoa farmers and fulfil the market demand by increasing the production and quality. At the service level, it is envisaged that a) Farmers have sustainable access to knowledge and information on appropriate farm management and cultivation practices for cocoa production, b) Farmers have functional access to suitable financial products and c) Farmers have sustainable access to good quality seeds and seedlings.

To deliver the vision four interventions have been proposed: a) Support the development and implementation of integrated cocoa development centre by big processor/trader in Jayapura,

Keerom and Sarmi.b) Support the piloting of existing financing modalities into cocoa sectors in the district of Jayapura, Keerom and Sarmi ,c)Support financial institutions and provincial government to develop appropriate risk sharing and financing products targeting cocoa farmers ,d) Facilitate modification of government seed certification process to include and promote locally suitable varieties among nursery owners.

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2. Background

The Australia-Indonesia Partnership for Promoting Rural Income through Support for Markets in Agriculture (AIP-PRISMA) is a multi-year program that is a part of the Government of Indonesia's midterm development strategy to accelerate poverty reduction through inclusive economic growth. With the support of the Government of Australia, the program aims to achieve a 30% increase in the net incomes of 300,000 male and female smallholder farmers in eastern Indonesia by June 2017. PRISMA works in East Java, West Nusa Tenggara (NTB), East Nusa Tenggara (NTT), Papua, and West Papua.

PRISMA has selected Cocoa as a sector to be developed in Papua because cocoa cultivation is one of the main income sources for farmers in Indonesia, especially in Papua. This Sector Report aims to provide a logic and rationale for market-based interventions, which can support the cocoa sector to the benefit of smallholder farmers in Papua.

3. Sector Description

3.1 Sector profile

The sector profile provides information on the current status and potential of the target sector. This has been derived mainly from secondary data and literature relevant to the cocoa sector.

3.1.1 Overall Context

Recent trends suggest, demand for cocoa globally is increasing and is expected to rise further while global production is estimated to fall¹. By 2020, global demand for cocoa is forecasted to rise by 30% (4.5 million tons), driven by rising incomes in emerging markets like India and China and anticipated economic recovery in the western economies. However, Figure 1 shows a slight fall of 0.2% in estimated cocoa bean production in America and Asia & Oceania regions. Moreover, in 2012/2013, global cocoa production declined by approx. 4%. In spite the dip in production in 2012/2013, forecast for the world's total production of cocoa beans are perceived positively, as the available data suggests.

Figure 1: Global Production of Cocoa Beans from 2011-2014

Indonesia, the 3rd largest Cocoa producing country in the world, can benefit from this unmet demand, by exploiting its relatively young plantations, however the overall production in Indonesia has decreased. As the largest cocoa producer in Asia and 3rd largest in the world, Indonesia produces 10.7% of the world's cocoa. However, there is a mixed

Production of cocoa beans
(thousand tonnes)

	2011/12		Estimates 2012/13		Forecasts 2013/14	
Africa	2929	71.5%	2833	71.9%	3174	73.0%
Cameroon	207		225		200	
Côte d'Ivoire	1486		1449		1730	
Ghana	879		835		920	
Nigeria	245		235		240	
Others	113		89		84	
America	655	16.0%	622	15.8%	666	15.3%
Brazil	220		185		210	
Ecuador	198		192		200	
Others	237		245		256	
Asia & Oceania	511	12.5%	487	12.3%	505	11.6%
Indonesia	440		410		425	
Papua New Guinea	39		41		42	
Others	32		36		38	
World total	4095	100.0%	3942	100.0%	4345	100.0%

Source: ICCO Quarterly Bulletin of Cocoa Statistics, Vol. XI, No. 3, Cocoa year 2013/14

¹"The future of chocolate: why cocoa production is at risk", available at www.theguardian.com

trend in cocoa production in Indonesia. From 2011-12 to 2012-13, cocoa production in Indonesia declined 440 tons to 410 ton), while in 2013-14 it was forecasted to increase (425 tons). Indonesia has relatively young plantations compared to the major cocoa producing countries in Africa, hence the potential to increase production in Indonesia is strong. In addition to existing plantations, there is potential for additional cocoa plantations to be expanded into new areas in Indonesia.

Historically, cocoa has been one of main sources of income and employment for farmer in Indonesia. According to the latest agriculture statistics, around 1.5 million households are engaged in cocoa production in around 1.74 million Ha land. In 2013 total cocoa production was 0.72 million tons. Cocoa is the third major export product from Indonesia, after palm oil and rubber. The national price of cocoa is directly linked with the international market and has been showing an upward trend. The current forecast by Price WaterHouse Coopersc(PWC) suggests that the price will rise steadily for the next 10 years². 93% of cocoa plantations in Indonesia are owned by farmers; there are few large plantations owned by public and private cocoa processing companies. Therefore, given the current demand forecast, potential increases in domestic production will benefit farmers directly.

Sulawesi is the leading cocoa producing region in Indonesia. Around 70-80% of national production comes from Sulawesi, while Papua contributes around 1.4 % of the total production (currently ranked 13 in the regional production). Sulawesi is the main processing and trading hub for cocoa. Only 10% of the cocoa produced in Sulawesi used to be processed by local industries till 2010 and 80% of the cocoa processing and export was done by large multinational companies.

Regulations introduced in 2010 and 2011³, increased export tax (on exporting unprocessed commodities) created strong potential for local processing and value addition in Indonesia. Because of the increased export tax on raw beans, most international companies established processing facilities in Indonesia; producing semi-processed or completely processed cocoa. Since the regulation has been in place 10 new processing plants have been established causing export of raw cocoa to decline by 62%. Further reductions are expected with 4 more processing facilities expected to come online taking Indonesia's annual processing capacity up to 950,000tons. Growth in processing capacity is outpacing the production growth. Hence there is huge potential of expanding cocoa production (both by improving productivity and by bringing in new area under cocoa production).

3.1.2 Local Context

Cocoa is an important cash crop for farmers in Papua, around 32,000 ha land was under cocoa cultivation in 2012. Cocoa is mainly cultivated in three districts of Papua involving approximately 26,300 farmers. Jayapura District, the main cocoa producing area in Papua, accommodates 53.6 % of the province's cocoa farmers. Keerom (19.9 %) is ranked second followed by Sarmi (11.9 %). Official statistics of Papua provincial government indicates that around 17-21% of the population in these districts live below the poverty line. However, for unavailability of official

² PWC: *Cocoa price Trends and prospect: an analyses for Chocolate Week, October 2014 in* <http://www.pwc.co.uk/economics-policy/index.jhtm>

³ PMK No:67/PMK:011/2010, PP No:50/2011 PMK No:130/2011

statistics, it is hard to determine the incidence of poverty among cocoa farmers. However, survey by YPPWP suggests that around 63.7% of the cocoa farmers in Papua are poor (measured by PPI). Despite being the main cocoa producing district both area coverage and production declined in Jayapura, while in Keerom district both area coverage and production is on rise. Total production in all other districts remained constant. However, overall productivity of cocoa in Papua is much lower than the national average.

Most of the cocoa farmers in Papua are subsistence farmers and production lacks commercialization. Cash from cocoa farming and trading is an important livelihood option for the farmers and approximately 50% of household income is generated from cocoa. Rest of the income is sourced from traditional gardens, forestry and foraging. Cash generated from cocoa is largely used to meet basic expenditure needs of the household, with very little reinvestment in commercialization of cocoa farming.

Cocoa produced in Papua has a very distinctive quality, stimulating high demand from niche markets. Common varieties typically grown in Papua are more resistant to some root diseases, have a special flavor, darker color, higher melting point (more than 32° Celsius) and larger bean sizes. As a result Papuan cocoa is mostly used as sample for trading. Unfortunately for farmers, the quality is not reflected in purchase prices offered to farmers. The niche demand for Papuan cocoa is via two small companies. The demand from these companies exceeds the amount Papua can currently supply suggesting potential for growth of the cocoa sector in Papua.

3.2 Sector dynamics

3.2.1 Market overview

Given the growing international and domestic demand referred to in Section 3, cocoa in Papua is a promising sector for growth at both national and provincial levels. With high bean quality, potential to increase productivity and expand cultivation area, cocoa can become a major source of income for farmers in Papua. However, subsistence farmers typically lack commercial awareness, exhibit reliance on traditional production techniques and rarely use fertilisers or quality seedlings. In absence of large traders and direct procurement channel of the large companies the competition among traders for procuring good quality cocoa is very low. The current market structure, therefore rewards neither the existing traders nor the farmers with appropriate price for their product. This further weakens the incentives for commercialisation of cocoa farming and compromise farmers' ability to invest in more intense Cocoa farming in Papua. The input markets, and information channels related to cultivation techniques and practices, are largely dominated by public agencies. Farmers' choice of inputs and cultivation practices are driven by subsidy from public agencies. For example, as long as the public agency provides free seedlings, the farmers will use the seedlings. Otherwise, they will rely on natural vegetation of trees. Papua's cocoa sector revolves around a 'low productivity, low return and low investment' cycle. Most of the cocoa farmers in Papua are smallholders; improved commercialisation of cocoa farming will have more pro-poor benefit in Papua than other cocoa growing regions in Indonesia. Increasing farmers' income through increased cocoa farming will require commercialisation of both input and output markets. More organised farming promoted through better linkage with traders and processing companies can 'push' the productivity of cocoa in Papua. Such transformation is possible when farmers' access to

quality seedlings is improved and farmers start using more intensive farming practices. However, changing the mind set of Papuan farmers to more commercial farming and gradual change of subsidy driven policy to more market and private sector oriented policy will be pre-requisite. Because of the farmers' weak investment capabilities, changes in cultivation techniques and productivity will be incremental.

3.2.2 Core Value Chain

Inputs (seeds, fertiliser and pesticide)

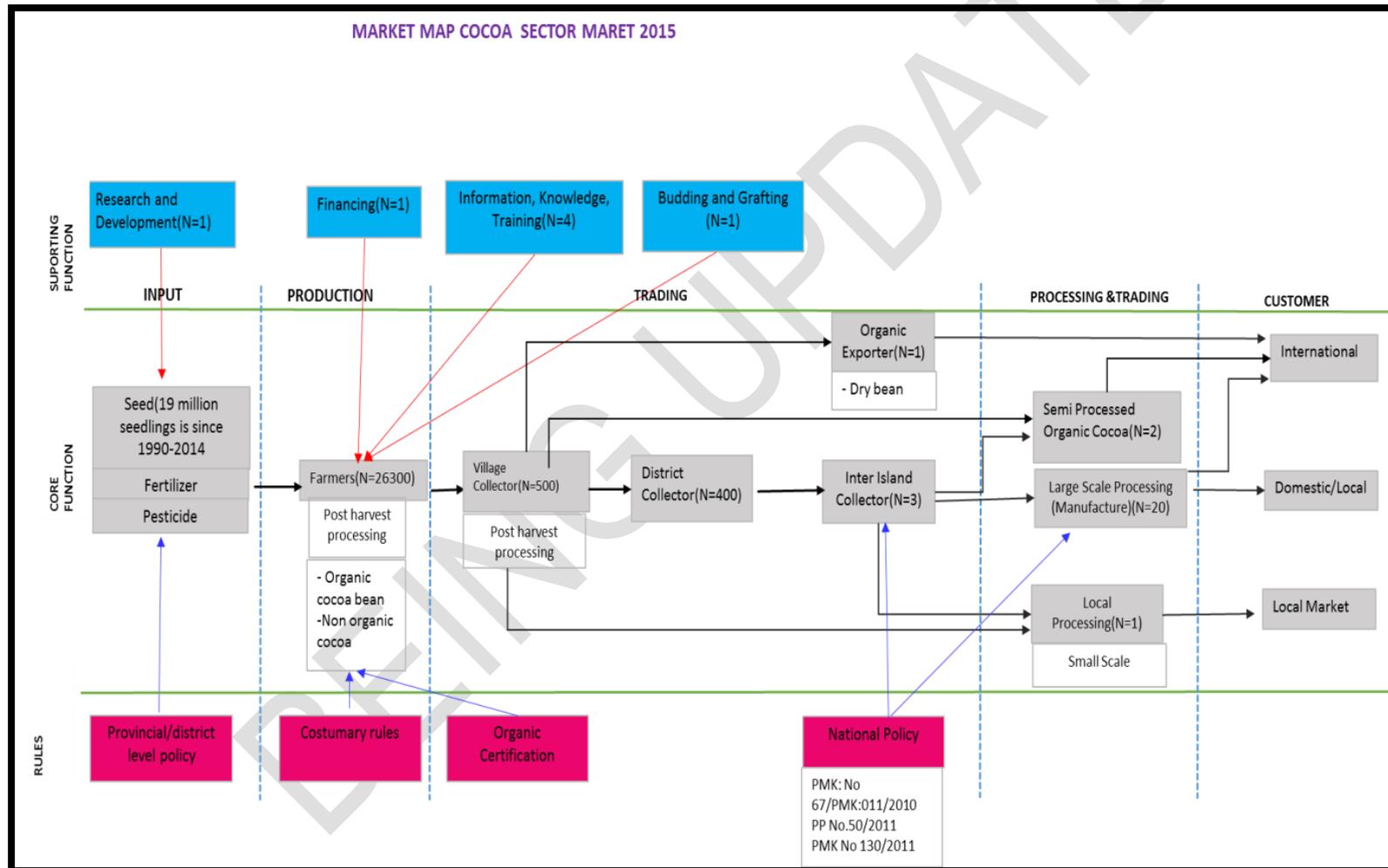
Input markets for Cocoa in Papua is highly dominated by public sector including seeds and seedlings. Historically, cocoa farming was introduced by the Dutch government in 1952, through distribution of free seeds among farmers. The trend is still continuing and under various programs, government has distributed cocoa seeds of different varieties among farmers. This subsidy driven approach has distorted the market for seeds and seedlings and created strong dependency on public sector. Public agencies have never focused on developing capacities of local seed or seedling producers. Large amount of subsidies have created disincentives for private companies to set up seedling nurseries for directly selling to farmers. In addition, the farmers also lack incentive to invest resources in sourcing and buying better quality seeds and seedlings.

Fertilisers and pesticides markets, like seed and seedling are also dominated by public agencies and distributed with high subsidy. However, availability of fertilisers (NPK and Urea) and pesticides among cocoa farmers is relatively a new phenomenon and started only in 2009 under GNK Program. Jayapura Sub-district government once made an effort to popularise and promote Organic Fertiliser one of the private companies with very limited success.

3.2.3 Sector Map

The sector map for cocoa in Papua is presented in a Figure 2 below. The map presents the core functions, relationships among market actors, support functions and regulatory environment affecting the Cocoa sector in Papua.

Figure 2: Sector Map for Cocoa in Papua



Production

Cocoa production in Papua is non-commercial with limited to no application of fertiliser and irrigation and poor farming practice. Farmers rely on natural production and the cocoa trees are often quite far from farmers' houses. Therefore farmers hardly invest in pruning or other services to improve production of their trees. Though Cocoa can be harvested all the year round, September and October are two peak harvesting period.

Trading and Processing

Village Collectors are the first interphase between farmers and output market. Village collectors are the local agent of companies or large district traders who are responsible for buying dried/wet cocoa from farmers in the villages. In Papua Province village collectors mainly work for 7 companies/individuals. PT Purni Jaya alone has 400 village collectors, spread across Jayapura, Keerom, and Sarmi Regents. Other businesses are localized and operate in specific regency. For example, Nur Wahid (one of the large traders) operates only in Keerom regency and has collectors in 4 districts of the regency. The farmers can also sell directly to the large traders. As most of the cocoa production takes place in Jayapura, there are at least 3 independent collectors in each village of this regency who buys cocoa beans from farmers and sell these to different district traders and companies. Farmers sell their product at farm gate usually on weekly basis. The price of the product depends on the price at Makasar, which is quite connected with the international market price. Because of limited traders and collectors, farmers hardly have any bargaining power in price negotiation.

District Collectors

District collectors are assigned by company or individual to buy and collect cacao from village collectors. These district collectors are mostly the employees of large inter-island traders. Two small companies use their district collectors to buy directly from the farmers. While the collectors of PT Purni Jaya aggregate product from the village collectors and store the products in the company's warehouse in 5 locations.

Inter-island Traders

Bulk of the cocoa trading of Papua is controlled by 3 traders (PT. Purni Jaya, Jhon Ambon and Nur Wahid) control. Two companies (ATJ and WWF) directly export their products to Netherland and Japan. These inter-island traders use shipping companies to transship their products to Surabaya and Makasar. An estimate suggests that these companies trade around 144 tons of cocoa beans from Papua to main trading centers of Indonesia.

Local Small Processing

At local level, there is only one company (CV Made Mulya Asih) that processes cacao from Jayapura and Keerom Regencies, into processed chocolate foods sold in local market. The company is. In a month, they need 100 kg of dried cacao seeds, obtained from farmers in Jayapura and Keerom Regencies (PT Purni Jaya).

Processing

Large processing companies in Indonesia are located in different parts. There are 5 companies in Makasar, 4 processors in Surabaya and 5-7 companies in Jakarta. All these companies need dried cacao from farmers across Indonesia and most of the processing struggle to fulfil their need from the domestic farmers, hence, import 30,000-40,000 tons of cocoa per year.

3.2.4 Supporting Functions / Services

Provision of information, knowledge and training on proper cultivation practices, choice of seeds and seedlings is the responsibility of provincial and regency government and public extension service. However, there is hardly any extension service being provided from public agencies. Weak capacity and limited number of extension workers make the public extension service quite inefficient. However, various NGOs often conduct trainings and knowledge dissemination sessions at limited scale. These trainings does not result in significant changes in farmers' behavior because other key issues related to input and market linkages are not addressed simultaneously.

In Jayapura there is only seller of bud grafted seeds and provides side grafting service. Farmers are hardly aware of the benefit of this service and use this service. One of the trader has trained 30 farmers on this service for applying in his own plantation. However, side grafting and budding is an important service to maximize the plant rejuvenation and improve the seedling quality.

There is no Research &Development facility on cocoa in Papua. Though there is a government seed production facility, the agency has not invested in developing a more suitable variety of cocoa seed for Papua. Few years ago, PT MARS established Cocoa Development Center (CDC) in Jayapura for research and development of new clones and improved agricultural practices, however, the facility is now non-functional.

There is no financial institution in Papua which is willing to provide credit services for cocoa production. One of the banks piloted a model to extend credit facilities to 30 cocoa farmers with a very low interest rate. The pilot was not successful as the bank had very limited engage with the farmers. The crop failed because of pest infestation and the farmers defaulted. There has been no follow up to the pilot and currently there is no financial service to the farmers for cocoa production.

3.2.5 Rules and Regulations

Almost all the local regulations form the basis for public seed distribution for free. Each district has their own regulation to determine the amount of free seed distribution among farmers every year. Customary Law in Papua plays an important role and according to the law there is no individual ownership of land. Rather individuals have user right while the land is owned by the clan. Such user right does not allow farmers to use land as collateral and therefore creates an impediment to access loans. .

4. Analysis

4.1 Problems in the Core Function and Underlying Causes

4.1.1 Problems Affecting Farmers

The problems and underlying causes are those affecting Papua's poor farmers that AIP-PRISMA seeks to support through its targeted interventions. The problems have been introduced in Section 0 Sector Dynamics and are also presented in Annex 1 Intervention Logic Analysis Framework (ILAF) table. The two key problems faced by farmers and their underlying causes can be summarised as:

- Farmers do not follow good agricultural production and management practices in cocoa production
- Farmers face high pest infestation and outbreak of diseases in cocoa.

Farmers do not follow appropriate production and management practices in the cocoa plantation. Cocoa farmers in Papua lack commercial orientation, knowledge or understanding of improved agricultural practices; as a result they do not invest in proper maintenance of cocoa trees. The situation is further exacerbated by their inability to access financial services. As a result productivity of the cocoa trees in Papua is low.

Farmers face high pest infestation and outbreak of diseases. Public agencies are the only source of seeds and seedlings available to Cocoa farmers in Papua. Public agencies distribute seeds which are not tested for the agro-climatic conditions specific to Papua. Moreover, there are concerns over the quality of seeds distributed by the public agencies, particularly, the plants susceptibility to pests and diseases. Cocoa farmers in Papua also do not apply any pesticides, as they lack commercial orientation and to them the incremental returns from investing in required pesticides are not very explicit. As a result, whenever, there is pest infestation in cocoa plantation, farmers hardly take any steps to tackle the problem.

4.1.2 Problems Affecting Farmers Via Other Actors

There are problems and underlying causes faced by other market actors, that eventually also affect cocoa farmers. The key problem faced by traders is:

- Limited volume of quality cocoa

Traders in Papua struggle to expand their business as there is an insufficient volume of quality cocoa available in the market. Because of the low production volume of cocoa, traders need to travel more and cover larger areas for procuring cocoa. As a result, the transaction cost of aggregation and bulking up increases and traders also fail to reach the economies of scale in their

operations. Since the traders' transportation cost is high due to high aggregation cost, to remain competitive in the market, they offer lower price to the farmers. However, inconsistent and limited supply of quality cocoa is one of the few reasons why farmers cannot demand a higher price for their product.

4.2 Weaknesses in services and rules / regulations

There are a number of services and regulatory factors which influence the underlying causes of the problems highlighted above. In order to strengthen the market system, it is crucial that weaknesses in these services and regulatory factors are identified. The key services weaknesses are detailed in the ILAF table and include:

- Limited knowledge and lack of resources and facility of public extension services in providing services covering a wide area.
- Limited incentive for private companies in developing seed, seedling production and provision of information to the farmers
- Weak capacity of financial institutions to develop and deliver appropriate credit services to cocoa farmers
- The Government's planning process and seed certification process do not consider agro-climatic conditions when selecting seed variety.

Limited knowledge and lack of resources and facility of public extension services in providing services covering a wide area. Public extension service providers struggle to meet the challenge of covering wide areas, especially remote plantation areas. They also have very limited influence over farmers' to improve cultivation techniques; since they themselves have limited knowledge of market idiosyncrasies, they cannot convince farmers on the business potential of investing in better cultivation methods.

Limited incentive for private companies in developing seed, seedling production and provision of information to the farmers. On account of the subsidy-driven environment and low demand from farmers, private sector organisations are unwilling to invest in setting up seed and seedling production for farmers who already have access to subsidised seed. In addition, low commercial orientation (for perceived lack of commercial return) of the farmers also lead to low demand for quality seeds and seedlings. Therefore, risks for private sector in investing in long term market development initiatives at this stage are too high.

Weak capacity of financial institutions to develop and deliver appropriate credit services to cocoa farmers in Papua. Banks and financial institutions in Papua lack the capacity to engage with farmers, as a result they fail to understand farmers' cash flow and credit needs. Such lack of understanding impedes them from designing suitable products for cocoa farmers.

The Government's planning process and seed certification process does not consider agro-climatic conditions when selecting seed variety for cocoa. The Government's seed certification

agency determines the cocoa seed varieties to be promoted and distributed under various public programmes across Indonesia. However, this is a centralised process and the seed certification agency at this moment in seed selection process does not consider diverse agro-climate conditions while selecting the seed varieties. This weakness in the planning and certification process leads to selection of generic seed varieties and lead to selection of seed varieties which are not suitable for Papua's agro-climatic condition. Since the seed variety is not tested in Papua, seedlings produced from this seeds are vulnerable to high pest infestation.

4.3 Cross cutting issues (Gender and Environment)

Women are involved in almost all stages of Cocoa production. Because of the importance of the commodity, all members of the household participate in cultivation. Since cocoa cultivation does not involve high physical labour, women engage in the core cultivation process, however, in fermenting and sorting women are more involved, including trading of dry cocoa beans.

Cocoa cultivation has no negative impact on the environment. Currently pesticides usage are very limited and hence there is no residual effect of chemicals on the soil or on the produce. Increasing productivity of cocoa farmers can reduce the deforestation, as the framers get higher return from the existing plantation.

5. Strategy for change

5.1 Market potential

There is market opportunity to expand Papua's cocoa production in order to meet the growing demand for cocoa by the confectionary industry in national and international marker. Demand for confectionary products are projected to continue experiencing robust growth as the population and incomes increase in Indonesia. The current national production is insufficient to meet the growing demand of cocoa processing industries with need of consistent supply of quality cocoa. As a result, there is potential for Papua to expand production and productivity of cocoa and ensure that its maize meets the feed industry's standards.

Assuming the total export from Indonesia will remain at 2010 level (432.437 tons), in 2015 the total demand for dry cocoa in Indonesia will be approximately 673.106 tons. According to our estimate there will be an unmet domestic demand of dry cocoa beans of 240,669 tons in 2015. Even if productivity increases by 2 tons/ha, 32,421 Ha land in Papua, can only supply 9.6 % of the total demand. In the context of growing international and national demand, Papua has a strong potential to emerge as a major cocoa producing region of the country.

Based on our calculations, there is potential to unlock an additional AUD 12 M of income in the 3 proposed intervention districts.

Table 1: Business potential of Cocoa in Papua

Description/Years	Total Business in the target area (s)
Existing Production (MT)	9,902
Potential New Production in Existing Areas (MT)	4,951
Total Potential Production (MT)	14,853
Average Selling Price Shallots per kg (IDR)	25,000
Current Value of Production (million IDR)	247,550.00
Total value of potential production (million IDR)	371,325
Total value of potential production (AUD)	37,132,500
Total potential value of increased production (million IDR)	123,775
Total potential value of increased production (AUD)	12,377,500

5.2 Vision of change

Focusing on achieving the potential outlined above for the cocoa sector in Papua, the vision of change can be outlined for both the sector and service levels. The vision of change at the **sector level** is to: ***To increase the income of Papuan cocoa farmers and fulfil the market demand by increasing production and quality.*** At the **service level**, it is envisaged that cocoa farmers have a) Sustainable access to knowledge and information on appropriate farm management and cultivation practices, b) Functional access to suitable financial products and c) Sustainable access to good quality seeds and seedlings.

5.3 Interventions

To unlock the potential of the Cocoa sector in Papua by improving the function of service markets in support functions, the following interventions are proposed:

- **Intervention 1:** Support the development and implementation of integrated cocoa development centres by big processor/trader in Jayapura, Keerom and Sarmi.
- **Intervention 2:** Support the piloting of existing non-cocoa financing modalities into cocoa sectors in the districts of Jayapura, Keerom and Sarmi
- **Intervention 3:** Support financial institutions and provincial government to develop appropriate risk sharing and financing products targeting cocoa farmers
- **Intervention 4:** Facilitate modification of government seed certification process to include

Intervention 1: Support the development and implementation of integrated cocoa development centre by big processor/trader in Jayapura, Keerom and Sarmi. Under this intervention in partnership with a large processor or trader private businesses will be supported to set-up seedling nurseries. The large processor will provide quality seedling to the nursery owner and also will train the nursery owner on the various aspects of the cocoa farming. The project will support promotion of usage of quality seedling. The nursery owner is expected to provide knowledge and information to the farmers for demand creation. The cocoa produced by the farmers

will be bought by the large processors. This intervention will create a somewhat organised farming to provide market linkage and access to quality input and information. This intervention is expected to reach 3,000 farmers by July 2018.

Intervention 2: Support the piloting of existing non-cocoa financing modalities into cocoa sectors in the districts of Jayapura, Keerom and Sarmi. The proposed idea for this intervention builds on the existing microfinance model of collateral free credit to cocoa farmers. The microcredit providing organisation will train farmers on better cultivation techniques, provide market information and thereby will aim to reduce crop failure rates. This intervention will provide much needed credit and access to information for the farmers. It will also play a supporting role in the successful implementation of Intervention 1.

Intervention 3: Support financial institutions and provincial government to develop appropriate risk sharing and financing products targeting cocoa farmers. Under this intervention, the project will support financial institutions to develop more inclusive financial products targeting the cocoa farmers, by linking them with a government initiated Credit Guarantee Fund. The Credit Guarantee fund shares partial risk of failure with the financial institutions, creating an incentive for the banks to reach a risky and excluded segment of the population.

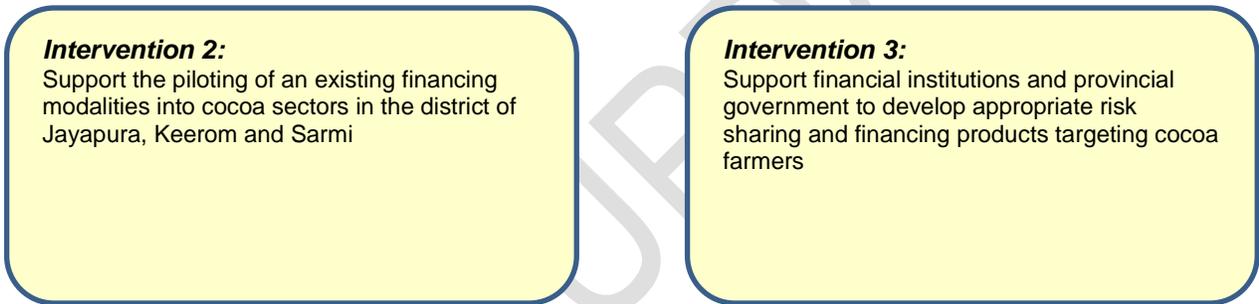
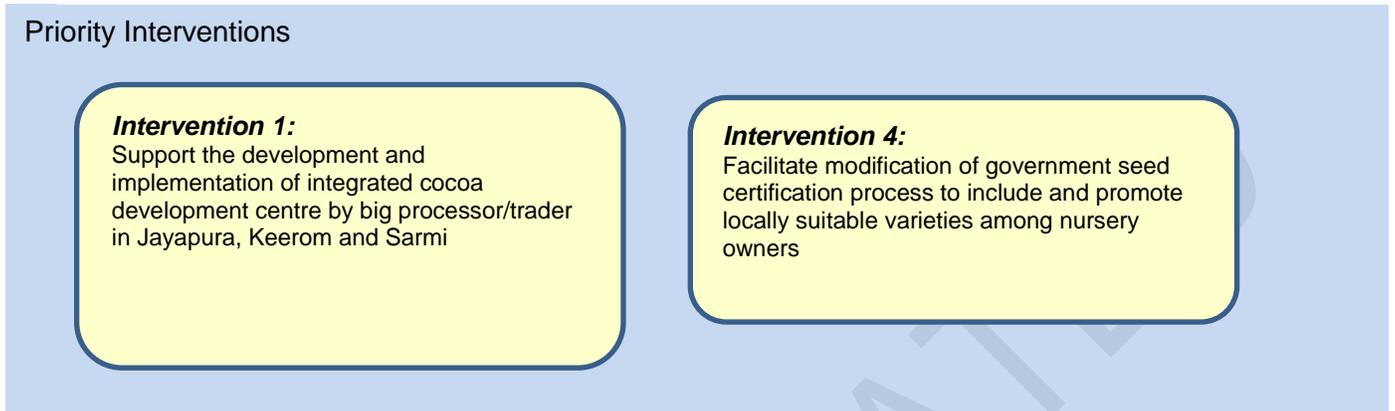
Intervention 4: Facilitate modification of government seed certification process to include and promote locally suitable varieties among nursery owners. This intervention will link the local government laboratory in Besum (Jayapura) with the central laboratory in Jember, East Java, and create a protocol for testing seed varieties in Papua. This will allow the district laboratory to trial different seed varieties and identify the most suitable variety for the local agro-climatic conditions. Once identified, this variety will be multiplied and distributed among farmers through private seedling companies.

5.4 Sequencing and prioritisation of interventions

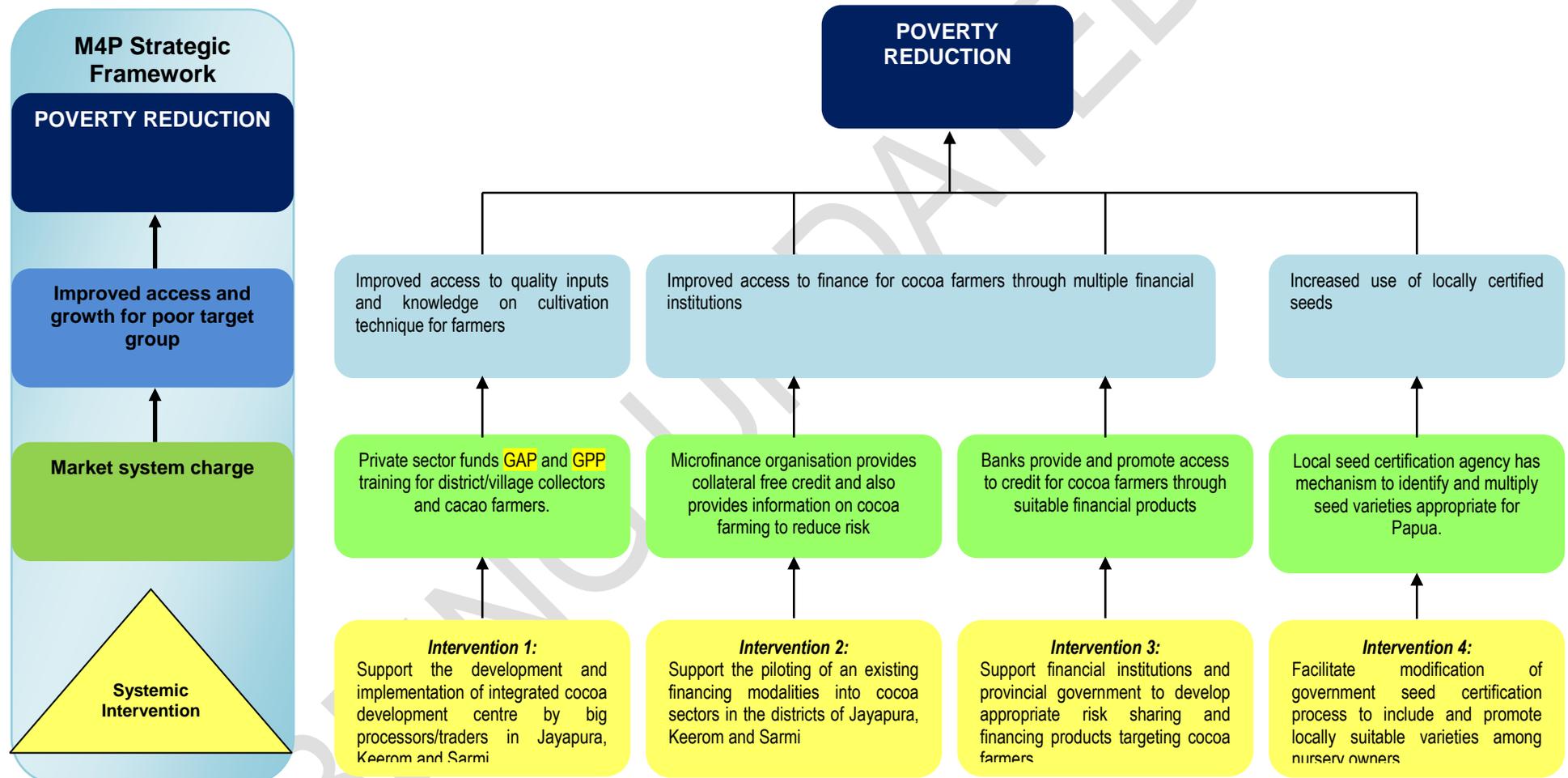
It is recommended that the interventions in the Papua cocoa sector be implemented in two phases. In the first phase, the focus will primarily be on increasing production and productivity through promotion of good agricultural practices and also improving the availability of seed and seedling quality in the public seed certification process. In the first phase, the priority is to strengthen the information flow between traders and farmers on price, quality of products and also on cultivation practices. More formal relationship between traders, processors and farmers will be promoted under Intervention 1. This intervention will be a strong step towards improving the commercial orientation of the cocoa farmers by linking them with traders and companies and also establish the commercial values of investing in good agricultural practices. The overall objective of the phase one interventions is to make incremental change in the productivity and production without changing the investment needs of farmers drastically. The second phase interventions aims at bringing in step changes in productivity and production which would require additional investments. The second phase of intervention, therefore, focuses more on creating a supporting environment for further intensification of cocoa commercial farming, by making financial and credit services available for cocoa farmers. However, these interventions will be more meaningful when the cocoa farmers in

Papua have adopted more commercial cocoa farming. Figure 3 presents the sequence of the proposed interventions.

Figure 3: Sequencing and Prioritizing Interventions



5.5 Sector Vision of Change Logic



Annex 1: Intervention Logic Analysis Framework (ILAF)

(1) Problem/ Symptom	(2) Underlying caused	(3) (4) Supporting function / rules	(5) Weaknesses	(6) Intervention	Service Provider/ Partner
<p>Low production (low volume of bean per harvesting period)</p>					
<p>Why-1</p> <ul style="list-style-type: none"> Farmers do not maintain the cocoa trees appropriately <ul style="list-style-type: none"> Farmers have insufficient knowledge in maintaining cocoa trees Farmers have limited financial resources to maintain cocoa trees Farmers do not see the benefit of maintaining cocoa trees and prioritizing the budget allocation for maintaining cocoa trees 	<p>Limited provision of information on GAP in maintaining cocoa trees</p> <p>Limited access to financial services</p> <p>Lack of knowledge in financial management</p>	<p>Information and extension services</p> <p>Financial services</p>	<p>Limited knowledge and lack of resources and facility of public extension services in providing services and wide coverage area.</p> <p>Limited private information/extension services</p> <p>Financial service institution do not see the business opportunity in financing cocoa farmers</p> <p>Limited experience of financial institution in providing services in cocoa sector</p> <p>Financial institution has lack of suitable financing products and requirements for cocoa farmers</p>	<p>1.Support the promotion of integrated cocoa development centre by big processor/trader to increase the good quality cocoa production for household farmers in the district of Jayapura, Keerom and Sarmi</p> <p>2.Support the development of financial access and appropriate financing product to cocoa farmers in the district of Jayapura, Keerom and Sarmi</p>	<p>District government extension services</p> <p>Cocoa processing factory</p> <p>Cocoa trader</p> <p>Financial services institution</p>

(1) Problem/ Symptom	(2) Underlying caused	(3) (4) Supporting function / rules	(5) Weaknesses	(6) Intervention	Service Provider/ Partner
<p>Why-2</p> <ul style="list-style-type: none"> • Frequent infestation by pest and disease <ul style="list-style-type: none"> ○ Farmers have insufficient knowledge in pest and diseases control ○ Trees are susceptible to pest and diseases <ul style="list-style-type: none"> ▪ Farmers planted low quality seedling <ul style="list-style-type: none"> - Farmers did not have any choices to the sources of good quality seedlings provided by government program 	<p>Limited information and knowledge on GAP in controlling pest and disease</p> <p>Government program distribute free and specific seedlings to farmers</p> <p>Limited access of information and resources to good quality seedlings</p>	<p>Information and extension services</p> <p>District government regulation regarding the use of seedlings provided by government</p> <p>Seedlings producing services</p> <p>Occulting and grafting services</p>	<p>Limited knowledge and lack of resources and facility of public extension services in providing services and wide coverage area</p> <p>Seedlings producer do not see demand of selling seed commercially</p> <p>Poor government's planning of appropriate seedlings distribution to the farmers</p>	<p>1.Support the promotion of integrated cocoa development centre by big processor/trader to increase the good quality cocoa production for household farmers in the district of Jayapura, Keerom and Sarmi</p> <p>3.Facilitate the capacity development of district government in policy planning of appropriate good quality cocoa seed distribution</p>	<p>Seedling producers</p> <p>District government</p>

Annex 2: Identified Market Actors

Market Function	Company Name	Name/Position	Contact details	Notes
Inter-Island Trader/Collector	PT Purni Perkasa Papua Jaya	Mrs. Kasmini/Director	Jl. Pasar Youtefa, Abepura Jayapura	Main market: Makassar, Surabaya and Jakarta
Exporter	CV Kakao Kita	Mr. Decky Alexander Rumaropen/Director	Jl. Stadion Hawaii, Sentani, Papua	Natural based dry cocoa bean products, mainly exported to Japan
Large Scale Processor (Manufacture)	PT Cargill Indonesia	Ms. Camille Paran/Sustainability Manager	Kompleks KIMA Makassar	Processing factory in Sidoarjo, East Java

Annex 3: List of Respondents

No	Date	Market Function	Company	Name/Position	Location	Contact details
01	05-01-2015	Inter-Island Collector	Garuda Store, Abepura	Harry/ Assistant Director	Abepura, Jayapura	Geryliawan Street, Abepura, Jayapura, Papua.
		Inter-Island Collector.	Pusat Koperasi Unit Desa (PUSKUD), Papua Province.	Jonh Wahey / Director of Puskud, Papua Province.	Kotaraja, Jayapura	Raya Sentani – Kotaraja Street (besides PT. Taspem Building), Kotaraja, Jayapura.
02	06-01-2015	Village Collector and Local Processing	Cv. Made Mulya Asih.	Drs Made, M.Si/Director	Waena, Jayapura	Raya Sentani – Waena Street, Jayapura, Papua.
		Inter-Island Collector.	PUSKUD, Papua Province.	Jonh Wahei / Head of PUSKUD Papua, and Head of APKAI, Papua Branch.	Kotaraja, Jayapura.	Raya Sentani – Kotaraja Street (besides PT. Taspem Building), Kotaraja, Jayapura.
		Inter-Island Collector	PT. Purni Jaya, Jayapura.	Hasan / PR and Ahmad / Accounting.	Yotefa, Abepura, Jayapura	Pasar Baru Street, Yotefa, Abepura, Jayapura.
03	07-01-2015	Inter-Island Collector	PT Purni Papua Perkasa Jaya, Jayapura.	Hj. Kasmini / Director	Yotefa, Abepura, Jayapura	Pasar Baru Street, Yotefa, Way Mhorok Village, Kotaraja, Abepura, Papua. Phone: +62 967-584679.
		Trading	-	Darman/ District Collector	Sarmi	Darman, East Bonggo District, Sarmi Sub-District
		Trading	PT. Purni Papua Perkasa Jaya	Nurhuda/District Collector	Sarmi	Nurhuda, Bonggo District, Sarmi Sub-District
04	08-01-2015	Village Level Collector	Private Sector	Klemens	Nembugresi/ Suna Districts.	Nembugresi Village, South Gresi District, Jayapura Regency.
	08-01-2015	Farmers	Head of Farmers' Association	Salmon Kwano / Head of Farmers' Association	Klaisu Village, Kentuk Gresi Sub-District, Jayapura Regency.	Klaisu Village, Kentuk Gresi District, Jayapura Regency.
	08-01-2015	Input: Cocoa Seeds	BBI Besum, Department of Agriculture, Papua Province.	Hassan / Head of Assistant	Besum, Nimboran Sub-District	Besum, Nimboran Sub-District, Jayapura District, Papua Province.

No	Date	Market Function	Company	Name/Position	Location	Contact details
	08-01-2015	Input: <ul style="list-style-type: none"> Fertilizer Pesticide 	Fertilizer and Pesticide Store	Suherman/ Owner	Besum, Nimboran District	Besum, Nimboran Sub-District, Jayapura Regency, Papua Province.
		Trading	-	Yohanes Kopong/ Village Collector.	Jayapura	Yohanes Kopong, Sawesuma Village, Unurum Guay District, Jayapura District
05	09-01-2015	<ul style="list-style-type: none"> Input Collector 	Assistant II, Jayapura Sub-District, Attending Meeting	Assistant II, Jayapura Sub-District, (Could not be interviewed because he/she was attending Meeting)	Jayapura Sub-District Regent's Office	Jayapura Sub-District Regent's Office; Raya Depapre - Sentani Street, Jayapura.
	09-01-2015	Collector	Collector in Sentani City	Leader (not giving any respond because he/she was busy when team was trying to approach).	Sentani City	Raya Depapre - Sentani Street, Sentani Kota, Jayapura District.
		Trading	-	Alex/District Collector	Jayapura	Alex, Unurum Guay District, Jayapura
06	10-01-2015	EMKL Expedition Service	PT. Kartika, Jayapura.	Taipin/ Director	Jayapura City	Koti Steet, Old Terminal, Jayapura City, Papua.
	10-01-2015	EMKL Expedition Service	PT. TPIL Logistics, Jayapura.	Aris Toding/ Marketing Executive.	Jayapura	Koti Street No.25 Jayapura, Papua. Phone: +62 967 524 546.
	10-01-2015	Inter-island Collector	Private Sector	Nur Wahid / Director.	Arso IV	Arso IV, Keerom District
07	14-01-2015	Counselling	Department of Food Securities and Fortress and Agriculture Counselling, Jayapura Sub-District (BKP5K).	Barnabas Mangar, S.Pi.MM / Head of Development and Institution counselling in Jayapura Sub-District BKP5K.	Jayapura Sub-District Department of Agriculture's Office, in Sentani	Jayapura Sub-District Office Complex in Gunung Merah, Sentani. Raya Depapre – Sentani Street, Sentani.
		Input	Department of Agriculture, Papua Province	Ir. Yan Yarangga / Head of Production section in Papua Province's Department of Agriculture.	Papua Province Department of Agriculture's Office in Kotaraja.	Raya Sentani – Kotaraja Street, Kotaraja, Jayapura, Papua.
		Financing	Religion counselling Institute (LPK) Papua.	Drs. Irianto Yakobus / Head of Program Division	Kotaraja, Jayapura.	Raya Sentani – Kotaraja Street, Kotaraja, Jayapura, Papua.

No	Date	Market Function	Company	Name/Position	Location	Contact details
		Trading	PT. Purni Jaya	Andi/ District Collector	Jayapura	Andi, Yapsi Sub-District, Jayapura District
08	15-01-2015	Financing	Bank BRI Genyem Branch.	Head of Credit Division	Genyem, Nimboran Sub-District.	Genyem, Jayapura District, Papua Province.
	15-01-2015	Financing	Bank BRI Genyem Branch.	Head of Credit Division	Genyem, Nimboran Sub-District.	Genyem, Jayapura District, Papua Province.
	15-01-2015	Financing	Bank of People's Credit (BPR) of Irian Sentosa.	Head of Credit Division	Genyem, Nimboran Sub-District.	Genyem, Jayapura District, Papua Province.
09	19-01-2015	Input: Seeds	Department of Agriculture, Jayapura Sub-District.	Ganefo, S.Pt / Head of Agriculture section, Jayapura Sub-District	Office of Jayapura Sub-District's Regent	Raya Depapre – Sentani Street (Red Genung), Sentani.
		Rules	Department of Agriculture, Sarmi District	Fachrudin, SE/ Head of Production section	Office of Sarmi District's Regent	Petam, Kasukwe
10	20-01-2015	Inter-Island Collector	John Ambon	John / Director.	Arso II	Arso II Transmigration Location, Keerom Sub-District, Papua Province.
		Inter-Island Collector	Nur Wahid	Nur Wahid / Director.	Arso IV	Arso IV Transmigration Location, Keerom Sub-District, Papua Province.
		Market	West Koya	Jayapura City Government	West Koya	West Koya Transmigration Location, Jayapura City Government, Papua Province
		Farmers		Karel Isiu/ Farmer trained by Agriculture Department, Sarmi Sub-District	Kasukwe Village	Office of Sarmi Sub-District's Regent Street
11	21-01-2015	Input: Seeds	Franchise: CV. Cenderawasih Wamena.	Sumanto / Director.	Kertosari	Raya Depapre – Sentani Street, Sentani Kota District, Jayapura Sub-District.
		MKL Service: Logistic.	PT. PELNI Jayapura Branch	IMRON / Head of MKL Division, PT PELNI, Jayapura Branch.	Argapura, Jayapura.	Raya Sentani – Argapura Street, Jayapura, Papua Province.

No	Date	Market Function	Company	Name/Position	Location	Contact details
		Supporting Function	Bank Papua, Cab. Sarmi	Matheus/ Head of People's Economy Department	Sarmi Sub-District	Inpres Mararena Street, Sarmi District, Sarmi Sub-District
		Inter-Island Collector	PT. Purni Papua Perkasa Jaya		Sarmi Sub-District	Bagerserwar
12	23-01-2015	Processing and Trading	PT Mars	Director of PT Mars	Makassar	Makassar
		Processing and Trading	PT Cargill Indonesia	Director of PT Cargill	Makassar	Makassar
		Processing and Trading.	PT Effem Indonesia	Director	Makassar	Kima X Street Kav.A16, Biringkanaya, Makassar, South Sulawesi.
		Processing and Trading.	PT Koleko Cocoa Industries.	Director	Makassar	Kapasa Raya Street No. 2, Biring Kanaya, Makassar, South Sulawesi.
		Regulations	Department of Food Security and Counselling	Idrus Hutabarat / Secretary	Sarmi Sub-District	Baru Petam City, Sarmi
13	24-01-2015	Processing and Trading.	PT Sanitas Murni Utama.	Director	South Jakarta	Kapul Kamal Raya Street No. 82, Penjaringan, North Jakarta, DKI.
14	26-01-2015	Research and Development.	Institute for Coffee and Cocoa Research of Indonesia.	<ul style="list-style-type: none"> • Dr. A. Adi Prawoto / Scientific Board. • Dr. Soetanto Abdulah / Researcher / Member of Cocoa Association Indonesia 	Jember	Institute for Coffee and Cocoa Research of Indonesia. P.B. Sudirman Street No. 90, Jember 68118; Phone: (0331) 757130, 757132.
15	27-01-2015	Market.	* Market	Puspa Agro.	Sidoarjo	Sidoarjo
	27-01-2015	Processing and Trading	PT Teja Sekawan Cocoa Industries.	• Fajar Harudi / Assistant Director.	• Rungkut, Sidoarjo.	• Rungkut Industries li / 27; Tenggilis Street, Surabaya, East Java.
	28-01-2015	Processing and Trading.	PT Multi Aneka Pangan Nusantara.	Agus / Director of Quality Control; and Mr Eko / Director of Production section.	Cangkir Village / Gresik.	Cangkir Village, Km.21; Driyorejo, Gresik, East Java.
	28-01-2015	Processing and Trading.	PT Jebe Cocoa Indonesia.	• Ms Ika / Head of Logistic section (could not be	Gresik, East Java	Manyar highway Street (Turn Right), Gresik, East Java.

No	Date	Market Function	Company	Name/Position	Location	Contact details
				interviewed because of the limited time) • Eko / Security / Informant for Logistic section.		
	28-01-2015	Processing and Trading.	PT Cargill Indonesia	Could not be interviewed	Gresik, East Java	Manyar Highway Street (Turn Right), Gresik, East Java.

BEING UPDATED

Annex 4: Investigation Team

Augustinus Rumansara, Project Manager, Yayasan Pengembangan Prakarsa Wirausaha Papua

Yohanes Hambur, Program Coordinator, Yayasan Pengembangan Prakarsa Wirausaha Papua

Patrcia Makabory, Field Coordinator, Yayasan Pengembangan Prakarsa Wirausaha Papua

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