

**COCONUT SUB-SECTOR GROWTH STRATEGY
IN
EAST JAVA AND WEST NUSA TENGGARA
October 2015**

DROPPED

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1. Executive summary

Coconut products are experiencing growing popularity in international markets. The total production in recent past have seen an upward trend. Indonesia and Philippines together produces more than 50% of world's total production. There is a booming international demand for coconut sugar, fuelled by the growing health concern in developed countries. However the market for coconut sugar is centred on organically certified sugar.

Even though Indonesia is the largest coconut producer in the world, it lags behind the second largest producer in terms of export earnings from coconut products. The overall productivity of Indonesia is above the world average, however there is very little value addition, which is why they miss out on earnings from exporting coconut products.

Smallholders' coconut sugar production in Indonesia is often inefficient and unhygienic, which reduces the quality of the end product. There are large number of households involved in coconut sugar production and the processing is dominated by women at the household level. There are growing demands for coconut sugar in the international market, and there are also unmet demand from the local food industry. East Java and Lombok sub districts are major coconut producers in eastern Indonesia, but it is considered as secondary crops. Hence there producers do not invest sufficient money or effort to improve the productivity. Also there is very limited support or attention from the govt. to the sector. There is an established trading system for coconuts, but collective production and sales by producers is under-developed. There are very limited value addition at the producers' level, which is why they could not access into the high value markets.

There are 4 key problems that restrict farmers' opportunity to increase their income from the crop. Farmers fetch low income because coconut sugar is not sold as organic products. The sugar is of inferior quality because processing quality and efficiency are low. Export market for coconut sugar cannot be tapped because small producers are not linked to exporters. Farmers do not practice optimum agricultural practices which results in low yield in East Java and Lombok.

The problems at the farmers' level are the outcome of several weaknesses at the service market. Those weaknesses include – non-existent certification service, non-existent extension services to promote good agricultural practices, lack of information on better processing technology and no service provider to introduce better technologies.

There is clear market opportunity to integrate coconut producers in East Java and Lombok, link them to the coconut sugar exporters and large processors who can help them in organic certification and accessing high value markets to increase their income. There are opportunities to increase the incomes of producers by introducing new skills and upgrading production practices to boost productivity and product quality.

The vision of change at the sector level is to increase smallholder producers' productivity, improve quality of their coconut sugar and create access to high value markets to meet growing demand. And at the level the vision of change is to improve in key service areas for the producers such as extension services, business brokering, promotion, organic certification, improved processing services and financial services. These vision will be realized through interventions that bring systemic and sustainable change in the market. The interventions are –

- Introduce organic certification to coconut producers and clean cook stove technology for production of better quality coconut sugar for export market.
- Establishment of coconut aggregation point to create market access and encourage farmers to adopt improved practices.

AIP-PRISMA

Australia-Indonesia Partnership for
Promoting Rural Income through
Support for Markets in Agriculture



The 1st intervention will work with large coconut sugar exporter and will focus in Pacitan and Trenggalek districts in East Java. The 2nd one will work with large buyers/traders and will focus in Central and West Lombok. Both the intervention are envisaged to start at the same time.

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2. Background

Department for Foreign Affairs and Trade (DFAT) has been a key player in supporting development activities in Indonesia. The Australia Indonesia Partnership for Decentralization - Rural (AIP - Rural) aims to increase rural incomes in 5 provinces of Eastern Indonesia. The goal of Promoting Rural Income through Support for Markets in Agriculture (PRISMA) is to contribute to a 30%, or more increase in net incomes for 300,000 poor rural female and male farmers by December 2018.

To enable a quicker start for the new project by identifying potential partners, building up their capacity to take on the role of market facilitators, AIP-Rural commissioned Swisscontact – Swiss Foundation for Technical Cooperation – to implement a small project called IMDI (Introducing Market Development in Indonesia) from October 2012 till 31 March 2014. The coconut sector was selected because it one of the main income source for many farmers in Indonesia such as Trenggalek and Pacitan in East Java and Lombok in West Nusa Tenggara.

This Growth Strategy Document (GSD) on coconut sector in East Java and West Nusa Tenggara has been produced by SNV Indonesia through IMDI from sector assessment in early 2013. The document is not intended as a comprehensive sector report; rather it is to provide a logic and rationale for market-based interventions for the benefit of small-holder producers in coconut sector.

3. Sector description

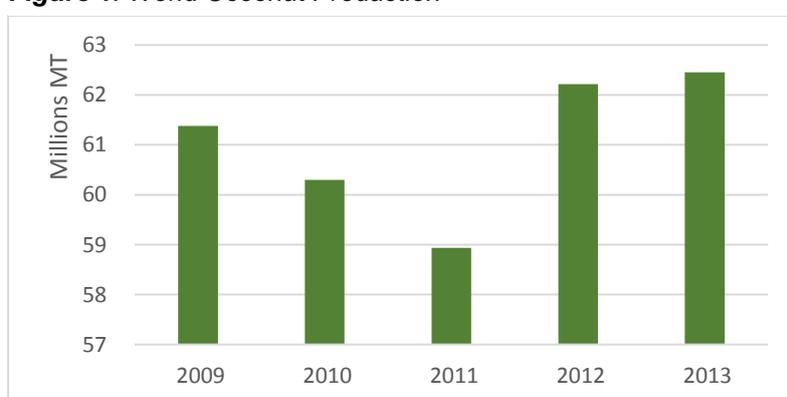
3.1 Sector profile

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 coconut sector.

3.1.1 Overall context

Coconut products are experiencing growing popularity in international markets. Coconut can be processed into a wide range of products including fresh green and dry nuts, copra, virgin coconut oil, coconut water/juice, desiccated coconut, coconut milk, coconut cream, coconut charcoal, activated carbon, brown sugar, and coconut fiber. Coconuts are produced in 92 countries worldwide on about 12 million hectares land. Figure 1 shows the world coconut production from 2009 to 2013¹.

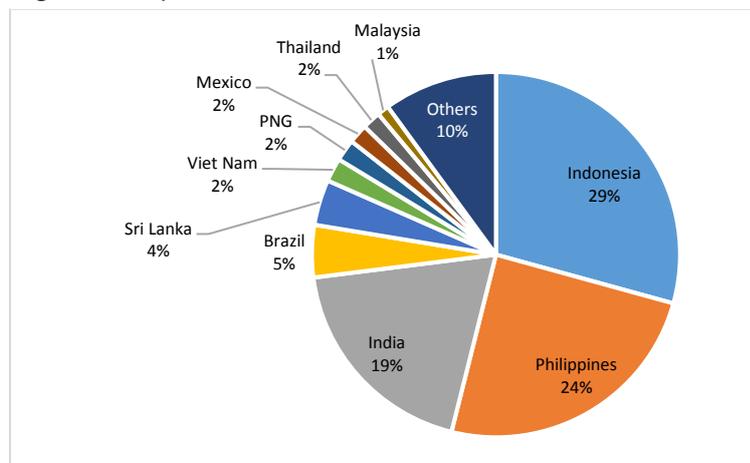
Figure 1: World Coconut Production



There was a down turn in production from 2009 to 2011, however it is increasing since then. World production has been estimated at 62.45 million MT.

Indonesia and Philippines together produce more than 50% of world's total coconut. Figure 2 shows top 10 Coconut producers in the world. From

¹ <http://faostat3.fao.org/home/E>

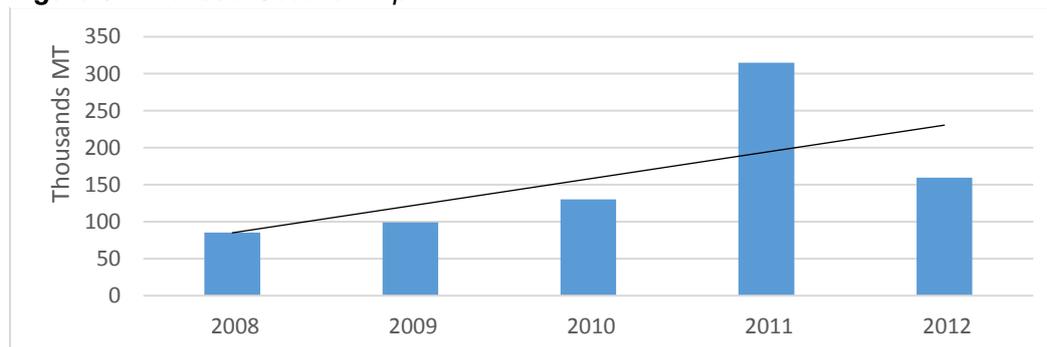
Figure 2: Top 10 Coconut Producer 2013

2008 to 2013, the total coconut production of three major coconut producers – Indonesia, Philippines and India – in the world have been mostly steady. Total harvested area under coconut in Indonesia is 3 million hectares and in Philippines it is 3.55 million hectares. Total harvested land have been steady over the last 5 years.

Indonesia is one of the largest exporter of coconut in the world.

The total export from Indonesia has

increased, with an unusual high amount of export in 2011 (Figure 3). Major importer of Indonesian coconut are Malaysia (67%), China (14%) and Thailand (10%)². Indonesia imports an insignificant amount of coconut (around 1100MT), mostly from Thailand in the form of green/fresh coconut.

Figure 3: Indonesia Coconut Export

The three most important forms of consumption for coconuts are fresh (including drinking), coconut oil and desiccated coconut.

Global consumption of fresh nuts is growing at a remarkable pace for coconut water and milk (some 30% of coconut consumption). Coconut water is growing in popularity worldwide as a healthy beverage and the milk is used in a number of food products. With the purchase of two Brazilian coconut water manufacturing Companies, one by Pepsi Cola and one by Coca Cola, coconut water entered the mainstream soft drink market. The coconut water market was worth over USD 400M in the US alone where imports of coconut water increased by 950% between 2004 and 2012³.

World coconut oil production has been somewhat stable over the decade. It is now estimated at 3.2 million MT per annum. This accounts for 2.5% of the world vegetable oil production. Over 60% of the global coconut oil production comes from the Philippines and Indonesia.

² <http://faostat3.fao.org/home/E>

³ Datamyne.com

Coconut oil (copra) exports have been fairly steady over the past decade. In 2012, just over 2M MT of coconut oil were traded on the world market. The Philippines was the largest exporter, accounting for 40% of world exports. The USA and Europe were the largest markets, accounting for more than 55% of coconut oil imports⁴.

Desiccated coconut is a well-established product and a larger number of countries can produce it than coconut oil. Global export of desiccated coconut is around 300,000 MT annually. This is dominated by Philippines, Indonesia and Sri Lanka. Indonesia exports around 61,500 MT desiccated coconut to the world, Singapore and Germany being the major destination.

Global production of coconut husks has been estimated at 23 million tons. This is the largest potential growth area for coconuts. It is used in the production of some 6 million tons of coir fiber and 14 million tons of peat (FAO stats).

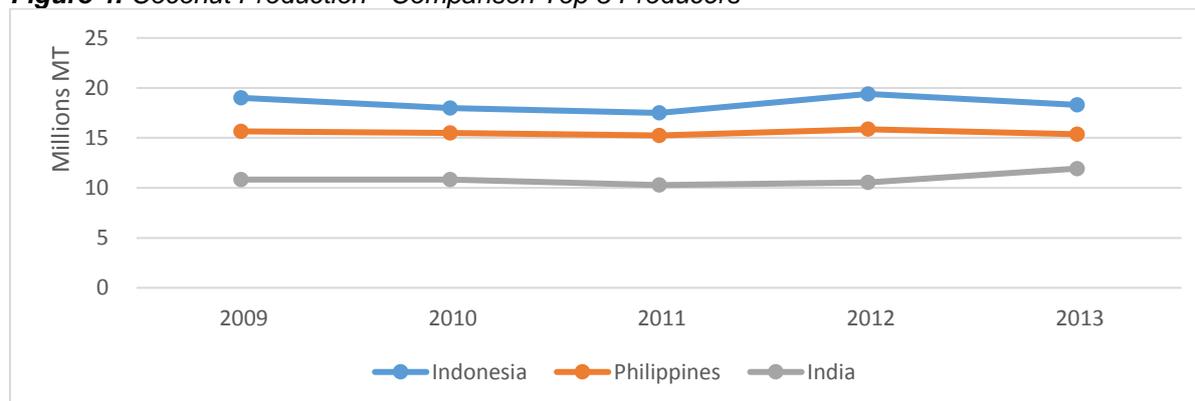
There is booming international demand for coconut sugar. The primary driver of this demand is the market for alternative sweeteners, which is driven by growing levels of obesity and diabetes. The low glycemic index of coconut sugar – around half that of regular table sugar – is the key reason why it is seen as a healthier substitute for table sugar. It is also marketed on the basis of its high nutrient content and distinctive taste. Coconut sugar is sold in health food shops in North America, Europe, Australia and North Asia and widely used in chocolate and bakery products.

Due to concerns about quality, demand in international markets centers almost exclusively on organically certified sugar. Coconut sugar is mainly produced by small producers with rudimentary processing equipment, lax quality standards leading to concerns that products will contain harmful contaminants. Buyers see organic certification as providing some guarantee of product quality. Since demand for coconut sugar comes from diabetic and health food manufacturers and outlets, organic certification also has some value addition for marketing. The designation 'organic' is accredited by a number of regulating bodies, the most recognized for compliance for organic are EU regulation, NOP(national organic program) in the US and JAS in Japan. Certifying bodies providing inspection and certification services must be accredited by NOP and EU administrating bodies so their issuance of certification is valid according to their standards.

3.1.2 Local context

Indonesia is the world's largest coconut producer, though it lags behind its competitors in terms of exports to the growing world market. As of 2013, Indonesia is the biggest coconut producer in the world, followed closely by the Philippines and then India (Figure 4). However, Philippines is the largest exporter in all categories of coconut products.

⁴ <http://faostat3.fao.org/home/E>

Figure 4: Coconut Production - Comparison Top 3 Producers

The major coconut producing provinces in Indonesia are Riau, Central Java, East Java, North and Central Sulawesi, and East and West Nusa Tenggara. In 2012, Philippines earned USD1.33 billion from the export of coconuts, copra, copra cake, desiccated coconut and coconut oil. At the same time Indonesia earned USD1.15 billion from the export of same coconut products⁵.

The most notable export products from Indonesia are coconut milk/ cream, coconut milk powder, coconut oil, desiccated coconut and coconut shell. Table 1 shows Indonesia's market share in the world trade for different category of coconut products.

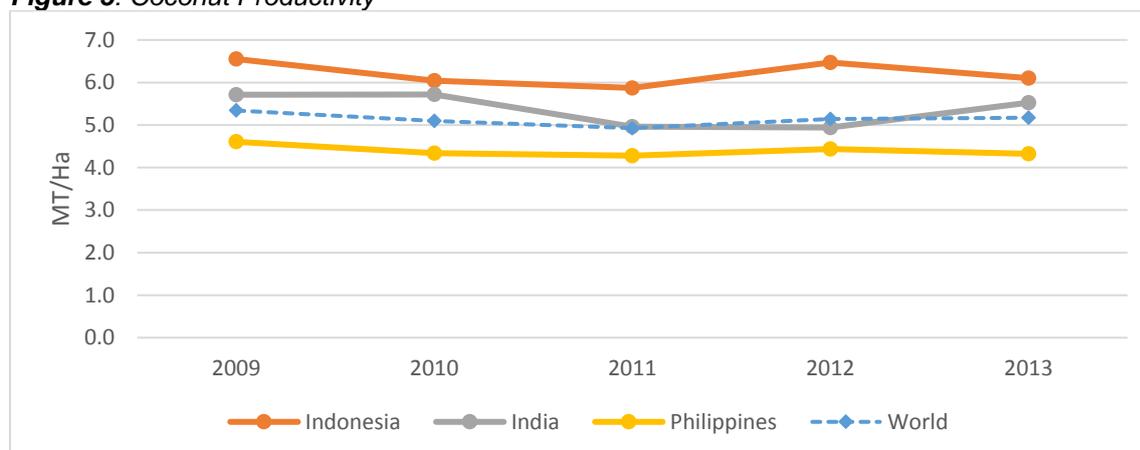
Table 1: Indonesia's Market Share in World Coconut Trade

Coconut Product	Indonesia Market Share
Cream	8%
Powder	29%
Oil	37%
Shell	38%
Copra meal	30%
Desiccated coconut	21%

There are facilities for coconut processing and packaging for export, which support exports to the US, and also serve the growing domestic demand for instant products from a rapidly urbanizing Indonesia. Domestic and foreign companies like PT Tulus Tritunggal, Thai Agrifoods, Asiatic Agro-Industry Co. Ltd, PT Green Mountain Purveyors, and Haeil International are among those investing in the development of coconut processing facilities in Indonesia.

The productivity of Indonesian coconut farmers is higher than its competitors, however there is little value added processing. The highest yield – 18.9MT/Ha – in the world in 2013 is recorded on Puerto Rico, however its total area harvested and total production are very small and they have a very little quantity traded in world market. Indonesian producers rank higher than their counterparts in India and the Philippines in terms of productivity (Figure 5). Despite that Indonesia could not take the advantage in international market due to less than optimum value addition at the local level.

⁵ FAO 2012.

Figure 5: Coconut Productivity

Assuming an annual production of 15.42 billion⁶ coconuts, Indonesia has the technical potential to produce 3.5M MT of coconut water, 0.75M MT of charcoal, 1.5M MT of fibre and 3M MT of coco peat every year. However, production currently falls far short of this potential, due to the limited capacity of the small or home industries that generate many of these products. There are only around 14 large-scale integrated or partial coconut processing operations in Indonesia, including in North Sulawesi (4), Central Sulawesi (2), Riau (4) and Jambi (4). These operations produce products such as cooking oil, activated carbon, coconut fibre, desiccated coconut, brown sugar, and coconut milk and water.

Smallholder coconut sugar production in Indonesia is often inefficient and unhygienic, and the quality of the end product is variable. Coconut sugar is obtained by processing nectar collected from the flower of the coconut palm. To tap the nectar, coconut palm tappers slice the tip of the flower spike and fix a collecting vessel in place. The nectar is collected up to two times a day. The processing of coconut sugar from the nectar are dominated by women and processed at the household level. They boil the sap for around four hours, following which it is crystallised or dried in blocks. Producers normally use basic equipment and processing methods. The wood fire cook stoves typically used to cook coconut nectar are not fuel efficient, and unhygienic cook stoves and drying processes mean that the quality of the end product is variable. Government involvement in the development of standards and extension services for coconut sugar producers is virtually non-existent. The local governments in the target districts have no policies aimed at promoting the development of the coconut sector, and there are no relevant local government programs on coconut sugar. Compared to the Philippines, which has actively promoted the implementation of standards for coconut sugar production, the quality of coconut sugar in Indonesia is unreliable.

There is unmet demand from the local food industry for coconut sugar, which is a preferred ingredient in sweet soy sauce. Although growing numbers of producers in West and Central Java are producing coconut for export, in East Java coconut sugar is produced by smallholders, collected and traded by local intermediaries, and sold almost exclusively on local markets. There is significant domestic demand from the local food industry for coconut sugar, which can be used to make *kecap manis* (sweet soy sauce), a popular condiment. However, demand from food manufactures reportedly outstrips supply, and has led some to substitute

⁶ Asian and Pacific Coconut Community, 2012

brown cane sugar for coconut sugar. Coconut sugar is also used in the manufacture of *kretek* (sweet clove cigarettes) and the production of local foodstuffs and herbal remedies.

East Java and Lombok are major coconut producing area in Indonesia, but coconut is seen as a low value supplementary crop and cultivation is rudimentary. Coconut is widely cultivated by smallholders in the selected areas, but normally as a supplementary crop. It is planted on farm boundaries and yards, and to a lesser degree intercropped with major cash crops like sugar cane, cacao, and cassava. Land holdings in East Java are small and average tree ownership is low, with only around 41 trees per household. Meanwhile, in Lombok, despite larger tree holdings, productivity is lower than in East Java. Low farm gate prices and lack of access to extension services mean that smallholder farmers, the major coconut producers, treat it as a secondary crop and rarely apply inputs or seek to control pests. The typical supply chain, from farmer to collectors to local market, adds little value and is sometimes dominated by larger collectors.

Figure 6: Coconut Production East Java (2011)

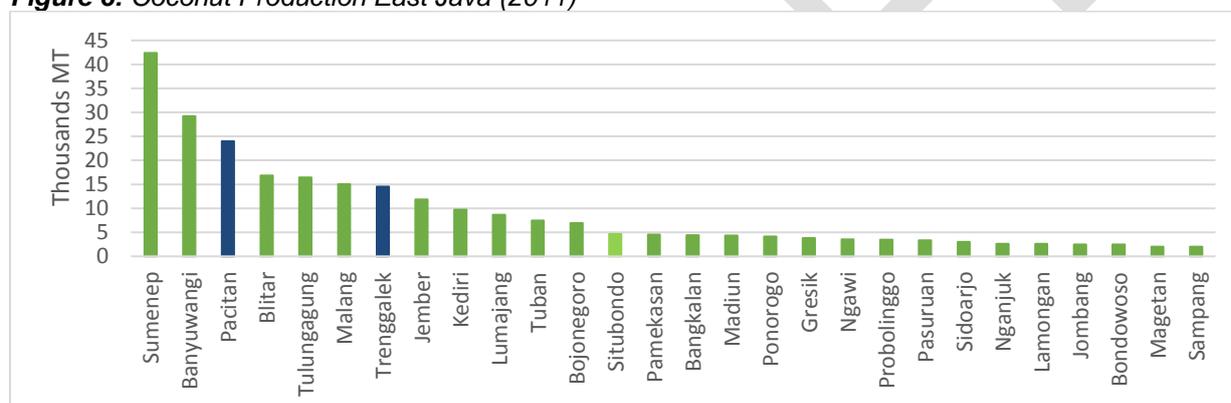
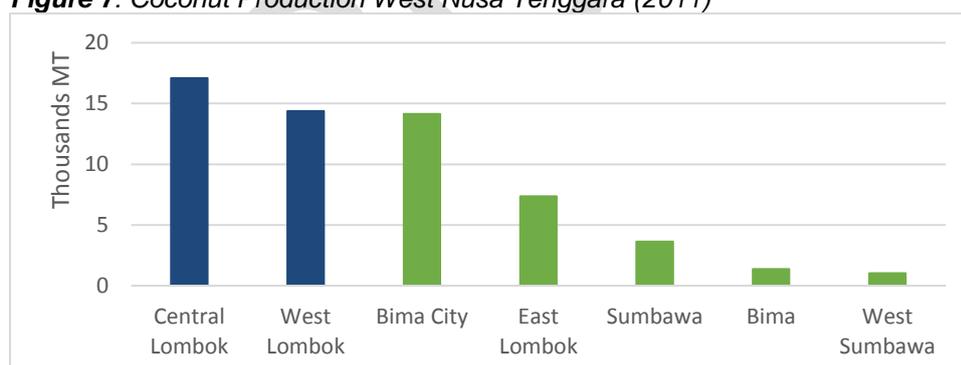


Figure 7: Coconut Production West Nusa Tenggara (2011)



An estimated 750,000 households in East Java and West Nusa Tenggara are involved in coconut production and processing. More than 65% of these households are below the poverty line⁷. The major production centres for coconut sugar in Java lie along the south coast stretching from Ciamis in West Java through Banyumas in Central Java and Kulonprogo in Yogyakarta, to Pacitan, Trenggalek and Banyuwangi in East Java. It is estimated that a minimum of 100,000 people in these areas are engaged in the production of coconut sugar, including an estimated 16,000 producers in the initial target areas Trenggalek and Pacitan in East Java. As in

⁷ SUSENAS 2010

most coconut sugar producing areas, coconut sugar produced in these districts is collected and traded by local intermediaries and sold almost exclusively on local markets within East Java⁸.

In East Java, there is significant value-added processing industry only in Trenggalek.

Production of coco fibre and is widespread in Pogalan sub-district in Trenggalek, though the process is labour intensive, and households lack equipment to enable them to scale up production.

The local government is not prioritizing coconut as an industrial sector and there is a widespread perception that coconut is a secondary crop.

The coconut sector is also largely unregulated, and no existing government policies specifically promote its development. The local governments in the target provinces have no policies aimed at promoting the development of the coconut sector. The only relevant local government programs identified in the research were infrequent small-scale coconut seedling distribution activities, which have had minimal impact. Neglect of the coconut sector can probably be attributed to the widespread perception of coconut as only a secondary crop with limited potential for development.

Coconuts are generally traded in a raw, non-processed form for both the young and mature ones.

Supply is affected by season and to a lesser extent weather. Little value is added to the product, apart from grading by retailers in traditional markets, which results in a price increase from IDR 3,250 to IDR5,500. The bulk of trade is in mature coconuts, the vast majority of which are sold on local traditional markets to serve domestic cooking needs. Demand and prices are more stable than for young coconuts.

3.2 Sector dynamics

3.2.1 Market overview

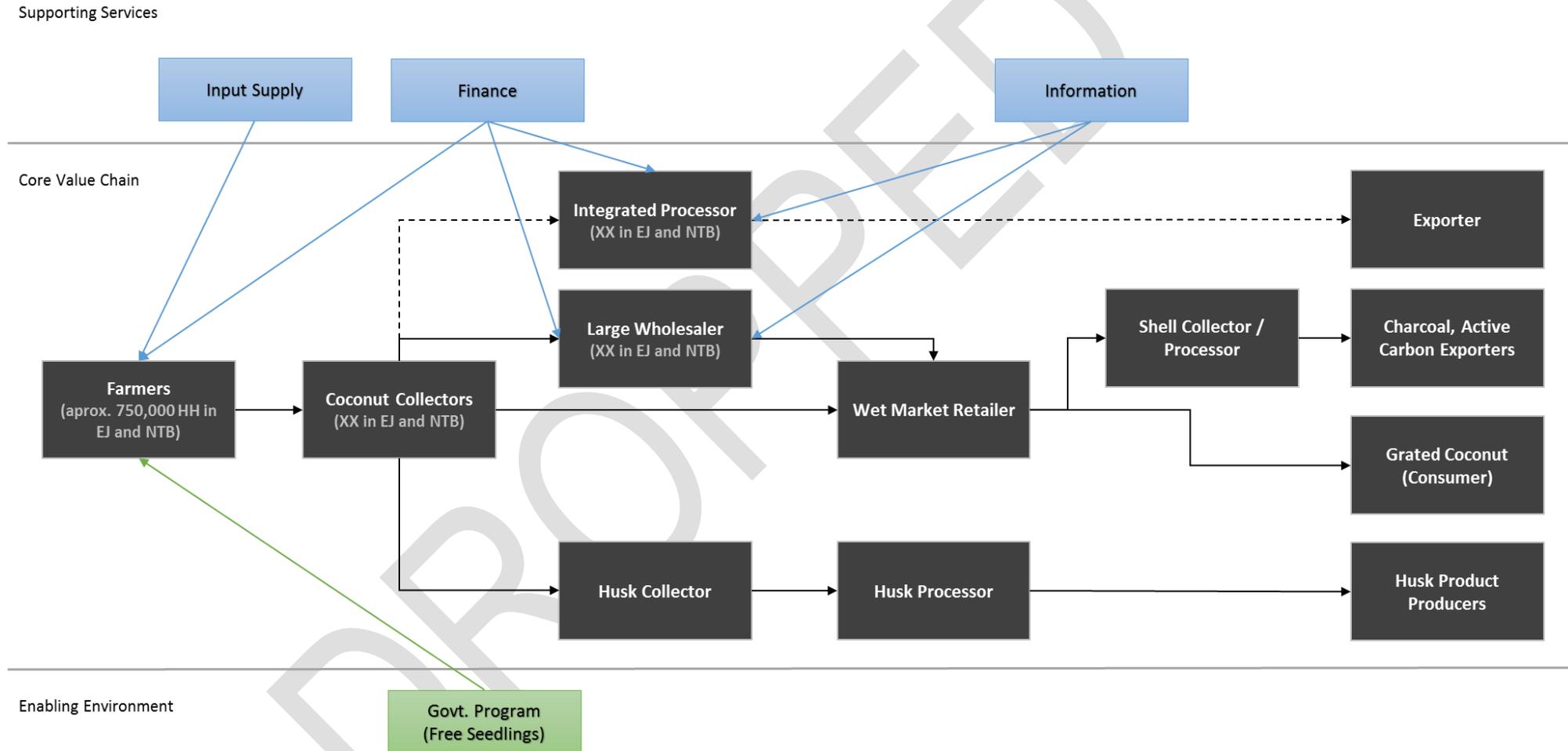
The coconut in East Java and NTB are produced in aging trees. Producers rarely practice good agriculture practice, which is why the yield is significantly low in these areas. Also there is very little value addition at the producer level. They mostly sell it as fresh coconuts to the coconut collectors who then sell them to large wholesalers or processors. However, there are significant number of households involved in coconut sugar production from the nectar collected from coconut trees. This is mostly done the women at the household level. The processing practice is not very hygienic and efficient which results in inferior quality of end product. That is one of the reason the sugar could take the advantage from the growing demand in world market.

3.2.2 Sector map

The sugar supply chain starts with producers which are generally linked to aggregators at the local level. Some coconuts are sold to large wholesalers and integrated processing operations which turn the coconuts into oil, milk products, and other value-added products, often for export. In the target districts however, the majority of coconuts are processed locally into husks, shell, grated coconut, and charcoal products.

⁸ Data collected through field survey

Figure 8: Sector Map

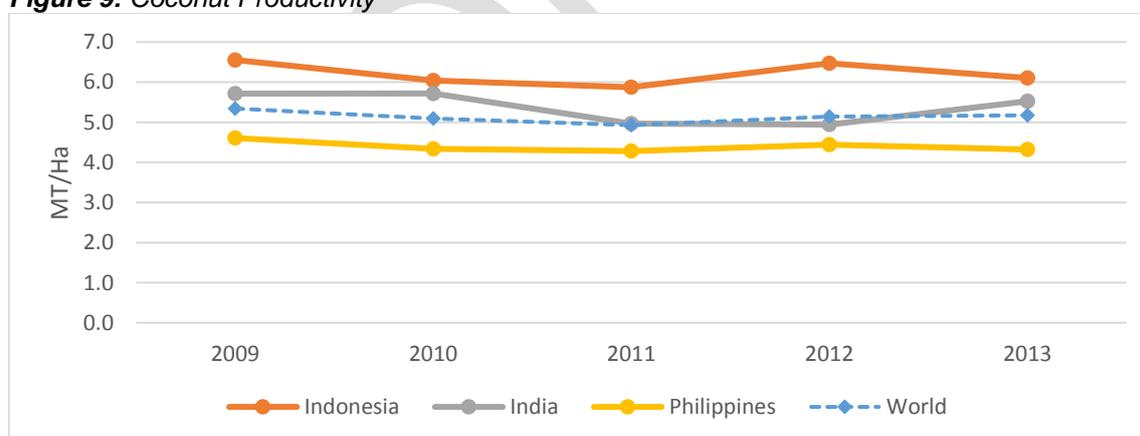


3.2.3 Core value chain

Cultivation is dominated by local varieties *kelapa genjah* and *kelapa dalam*, where productivity improvement practices are rarely observed. Farmers typically conduct seed propagation by themselves with more knowledgeable farmers selecting seeds based on fruit size. Local governments occasionally conduct small-scale seedling distributions, though a one-time promotion of hybrid variety largely failed to promote uptake. Fertilizer and pest/disease control inputs are rarely used, most likely due to a widespread perception of coconut as a secondary crop and requires little by way of inputs. However, inputs are obtained indirectly when coconut is intercropped or cultivated nearby primary crops. Trees that grow near the house are often in noticeably better condition as they are unintentionally fed by waste from cooking. A few farmers have realized the importance of fertilizer application to improve productivity, and sporadically apply urea, NPK, ZA or manure compost. Input stores stock both chemical fertilizers and pesticides, although dosing advice from store managers is generally unreliable.

Coconut plays a role as a secondary income source for farmers. Tree ownership is low, with typically only 23-46 trees per household. Average productivity in EJ and NTB is below 1MT/Ha which is far below the average productivity of Indonesia (Figure 9). Production is affected by seasonal variation, climate conditions, and stability of the water supply. Coconut is often cultivated as a supplementary income source to more traditional crops (staples and horticultural) and is not prioritized by farmers. Management practices are generally poor, and farmers rarely make efforts to improve productivity.

Figure 9: Coconut Productivity



There is an established trading system for coconuts, though collective production and sales by producers is under-developed. It is common for laborers to be hired to harvest and de-husk coconuts, receiving payment worth around 10-20% of the harvest value. Larger traders control the coconut supply chain from collection to market. These traders pre-pay to secure the coconut harvest, paying little below the market price of approx. IDR3,250 per coconut. An auction-type market for coconuts exists in the Gedangan area of Malang, where collector-traders and farmers sell coconuts destined for Malang, Singosari and Surabaya. Farmers only rarely engage in collective action to consolidate supply or negotiate with buyers.

Processing of coconut to add value remains limited in the target areas. The most common forms of processing are de-husking by farmers or collector-traders, grating in traditional markets, and processing or sale of the coconut water and shells that are by-products of grating. There are small-scale processing industries in the areas of: husking, shelling and water collection, copra production, and broom and doormats production. In husking the collector-traders sell to local charcoal-makers fetching around IDR 80,000 - 150,000 per pickup truck load. In coconut shelling and water collection, the shells sell for about IDR 7000 per plastic bag, while nata de coco makers pay IDR 6,000 for a jerry can of coconut water. In copra production, shipments of copra from other islands are processed into cooking oil that sells at highly competitive prices (from IDR 11,000 per 600cc, compared to IDR 30,000 per 500cc of locally produced cooking oil); and, broom and doormats production has become a substantial home industry (particularly in Trenggalek). There is a plan for two new integrated processing facilities in East Java who would produce different products from all parts of coconut for export market.

There is one small enterprise involved in the production of ropes and doormats. There are at least two local copra production units operating locally though owned by large coconut traders in Kampak sub-district. Generally copra is produced locally when the price of coconut falls to around IDR 1,000 per nut, and the copra would be sold to traders in Blitar city who would process it into oil. Coconut sugar production is more widespread, with production is believed to be well in excess of figures from the local Department of Trade and Industry, which recorded 95 coconut sugar producers producing a total of 18,150 kg per month in 2012. Local farmers association Bunga Harapan, which represents farmer groups from 17 villages involved in coconut production, estimates that one village can produce up to 3 MT of coconut sugar per month.

3.2.4 Supporting Functions / Services

The local government is not prioritizing the coconut sector and there is limited local capacity for business support services. District government Extension Officers (EOs) are assigned to help farmers adopt good agricultural practice and to organize beneficiaries for government assistance (usually seedling or materials distribution). But such assistance never focuses on coconut. Researchers could not identify any efforts to address coconut diseases and pests, and EOs themselves have little knowledge of these issues. Dinas Koperasi and UKM (SME) has an office at district level are tasked with supporting small producers and enterprises to access finance, markets and knowledge resources. However, their reach, capacity and programs are very limited. Their programs lack any specific sector focus, and they tend to target only SMEs involved in processing, not the primary producers. Extension officers from the district government have no standard practice or guidance for farmers on coconut cultivation.

Financial services providers in the target areas, have limited reach particularly for small-holders. BRI and PT Permodalan Nasional Madani helps SMEs in the area to access working capital. BRI is the agent for the government credit program for micro enterprise (KUR). The main beneficiaries of the program include local rice farmers, who are organized under registered groups to share the risk of credit default. Applicants must provide an endorsement letter from the village head, and those seeking loans worth over IDR 100M

must provide a tax number and business license. BRI has limited reach and relies mainly on approaches from those seeking loans. It is considering combining its current credit program with a warehouse receipt system currently developed by the Ministry of Trade and Industry of Indonesia that would enable stored commodities to be used as collateral.

Generally inputs providers are not providing high quality technical information.

Although input supply stores are available and stock major items including fertilizer (urea and NPK) and pesticide, they are unable to advice on issues such as appropriate dosages. In terms secondary processing, those are mostly household level processing without much modern and improved processing facilities. There are no active SME Business Development Services to support the introduction of innovation that might greatly improve quality and productivity.

3.2.5 Supporting Rules and Regulations (Enabling Environment)

The government shows little interest in coconut crop development. The national and local governments devote few resources to supporting the development of this sector. Rather the focus is on cash crops that are more vulnerable to weather and climate change. No specific rules govern coconut production and trade and there is no export tax or regulation related to coconut sector, unlike in palm oil which is higher priority as it constitutes a major foreign exchange earner for Indonesia.

4. Analysis

4.1 Problems and underlying causes

The problems and underlying causes are specific to the poor target groups that AIP-PRISMA seeks to support through interventions in the coconut market system in EJ and NTB. These problems have been identified through the Sector Dynamics section above and are also presented in the Intervention Logic Analysis Framework (ILAF) table. The 4 key problems faced by farmers can be summarised as:

- Farmers fetch low income because coconut sugar is not sold as organic products (organic is a signifier of quality).
- Coconut sugar is of inferior quality because processing quality and efficiency are low.
- Export market for coconut sugar cannot be tapped because small producers are not linked to exporters.
- Farmers do not practice optimum agriculture practices which results in low productivity in East Java and Lombok.

Farmers fetch low income because coconut sugar is not sold as organic products (organic is a signifier of quality). Coconut sugar producing areas in East Java such as Trenggalek and neighboring Pacitan are mountainous, and coconut farms there are mostly naturally organic. Although 'organic' has come to be seen as a signifier of quality in the global market, local producers do not have organic certification, leading to low commercial engagement with exporters. The causes of this include the lack of knowledge and capacity

on the farmers' side to achieve organic certification, which is a basic requirement for exporters.

Coconut sugar is of inferior quality because processing quality and efficiency are low. Processing technology and methods are generally inefficient. In particular, the wood cook stoves used to boil nectar use large amounts of firewood and are not fuel-efficient. Product quality is also impacted by poor processing technology and practices. Cook stoves are often unhygienic, and poor processing practices also lead to contamination by insects or other foreign bodies. The causes of this include limited access to technology and knowledge services on good processing practices, and access to the capital to buy appropriate processing equipment which could support production quality and efficiency.

Export market for coconut sugar cannot be tapped because small producers are not linked to exporters. Despite high demand, producers in the target areas sell almost exclusively on local markets and are not linked to exporters. This is mainly because sugar is produced by home industries, which are numerous and mostly unorganized with producers often unaware of the quality standards required by exporters. Also, coconut sugar processors have difficulty in aggregating supply which means their interaction with buyers with higher quality standards is limited. Exporters are currently focused on Central Java and are less active in Eastern Java. The cost for exporters of developing links with large numbers of small producers acts as a disincentive to enter new areas.

Farmers do not practice optimum agriculture practices which results in low productivity in East Java and Lombok. Low productivity amongst farmers is largely due to low adoption of good agricultural practices (GAP) and aging trees. The causes of this are that coconut is not regarded as a major income source and cultivated only as a secondary crop, with farmers rarely applying fertilizer or managing pests, leading to small-holder farmers continuing to realize low farm-gate prices and invest minimally in cultivation. There are no extension services to promote good agricultural practice for coconut farmers and most local stakeholders lack awareness of the economic potential of coconut processing.

4.2 weaknesses in services and rules / regulations

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

- Certification services does not exist.
- Non-existent extension services to promote good agricultural practices.
- No service provider exist to introduce technology and develop skill.

Certification services does not exist. Famers' lack knowledge and capacity to organise organic certification, and no support is available locally. Certification should be relatively simple, quick and inexpensive to arrange. It is also potentially highly beneficial for coconut

sugar producers, who stand to gain a premium of 20% if they sell to exporters. However no system of organic certification has been promoted in the area and farmers are not aware of the potential economic benefits of certification. Also, representative entities for smallholders do not exist to drive this agenda forward.

Non-existent extension services to promote good agricultural practices. Farmers are largely unaware that coconut productivity can be increased by employing low cost good agricultural practices, including fertilizer application, pest control, and intercropping. Coconut is almost entirely neglected by local government extension services. Although inputs are locally available, store managers also lack basic knowledge about fertilizer and pest control. All stakeholders share the perception that coconut is a low-value secondary crop.

No service provider exist to introduce processing technology and develop skill. Currently coconut sugar is processed over an open wood fire often in unhygienic conditions. For the domestic market this is not yet an issue, however for the international market the coconut sugar processing has to meet the appropriate standards. Processors also lack awareness of the poor fuel efficiency of traditional cook stoves as well as the negative health and environmental effects. There are currently no service providers of commercial standard equipment in the target area and access to finance is also a challenge for equipment purchase.

5. Strategy for Change

The strategy is designed to strengthen the weaknesses in the current service provision and enabling environment in the market system. This takes the form of (1) identifying the market potential, through calculations to show the potential of the sector; (2) a vision of change, to envisage how the value chain or market system would operate if identified problems are resolved; and (3) a set of interventions which can be targeted at specific market actors or groups of market actors which can be engaged to drive change in the system.

5.1 Market Potential

There is a clear market opportunity to integrate coconut producers in Malang, Tulungagung, Trenggalek and Pacitan of East Java and Lombok of NTB into the growing market for value added coconut products. Certified organic brown sugar realises a premium of around 20% above conventional coconut sugar. The product is also in high demand on export markets. An opportunity exists to support producers to implement organic standards and develop linkages with exporters. Some producers currently engage in value added processing activities, particularly in Trenggalek. However production techniques and technologies are rudimentary and productivity is low. There are opportunities to increase the incomes of producers by introducing new skills and upgrading production practices to boost productivity and product quality. The increase in productivity of coconut farmers through interventions to develop the market can realise an additional 150M coconuts and nearly 8000MT of coconut sugar. This would **unlock an additional IDR 323Bn in coconut market, and over IDR 93Bn in the coconut sugar market.**

Table 2: Coconut Sector Market Potential

Market / Production Value (IDR)		
	Coconut	Coconut Sugar
Average Selling Price per coconut / sugar per kg (IDR)	2,200	12,000
Current Production (no. of cocunuts and MT for Coconut Sugar)	669,418,152	39,000

Potential Production (no. of coconuts and MT for Coconut Sugar)	816,363,600	46,800
Current Value of Production (million IDR)	1,472,720	468,000
Total value of potential production (million IDR)	1,796,000	561,600
Total potential value of increased production (million IDR)	323,280	93,600

5.2 Vision of change

Focusing on achieving the potential outlined above for the coconut sector in East Java, a vision of change can be outlined for both the sector and service levels. The vision of change at the sector level is: (1) to increase smallholder productivity and market access to higher value markets to meet growing market demand; and (2) to increase coconut sugar producer productivity and supply of coconut sugar to export markets. At the service level it is envisaged that the key services improved will include: (1) extension services – provided to producer groups; (2) business brokering – through processing companies; (3) promotional services – through producer groups; (4) organic certification services (for coconut sugar) – through exporters; (5) improved processing technology services – through processing companies; and, (6) financial services – provided through linkage with exporters.

5.3 Intervention Areas

It is crucial that interventions are designed which are ‘systemic’ so that outcomes are not dependent upon the project or development partner for sustainability. This means that AIP-PRISMA should not seek to provide services (or at least only temporarily) but rather enter the market system in a catalytic manner to tackle the service weaknesses in existing market actors. Based on our analysis, two key intervention areas will be necessary to transform the coconut sector in NTT:

- **Intervention Area 1:** Introduce organic certification to coconut producers and clean cook stove technology for production of better quality coconut sugar for export market.
- **Intervention Area 2:** Establishment of coconut aggregation point to create market access and encourage farmers to adopt improved practices.

Intervention 1: Introduce organic certification to coconut producers and clean cook stove technology for production of better quality coconut sugar for export market.

Organic certification is sought after by buyers as it can raise value when converted into processed products. Certification should serve to improve linkages between small-holder producers, increase the supply of coconut sugar to export markets and promote efficiencies in processing. Although significant numbers of coconut sugar producers along the south coast of West and Central Java already sell coconut sugar for export, producers in East Java are very poorly linked to export markets, which provide premium prices for quality sugar. The intervention addresses the lack of organic certification, which hinders producer access to the export market, and leads to poor production quality and productivity of sugar processing, and a lack of producer linkage to export markets. It is recommended that this intervention be implemented to support smallholder sugar producers in Trenggalek and Pacitan in East Java, together with large coconut sugar processors and exporters.

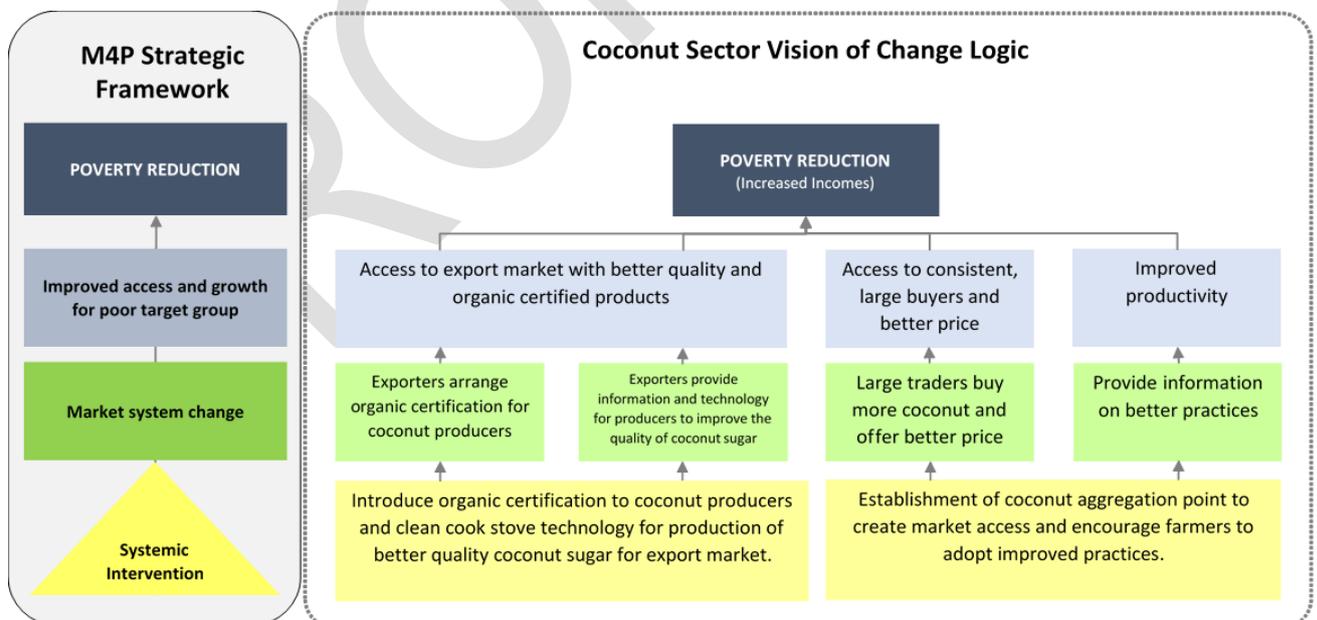
Intervention 2: Establishment of coconut aggregation point to create market access and encourage farmers to adopt improved practices.

Aggregation points will support producers to be able to respond better to market demand by aggregating produce for the benefit of traders. This will support producer organization and attract further traders to serve local areas, and improve supply to local processing industries. The intervention will address the low productivity amongst coconut farmers and the lack of a stable supply of coconut for integrated processing facilities, which hinders investment in the sector. Once the target producers start seeing the benefit from coconut production, they will be motivated to invest in good agricultural practices which can further increase the productivity and ensure increased income for them. Central and West Lombok would be ideal for the implementation of this intervention due to the relatively large numbers of coconut farmers located there and strategic location on the Surabaya - Lombok transport route.

5.4 Sequencing and prioritization of interventions

As the proposed interventions are focusing different geographic locations, so both of them can start at the same time. For intervention 1 once the pilot phase is successful it can be scaled up to more districts which has similar or higher number of coconut producers. For intervention 2 once the pilot phase is successful it can be scaled up to new areas. Also during the pilot phase the early success can be used as motivator for farmers to spend on good agricultural practices to increase productivity.

5.5 Sector Vision of Change Logic



Annex 1. Intervention Logic Analysis Framework (ILAF)

(1) Problem/ Symptom	(2) Underlying cause	(3) (4) Services and Enabling Environment	(5) Service weaknesses/ underlying causes	(6) Intervention Areas	Service Provider/Partner
Farmers fetch low income because coconut sugar is not sold as organic products (organic is a signifier of quality).	Lack of knowledge and capacity to achieve organic certification, which is a basic requirement for exporters	Organic certification services (for coconut sugar)	Certification service does not exist. No representative entities for smallholders exist to drive this agenda.	Intervention 1: Introduce organic certification to coconut producers and clean cook stove technology for production of better quality coconut sugar for export market	<ul style="list-style-type: none"> Coconut sugar exporting companies Large scale processors
Coconut sugar is of inferior quality because processing quality and efficiency are low.	Limited access to knowledge services on good processing practice	Improving processing technology service	No service providers exist to introduce technology and develop skills.		
	Limited access to appropriate processing equipment to support production quality and efficiency	Business brokering	Credit is not supplied to farmers		
	Farmers also have limited access to capital to buy processing equipment.	Access to finance for better tools			
Export market for coconut sugar cannot be tapped because small producers are not linked to exporters.	Sugar is produced by home industries, which are numerous and mostly unorganized.	Business brokering	No service providers exist to introduce technology and develop skills.		
	Coconut sugar processors have difficulty in aggregating supply				
Farmers do not practice optimum agriculture practices which results in low productivity in East Java and Lombok.	Trees are very old, has lost productivity over time. Limited promotion for better coconut varieties with higher yield.	Promotional services	Lack of coordination at govt. level. Research center in Sulawesi, very much underfunded. No private sector actor are involved in providing extension services.	Intervention 2: Establishment of coconut aggregation point to create market access and encourage farmers to adopt improved practices.	<ul style="list-style-type: none"> Exporters of coconut diversified products Input company
	Coconut is considered as secondary crop so farmers lack interest in improving their agricultural practices.				
	There are no extension services to promote good agricultural practice.	Extension services			