



# The Nursery Business Model Overview and the Lessons Learned

Sustainable Cocoa Production Program (SCPP)

10 October, 2017

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## Abbreviations

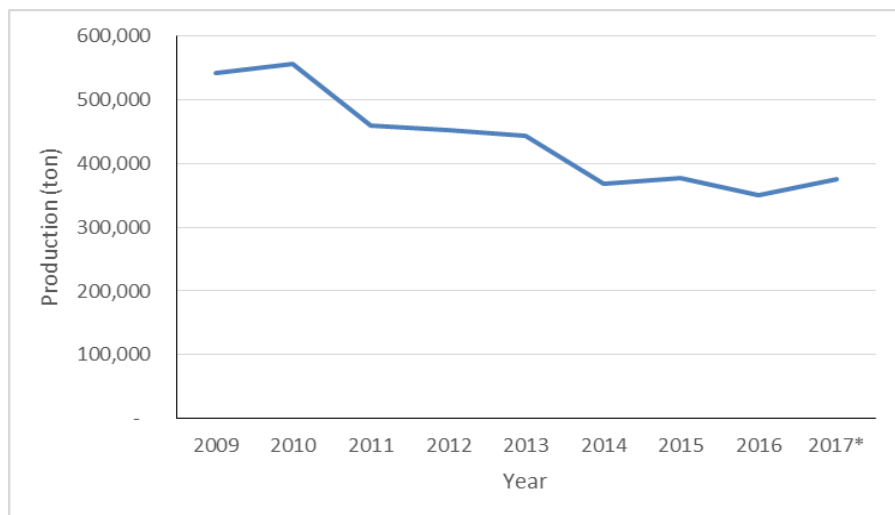
Askindo	: Asosiasi Kakao Indonesia
GP-SCPP	: Green Prosperity - Sustainable Cocoa Production Program
ICCRI	: the Indonesian Coffee and Cocoa Research Institute
IUPB	: Izin Usaha Produksi Benih
Kepmentan	: Keputusan Menteri Pertanian
MT	: Metric Ton
PBT	: Pengawas Benih Tanaman
Permentan	: Peraturan Menteri Pertanian
SK	: Surat Keputusan
UPT	: Unit Pelaksana Teknis
UPTD	: Unit Pelaksana Teknis Daerah

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## 1. Introduction

Cocoa farming in Indonesia is dominated by Smallholder Farms (95%), followed by State-owned plantation (3%), and Private Plantation (2%).<sup>1</sup> The average area of a Smallholder Farm is around 0.93 ha per farmer (*Cocoa trace, 2017*). One of the challenges faced by Indonesian smallholders is the declining productivity that is mostly caused by aging cocoa trees, lack of good agricultural practice and soil quality degradation. This leads to declining income as well. The lower production and income makes farmers less motivated to take care of their farm. When farmers do not maintain their farm, the likelihood of pests and diseases increases and further decreases their productivity, thus many farmers shift to other crops. As a result, national cocoa production has been dropping during recent years. According to Askindo (the Indonesian Cocoa Association), the national cocoa production has been declining since 2010. From 557,596 MT in 2010 to 350,000 MT in 2016 as shown in the following chart. In 2017, it is expected the production will increase moderately to 375,000 MT.

Figure 1: Cocoa Production of Indonesia (2009 – 2017)



(Source: Askindo, 2017)

Looking at the main problem of aging farms, most of the smallholders have limited access to superior planting materials. In addition, they have limited financial capacity to buy superior planting material for replantation. Based on these conditions, the Green Prosperity – Sustainable Cocoa Production Program (GP-SCPP), in cooperation with the private partners, provide support for nursery development. This support aims to provide access to superior cocoa planting materials. Through the availability of superior planting

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<sup>1</sup> Statistik Perkebunan Indonesia: Kakao 2015 – 2017

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materials and strengthening good agricultural practices, the Program believes that it will eventually increase the productivity on smallholder farms.

This assessment was designed and intended to identify activities in existing nurseries supported in the program areas and found out the success factors of active and well-run nurseries. With this information, the Program can sharpen its interventions on nursery development and contribute to sustainable cocoa production in Indonesia.

## **2. Market and Marketing Channel**

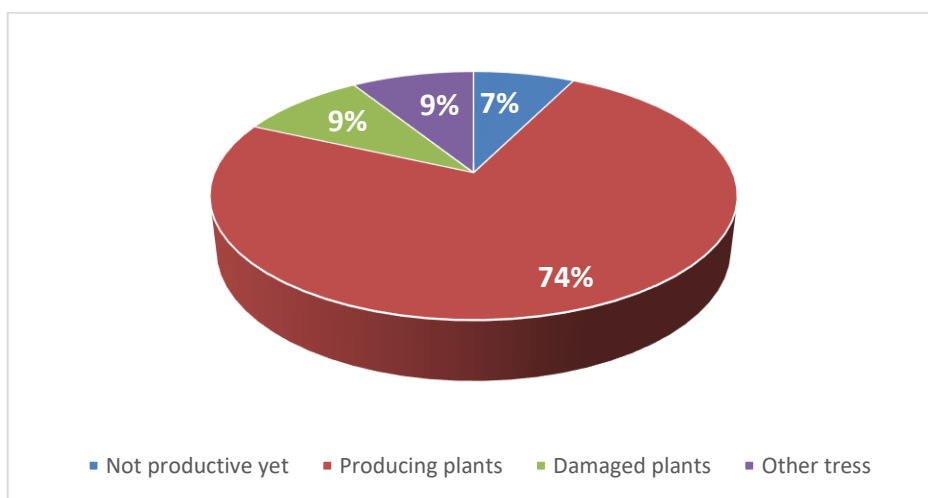
### **2.1. Cocoa Farm overview and demand for planting materials**

Currently, Indonesia is the world's third largest cocoa producer after Ivory Coast and Ghana. The government of Indonesia expects to be the world's second largest cocoa producer by 2020 with total production reaching 1.5 million MT (Detik Finance, 2017). However, there are many smallholder farms that are aging and not well-maintained.

As illustrated in CocoaTrace 2017, the age of the cocoa trees in the program area is on average 18.3 years old. The province of Nusa Tenggara Timur (NTT) has the highest average age at 21.8 years old, while West Sumatra has the youngest age at 11.2 years old. Commercially, the productive age of a cocoa tree is up to 25 years. After 25 years the cocoa tree is still productive but commercially less profitable. In addition, based on CocoaTrace, 7.48 million cocoa trees in SCPP area are considered to be broken and non-productive. Considering this current condition, the government's target to be the world's leading cocoa producer will be difficult to achieve. It requires a cocoa farm rejuvenation program, through rehabilitation and replantation.

Based on the above situation, the rehabilitation and replantation will increase demand for cocoa planting materials in Indonesia accordingly. Thus, nurseries are a good business prospect. However, lack of access to superior planting materials as well as lack of capital are two factors that hamper the growth of nursery businesses. For replantation activities, the farmers need funds for planting materials and labor, and they also need capital to cover their income loss before the cocoa trees are productive. The typical Indonesian cocoa farm condition is shown in the figure below.

Figure 2: Cocoa Farm Condition in S CPP areas (as of Sep 2017)



(Source: CocoaTrace, 2017)

## 2.2. Cocoa Seedlings Market

There are many actors in the cocoa seedlings marketing channel, including source of seeds, nurseries, and buyers. In addition, based on the new regulation on seedlings production and distribution (Permentan number 50/Permentan/KB.020/9/2015 and Kepmentan number 314/Kpts/KB.020/10/2015), the government will supervise the cocoa seedlings production and distribution through the Seedlings Supervisor (*PBT/Pengawas Benih Tanaman*).

### Source of Seeds

Cocoa plants can be propagated through both a generative and vegetative method. The generative propagation can be done through cocoa seeds, and the vegetative propagation can be done through conventional methods such as side grafting, top grafting, patch budding, and plant tissue isolation (in vitro) using a cocoa plant's bud. In order to maintain the originality and quality of the planting materials, the generative propagation should be done using first-generation hybrid seeds (F1).

Currently, a common cocoa plant propagation method is the generative method as it is easier and cheaper than the vegetative method. In addition, this method generates cocoa plants that have stronger rooting, longer productive age, and more genetic diversity that can be used for breeding activities. However, the method also has its disadvantages, such as producing plants with various genetic characteristics, due to the non-homozygous plants crosses, and often, this method produces crops with characteristics which are different from the parent plant, such as lower productivity, less resistance to disease, etc.

Considering this reason and the difficulties to obtain the first generation hybrid, farmers used vegetative propagation in order to have clone with desired traits. Bud wood is used for vegetative propagation of cacao clones, where the bud wood is grafted onto a seedling or mature tree healthy cacao trees. Bud wood is a branch taken from a cacao tree and therefore holds the same genetic traits and attributes as the tree it has been taken from. Farmers usually use two types of vegetative propagation, i.e. side grafting and top grafting. In the side grafting, the bud wood with desired traits is grafted onto tree healthy cacao trees. While in the top grafted, the bud wood is grafted onto a seedling (rootstock). The farmers usually use local clone for the rootstock, because it has a strong root system and the clone has adapted with local condition.

Based on Minister of Agriculture decree number 314/Kpts/KB.020/10/2015, the seedlings used in each propagation method should use superior seedlings that are approved by the Minister of Agriculture (see Table 1) and originated from cocoa farms that have been certified by the government.

Table 1: List of Superior Clone

	Clone Type	Approval
<b>A Fine Cocoa</b>		
1	DRC 16	SK Mentan no. 735/Kpts/TP.240/7/97
2	ICCRI 01	SK Mentan no. 212/Kpts/SR.120/5/2005
3	ICCRI 02	SK Mentan no. 213/Kpts/SR.120/5/2005
4	ICCRI 05	SK Mentan no. 1985/Kpts/SR.120/4/2009
<b>B Bulk Cocoa</b>		
1	GC 7	SK Mentan no. 736/Kpts/TP.240/7/97
2	ICS 13	SK Mentan no. 737/Kpts/TP.240/7/97
3	RCC 70	SK Mentan no. 686/Kpts-IX/98
4	RCC 71	SK Mentan no. 686.a/Kpts-IX/98
5	RCC 72	SK Mentan no. 686.b/Kpts-IX/98
6	RCC 73	SK Mentan no. 686.c/Kpts-IX/98
7	ICCRI 03	SK Mentan no. 530/Kpts/SRI.120/9/2006
8	ICCRI 04	SK Mentan no. 529/Kpts/SRI.120/9/2006
9	ICCRI 07	SK Mentan no. 2793/Kpts/SRI.120/8/2012
10	Sca 6	SK Mentan no. 1984/Kpts/SR.120/4/2009
11	Sulawesi 01	SK Mentan no. 694/Kpts/SR.120/12/2008
12	Sulawesi 02	SK Mentan no. 695/Kpts/SR.120/12/2008
13	Sulawesi 03	SK Mentan no. 2795/Kpts/SRI.120/8/2012
14	MCC 01	SK Mentan no. 1083/Kpts/SRI.120/10/2014
15	MCC 02	SK Mentan no. 1082/Kpts/SRI.120/10/2014

(Source: Minister of Agriculture decree number 314/Kpts/KB.020/10/2015)

In addition to the superior seedlings that are listed in Table 1 above, cocoa planting materials can also use superior cocoa seedlings from the cocoa seedlings that were



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developed in 1912, such as DR 1, DR2, DR 38 and Bulk Cocoa that were developed in 1980 such as ICS 60, TSH 858 and UIT 1.

## Nursery

Nursery is the activity of producing planting materials that are ready to be planted in the farm. In the cocoa sector, nursery activities might use a generative method or a combination of generative and vegetative. In a traditional nursery, the seeds and bud wood come from their own farm or neighboring farm that are identified as superior seedlings showing certain characteristics.

By the issuance of Ministry Agriculture regulation number 50/Permentan/KB.020/9/2015 and number 314/Kpts/KB.020/10/2015, the nursery activities should comply with the regulations, such as the requirement that the seeds and bud wood should come from the superior seeds that have been certified by the Minister of Agriculture.

## Buyer

Currently, there are two types of buyers identified in the cocoa seedlings market:

### 1. End user

The end user are the people who buy the cocoa seedlings to be planted on their own land. This group includes cocoa farmers, both small-holders and the operators of large plantation. This type of buyer are concerned with the quality of seedlings, because they expect the seedlings are superior seedlings that have high productivity and/or resistant to pests and disease.

### 2. The buyer who will buy the seedlings to distribute to the farmers

This type of buyer doesn't buy seedlings to be planted on their own land, but they buy seedlings to be distributed to the farmers in the subsidized seedlings program. This type of buyer includes the government, Non-Governmental Organizations, and private companies. They buy seedlings in bulk that is often a demand that cannot be supplied from one nursery. Therefore, they usually buy from seedling suppliers who buy the seedlings from several nurseries. For transparency, the procurement process is usually is done through open bidding process. The bidder will try to buy the cheap seedlings in order to maximize the profit. Usually the cheap seedlings have low quality, but this cannot be evaluated by the buyer on the spot and is only seen after years, when the tree produces.

## Supervisor of Seedlings Production and Distribution

Based on the Minister Agriculture decree number 314/Kpts/KB.020/10/2015, all seedlings that are produced for the public have to be certified and labeled prior to distribution to the users. The certification process is done by Central UPT and Provincial UPTD that monitor seedlings and certify, or, it is done by seedling producers that have

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been certified by the Quality System Certification Body (Lembaga Sertifikasi Sistem Mutu).

Certification and monitoring of the seedling distribution are done by Seedling Supervisors (*Pengawas Benih Tanaman*) that are based in Central UPT or Provincial UPTD. The monitoring is done through procedural (documents) checking as well as technical (physical) checking.

### 3. Nursery Business Model

#### 3.1. Current Business Models

##### 3.1.1. Type of nursery operator

There are various nursery business models in the GP-SCPP area. Based on institutional type, there are four types of nursery operators: Individual farmers, Farmer Groups, Cooperatives, and Private Companies. GP-SCPP only facilitates nurseries that are operated by the individual farmer, farmer groups, or cooperatives. Please find below the composition of the nursery model based on the type of operator.

Table 2: The nursery composition based on the type of nursery operator

	<b>Number of Unit</b>	<b>%</b>	<b>Total Capacity</b>	<b>%</b>
Individual	93	30.5%	327,500	35.7%
Farmer Group	210	68.9%	523,620	57.0%
Cooperative	2	0.7%	66,800	7.3%
<b>Total</b>	<b>305</b>	<b>100.0%</b>	<b>917,920</b>	<b>100.0%</b>

*Note: total capacity is total capacity per production cycle*

*(source: CocotrAce, 2017)*

##### Individual Farmer

This model is commonly found. This model is usually chosen because it is simple. Usually the owner also manages daily nursery operations. This model accounts for 30.5% of the total nursery units that are facilitated by GP-SCPP.

Nurseries owned and operated by an individual are able to get legal entity as a Sole Proprietorship, but most of them operate without legal entity. Thus, most of them do not have business legality for running the nursery business. Based on the new Minister Regulation number 50/Permentan/KB.020/9/2015, all nurseries should have Business License of Seedlings Production (*Izin Usaha Produksi Benih*).

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Lesson learned from an Individual Nursery Operator

### **A Nursery Entrepreneur: Ahmad Mudir (ID 760400650)**



Ahmad Mudir, who is a cocoa farmer and father of six children, is a member of Karya Tani farmer group. He and his family live in Salubarana village, Sampaga sub-district, Mamuju, West Sulawesi. Initially, Ahmad Mudir, who graduated from Agriculture High school, only wanted to focus on working in his cocoa farm like other farmers in his area. In May 2015, he started his nursery business, and currently his nursery has sold more than 10,000 seedlings with a total profit generated above IDR 20 million.

Initially, he built the nursery in response to the growing demand of top-grafted seedlings in his area. He started to build a nursery with a size of 7 x 18 m (126m<sup>2</sup>) that can produce around 5,000 seedlings per cycle. In addition to fulfilling the demand on top-grafting seedlings, he expected the nursery could also become an alternative source of income for his family.

Currently, his nursery is popular in his village as well as surrounding villages, including Salubarana village, Kalonding village, Tanam Buah village, and Loso village. He sells the seedlings at IDR 7,000 per seedling. Following his initial success, Pak Ahmad expanded his nursery to 7x26 m (182m<sup>2</sup>). This expansion increases the production capacity from 5,000 seedlings to 7,280 seedlings per cycle.

His success comes from his commitment and motivation to learn and implement the knowledge and skills gained into practice. He showed his commitment since the beginning. He financed the nursery construction and seeds from his own money. Swisscontact supported his initiative by providing supporting materials and equipment, such as UV plastics, polybags, paranet, net and water hoses. He is keen and enthusiastic in participating in the training conducted by various parties, including the farmer field schools organized by GP-SCPP and the training by the government. He is also diligence and discipline in taking care of his nursery. Every morning before working in his cocoa garden, he takes time to control and take care of his nursery. The same thing happens

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every afternoon after working in his cocoa farm, he check his nursery and do watering.

The other key success factor is his services to his customers. He provides a free delivery service for his seedlings. In addition, he also does follow up visits and provide free consultation to his customers. These services are provided in order to ensure his seedlings growing well. He also develop a demo plot where the other farmers can learn and see his work result. He didn't realize that the services provided to the customer become promotion, and it becomes his competitive advantages. He provides an after sales service and "product warranty" for his seedlings. Through mouth to mouth promotion, his nursery become popular and help him to expand the market.

His eagerness to learn has led him to apply new knowledge on cocoa culture and make innovations. Facilitated by Safaruddin, a staff member of GP-SCPP, Ahmad has innovated his approach by integrating a goat farm into his nursery management. He uses the goat's manure as the organic fertilizer and the urine as the organic pesticide to control helopeltis, PBK (*C. cramerella*), and rats.

Currently, his nursery business and cocoa farm has helped him to send his two sons to study in the university, buy additional land (0.25 ha) for his cocoa farm, buy one motorcycle for seedlings distribution. Besides generating additional income for his family, the nursery has also generated additional income for his neighborhood who are involved in the nursery activities, such as filling the planting media into polybags and polybag arrangement in the nursery. Polybags filling is usually done by the women, who are paid IDR 70,000 per day. A worker can fill in around 300 bags per day. The other activities, such as top grafting and daily maintenance (watering, provide fertilizers and pesticides) are carried out by himself or occasionally he asks other farmers to assist him in taking care of his nursery, when he is not able to manage by himself or when he has another activity.

### Farmer Group

This model is widely adopted by nursery development support programs, such as in programs from government and non-governmental institutions. The support program tends to provide for the group rather than an individual. Support provided by GP-SCPP are also mostly provided to the farmer groups. Therefore, this model is the largest number (68.9%) of the total nursery unit that been facilitated by GP-SCPP.

This model has, however, the following disadvantages:

- Collective ownership that often leads to a lack of ownership of the nursery. It makes the members reluctant to take care of the nursery and results in a lack of management and maintenance.
- Without any clear roles, rights and responsibilities of each member, the collective ownership has potential internal conflict. When it happens, the nursery operation stops and eventually becomes non-active.

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In order to mitigate the above risk, the farmer group should have clear roles, rights and responsibilities of each member regarding the nursery operational. This can be done through the following alternative schemes:

- **Appoint one operator.** The farmer group appoint one of the member to be the nursery operator who is responsible to manage the nursery. Regarding this appointment, the farmer group and the operator should have an agreement on the roles, rights and responsibilities of the operator and the farmer group, including the arrangement of the incentive for the operator. The incentive could be in the form of salary or profit sharing. With this model, the investment cost could be shared between the farmer group and the operator. While for the operating cost, usually it will be paid by the operator. The profit will be shared between the operator and the farmer group as the owner.
- **Sharing cost and responsibilities.** All members agreed on the roles, right and responsibilities. There are several alternatives on sharing cost and responsibilities, such as the following options:
  - **Sharing cost and collective work (*gotong royong*).** Investment cost and the operating cost will be shared among the members, and the profit will be shared based on the sharing portion of each member.
  - **Sharing facility.** The investment cost will be shared among the members who are willing to contribute. In this model, the nursery area will be divided by the number of members who contribute to the nursery investment. Each member will be responsible for his own portion as well as the seedlings. All seedlings produced in his own area will belong to him. For example, a nursery the size of 17 x 8 m (136 m<sup>2</sup>) with the capacity of 5,000 seedlings is operated by a farmer group with 10 members in total. Each member will be responsible for 13.6 m<sup>2</sup> (500 seedlings). Each member will take care of their own portion and they are entitled to the seedlings produced.

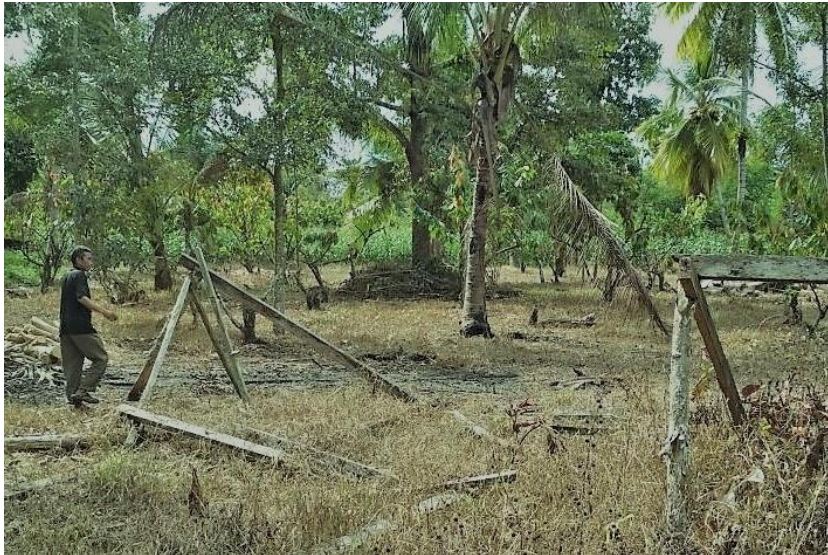
Though this option might work well, it is not recommended for the commercial nursery as the seedlings appearance and quality will be different. The seedlings will grow differently based on how they were treated by each owner. The potential buyer will be less interested with the seedlings with different appearance and quality. Buyers prefer to buy the seedlings that looks similar and has similar quality.

As this model has higher institutional risk than nurseries owned by an individual, it is recommended that the support for the nursery development be provided to the individual. Or, if support is provided to farmer groups, they should assign one person to manage the nursery operation. In addition, it is recommended that the nursery operator candidate should have experience in managing a business. Thus, the nursery operator can operate the nursery as a business entity. It will ensure the sustainability of the nursery operation.

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*Lesson learned from a Nursery operated by Farmer Group*

**Bunga Coklat: Sad story from Tolada village**



H. Kamaruddin (51 years) walks through the broken nursery facility that was operated by Bunga Coklat farmer group. They failed to take care of the nursery. The nursery is located in Tolada village, Malangke sub district, North Luwu. Their group built a nursery in November 2014 with support from Swisscontact. The nursery was only operated in three cycles before it stopped its operation due to internal conflict

Based on his experience, the biggest challenge in operating the collective nursery is maintaining the commitment and trust among the members. The members have different characters and commitment to the nursery. In the beginning, they agreed to share the cost and take care of the nursery collectively. As time went by, several members were frequently absent in the mutual activities (*gotong royong*) done to maintain the nursery. However, they asked that the revenue be shared equally. The members who were more committed were disappointed and it created conflict among the members. During the conflict, the nursery was in-active. Pak Kamaruddin, who owned the land, was also reluctant to continue the nursery operation because the nursery is collectively owned and he did not want to be accused of wanting to operate the nursery for his own benefit. After the nursery stopped its operation, nobody took care of the nursery, and the nursery was gradually damaged. It is now totally damaged. On the other hand, the existing demand for cocoa seedlings in his village are growing. In his group, some members have done replantation for their cocoa farm (In total around 20 Ha). Since they do not have nursery, they have to buy the seedlings from the neighboring villages.

Based on this lesson, Pak Kamarrudin suggested that the nursery support program should be provided to individual rather than group in order to avoid jealousy and conflict among the members.

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## Cooperative

In this model, the Cooperative (*koperasi*) manages and operates the nursery. The nursery becomes one of the business unit of the cooperative, and the cooperative assigns staff to manage and be responsible for the nursery operation. The nursery operator could receive salary or profit sharing, it depends on the agreement between the cooperative and the operator. In the GP-SCPP area, there are two nurseries that are operated by cooperatives, i.e. Koperasi Gabungan Gapoktan in Kolaka Timur and Koperasi Kakao Mandiri in Tanah Datar.

Koperasi is a formal legal entity and this makes it easier to obtain a business permit. The business permit is one of the capital that support the business in cooperative, especially in channeling the business market into governmental programs, development sectors, and other sectors that require legal status for their transaction. The Managing Board and Supervisory Board are elected by the members during the General Assembly Meeting. It should be a group of people managing the cooperative including the business unit. Based on SCPP experience, when individuals were elected to lead one of the business unit/ operation, there is potential conflict among the Boards and the members. When the conflict arises, it will affect to the operation mechanism in the cooperative and the sustainability of the cooperative's business, including the operation of the nursery.

Lesson learned from Cooperative as Nursery Operator

### **Koperasi Gabungan Gapoktan: A nursery to serve the members and the other farmers in the area**



Koperasi Gabungan Gapoktan (KGG) is a cocoa cooperative based in Tokai village, Poli-Polia sub-district, Kolaka Timur, Southeast Sulawesi. Starting with 22 farmers when it was established in 2012, KGG has grown rapidly in the last two years. As of Dec 2016,

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KGG has 2,093 members.

In response to member growth and considering the business potential for nurseries in the area, KGG planned to set up a nursery business in 2016 in order to provide superior cocoa seedlings for its members and the cocoa farmers in the surrounding areas. KGG has capitalized through being a certificate holder for UTZ certified beans that turned out to be a highly profitable business. In February 2017, KGG built a nursery on its own land and by their own funding. The size of nursery is 500 m<sup>2</sup> (10 m x 50 m) and the capacity was 20,000 (later it was expanded to 14 m x 50 m with the capacity increased to 30,000 seedlings). The total investment cost is IDR 51.12 million.

KGG appointed Pak Ujang, one of its member, to act as the nursery operators. He is responsible to manage the daily operation of the nursery. Pak Ujang was appointed as he has knowledge and expertise in taking care of nurseries. He did the grafting as well as maintaining the nursery by himself, and only sometimes he is assisted by one additional person for the heavy works, such as controlling weeds. The activities which need more workers, such as bag filling, seed planting, and bag arrangement, are done by temporary workers.

In the beginning, KGG was optimistic with the prospect of the nursery business, considering Kolaka and Kolaka Timur are the major cocoa producer areas in Sulawesi, and also the number of its member who are expected to be the potential buyers. However, when the seedlings were ready to be distributed, the actual demand is low. During eight months of its operation, KGG was able to sell around 7,000 seedlings at the price of IDR 6,500 in the beginning, but then the price was decreased to IDR 5,000. It is suspected that the market was distracted by the government distribution program that is planned to be implemented by the end of this year. The company who participated in the government tender offered to buy the seedlings at the price of IDR 5,000 maximum. Thus, the consumers also asked the same price (IDR 5,000 per seedling). Due to its large capacity, KGG was forced to sell its seedlings below the expected price.

Although KGG has lowered its price, they still struggle with the marketing. Currently, KGG is approaching the company who participated in the government tender sell its seedlings. As the government program needs hundreds of thousands seedling, it is expected that KGG can sell all the remaining seedlings stock to the government program, if they succeed on the negotiation with the winner. In the long term, KGG plans to apply for certification in order to comply with the government regulation and access to the institutional market.



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## Private Company

In this model, the nursery is owned and operated by the private sector, and has a legal status as private company, such as CV, PT, or other private legal entities. This model has an advantage when applying for a business license, because the model is operated as legal entities. Based on Kepmentan number 314/Kpts/KB.020/10/2015, a nursery should have a nursery business license before they apply for certification of the seedlings.

Another advantage is that the private company is usually perceived as a more professional entity than cooperatives and farmer groups. In addition, a business license is one of the requirement for participating in the government procurement bidding. By being eligible to supply for government programs, the companies could tap into larger markets as their first return of investment.

In this model, the decision making process is controlled by the majority shareholders, therefore it reduces the risk of dualism in the decision making. A business entity is established with the aim of generating profits, so the management will run the business professionally in order to maximize the profits.

To summarize the nursery operator types, each institutional has their own characteristics. The advantages and disadvantages of each type can be summarized as follows:

Table 3: The summary of advantages and disadvantages of each institutional type

	Advantage	Disadvantage
Individual	<ul style="list-style-type: none"><li>• Simple structure and faster decision making process</li></ul>	<ul style="list-style-type: none"><li>• Capital is limited</li><li>• The business sustainability will depend on the capacity of owner/operator</li></ul>
Farmer group	<ul style="list-style-type: none"><li>• Required capital can be shared among the members</li><li>• Some of the seedlings produced by the nursery can be absorbed by the internal (members') demand. It will release pressure to sell the seedlings during the initial years.</li></ul>	<ul style="list-style-type: none"><li>• It is not a legal business entity, so this type has impeded the legality of the business activities</li><li>• In many cases, collective ownership will have challenges on un-clear rights and responsibilities for the operation</li><li>• There are potential conflict among the members regarding the nursery operation</li></ul>
Cooperative	<ul style="list-style-type: none"><li>• A cooperative is legal entity, so it is eligible to have business permit</li></ul>	<ul style="list-style-type: none"><li>• In many cases, cooperatives lack of professionalism and is perceived as less professional</li></ul>

	<ul style="list-style-type: none"> <li>Some of the seedlings produced by the nursery can be absorbed by the cooperative members' demand with a flexible mechanism of payment</li> </ul>	<p>than private companies</p> <ul style="list-style-type: none"> <li>There are potential conflicts among the Board if the nursery operator is elected individually rather than as one team</li> </ul>
Private company	<ul style="list-style-type: none"> <li>It is legal business entity, so the legality of the business is clear</li> <li>The business is controlled by the majority shareholders</li> <li>It is perceived as more professional than the other type so that people has more trust</li> </ul>	<ul style="list-style-type: none"> <li>The business orientation is maximizing profit, and sometimes they pay less attention on the other aspects, such as social aspects. The payment scheme therefore is stricter than and not as flexible as cooperatives and farmer groups. This actually could be a disadvantage to the farmers, but on the other hand, the business will keep running due to good financial management</li> </ul>

### 3.1.2. Size of the nursery

Based on the size/capacity of the nursery, it can be classified into 3 groups, i.e. small-scale (capacity of < 5,000 seedlings), medium-scale (capacity of 5,000 – 20,000 seedlings), and large-scale (capacity of > 20,000 seedlings). Most nurseries facilitated by the Program are small-scale (90.5%) and it accounts for 72.6% of the total saddling capacity. The medium size is 8.5% of the total unit, and accounts for 16.7% of the total capacity. Whereas, the large size is only 1% of the total unit, but it is representing 10.7% of the total capacity.

Table 4: The nursery composition based on the nursery capacity

	Number of Unit	%	Total Capacity	%	Remark
Small	276	90.5%	666,240	72.6%	capacity < 5,000
Medium	26	8.5%	153,200	16.7%	capacity 5,000 to 20,000
Large	3	1.0%	98,480	10.7%	capacity > 20,000
<b>Total</b>	<b>305</b>	<b>100.0%</b>	<b>917,920</b>	<b>100.0%</b>	

(Source: cocoa trace, 2017)

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### Small-scale

This type of nursery is suitable for new nursery players (start-up) because the investment and the operation cost are relatively low and it can be operated by one person. In addition, as the production volume is low, the marketing is manageable by the new nursery player who has not yet had customers or built up their reputation. Therefore, they have less business risk compared to the larger capacity.

The cost estimation to build a nursery with this capacity is around IDR 36.8 million that consist of IDR 9.5 million for the nursery construction, IDR 2.1 million for the equipment, and IDR 24.2 million for the cost of production. Based on this cost structure, the estimated cost per seedling is IDR 5,230.

### Medium-scale

Usually this nursery is an expansion of a small nursery that has increased the capacity to manage produce on a larger scale. Their knowledge and experiences in managing nursery help them in managing the business risks. In addition, they already have customers and a track record in the business. These aforementioned factors would help them in market expansion.

On this scale, the nursery needs more attention, so it needs an operator who is focused on the operation. In the daily operation, the operator is usually assisted by additional workers on a daily or activity basis, such as filling the polybag, weeding, etc.

The cost estimation of a medium scale nursery with a capacity of 10,000 seedlings is around IDR 68.5 million that consist of IDR 17.8 million for the nursery construction, IDR 2.9 million for the equipment, and IDR 47.8 million for the cost of production. Based on this cost structure, the estimated cost per seedling is IDR 5, 120,-.

### Large-scale

Usually this group is also a wholesale nursery that grows seedlings to sell to other nurseries, seedling traders, and institutional buyers. They grow plants on a contract basis in order to reduce the risks, because the seedlings have an “expiry date”. Based on the Ministry decree number 314/Kpts/KB.020/10/2015, the cocoa top grafted seedling is eligible to be distributed maximum 5 months after grafting. So, if they have the purchasing contract, they can manage the production time based on the contract.

Due to the large scale production, the nursery in this group usually has access to institutional markets, such as government, private companies, and other institutions, who usually purchase seedlings in bulk. With the large production scale, they will have difficulties to sell the seedlings in the market only by relying on the retail market. The retail market has less potential due to small size of the average cocoa farms in Indonesia

and in the GP-SCPP area.<sup>2</sup> In addition, after several areas, farmers prefer to plant the cocoa trees in polyculture (combining with other crops/commodities).

Similar with the medium scale, the large scale nursery also needs more effort on the operation, so this type of nursery needs a nursery operator who dedicates more time and attention on taking care of the nursery. In addition, the large scale production requires the operator to have good marketing network.

The cost estimation of a large scale nursery with a capacity of 25,000 seedlings is around IDR 236.3 million, consisting of IDR 107.9 million for the nursery construction, IDR 7.6 million for the equipment, and IDR 120.7 million for the cost of production. The construction cost is high, because in this model, the construction is made from steel with a concrete foundation. Based on this cost structure, the estimated cost per seedling is IDR 5,094.

Please find below the cost comparison of the various nursery capacities. The detail cost breakdown of each nursery type can be seen in Appendix 2.

Table 5: Cost estimation of various size of nursery

Description	Qty	Unit	Size/capacity		
			5,000	10,000	25,000
Nursery construction	1	package	9,450,000	17,825,000	107,913,200
Equipment	1	package	2,110,000	2,895,000	7,660,000
Cost of Production	1	cycle	24,225,000	47,750,000	120,688,000
<b>Total</b>			<b>35,785,000</b>	<b>68,470,000</b>	<b>236,261,200</b>
Depreciation nursery cons.	1	cycle	1,575,000	2,970,833	5,395,660
Depreciation equip.	1	cycle	351,667	482,500	1,276,667
<b>Total Depreciation</b>			<b>1,926,667</b>	<b>3,453,333</b>	<b>6,672,327</b>
<b>Operating cost</b>	1	cycle	<b>26,151,667</b>	<b>51,203,333</b>	<b>127,360,327</b>
Cost per seedlings	1	seedling	5,230	5,120	5,094

Note:

- *cost per seedling include the depreciation*
- *the investment cost doesn't include cost of business permit and land*
- *the nursery construction with capacity 5,000 and 10,000 are made from wood and bamboo. The construction of the capacity 25,000 is made from steel and cement.*
- *the detail cost estimation can be seen in the Appendix 2*

<sup>2</sup> The average cocoa farm owned by the farmers in Indonesia is 0.97 ha (Statistik Perkebunan Indonesia 2015 -2017: Kakao), and the average of land area in GP-SCPP area is 0.93 ha (CocoaTrace, 2017).

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The construction cost for a large nursery is high, but it has a longer lifetime than the other two, so the depreciation cost per seedlings is not significantly different with the other two.

Based on the above cost simulation, the cost per seedlings decline when the capacity increase, because the fixed cost can be reduced. It means the larger capacity nursery could operate more efficiently as long as the seedlings can be marketed on schedule. If the seedlings cannot be sold on schedule, it will increase the cost of production.

## **3.2. Alternative Business Model**

Currently, there are innovations of the business model, such as partnership contract and seedlings franchises.

### **3.2.1. Partnership Contract**

This model is commonly applied on the large scale nurseries and wholesale nurseries that especially serve the buyers who want certified seedlings. The certified seedlings should come from the certified planting materials (certified seeds and bud woods). The contract is signed between the nursery and the supplier of certified planting materials, and it defines the quantity, variety, schedule of delivery, etc. The contract is needed in order to secure the supply of certified planting materials. It is needed to secure the commitment on the quota that will be delivered to the buyer and it is also required for the supporting documents that proves the origin of the planting materials. In addition, the contract also will help both parties in the production planning.

### **3.2.2. Seedlings Franchise**

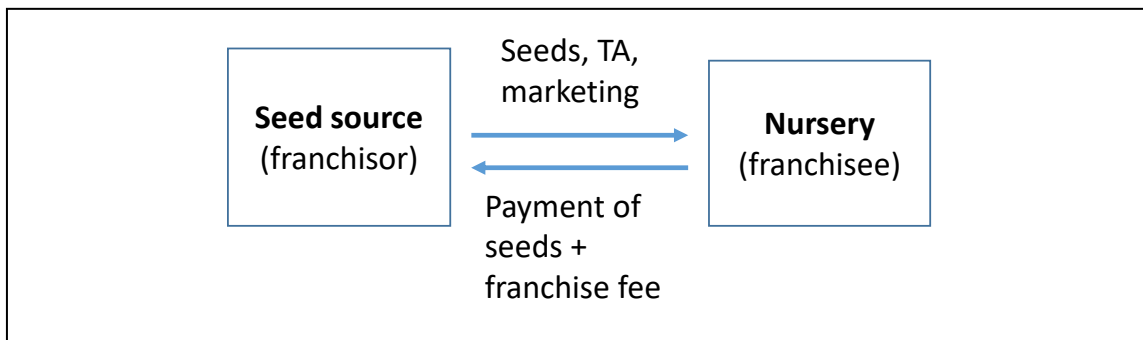
Franchise model is used by well-established and well-known business to expand the business presence as well as the market share quickly. The franchisor (the owner of franchise) assist the franchisee in the preparation to start the business and also assist the franchisee in managing the business operation. The franchisee will pay a franchise fee for the services.

The success of this model in other business, such as in the food, hotel, restaurant, etc., has inspired seeds producers to develop this model for nursery business. This model has been developed in palm oil sector by the Indonesian Oil Palm Research Institute (IOPRI) in Medan. The objective is to eliminate the low quality seeds. This franchise model also applied in the cocoa sector by the Indonesian Coffee and Cocoa Research Institute (ICCRI). In this model, ICCRI as the franchisor will assist the franchisee in developing the nursery business.

There are two models that are offered by ICCRI, i.e. (i) seeds source development, and (ii) nursery development. In the seeds source development, ICCRI will assist the franchisee in the development and the management of clonal garden (as source of seeds and bud woods). In the nursery development, ICCRI will assist the franchisee in the production of

rootstocks as well as the top grafted seedlings. ICCRI will provide the planting materials as well as technical assistance. In addition, ICCRI also offers the marketing support. There are two options of marketing support. First option, the marketing will be done by the franchisee with supervision from ICCRI. The second option, ICCRI will market the seedlings, and franchisee will supply the seedlings to ICCRI.

Figure 3. The Seedlings Franchise Model



The benefit of the franchise model:

- On going technical assistance from the franchisor (including transfer of technology and the Standard Operating Procedure)
- Update on the product information and the product development
- Payment can be more flexible
- Secure in the supply of certified planting materials
- Rapid expansion of the business
- Reduction on operating cost
- Higher return on investment
- Marketing support: do not need to create the brand value and market penetration

Below is the summary of advantages and disadvantages of the contract and franchise model:

Business Model	Advantage	Disadvantage
Franchise	<ul style="list-style-type: none"> <li>• On going technical assistance (transfer of technology and SOP) from franchisor</li> <li>• Update on the product information and the product development</li> <li>• Payment can be more flexible</li> <li>• Secure in the supply of certified planting materials</li> </ul>	<ul style="list-style-type: none"> <li>• Should make large investment upfront (pay the franchise fee)</li> <li>• There are terms &amp; condition that should be followed by the franchisee (less independent)</li> <li>• Longer time on the process, because of the assessment and approval process</li> <li>• The franchisee should have a</li> </ul>

	<ul style="list-style-type: none"> <li>• Rapid expansion of the business</li> <li>• Reduction on operating cost</li> <li>• Higher return of investment</li> <li>• Marketing support: do not need to create the brand value and market penetration</li> </ul>	track record in order to develop trust
Partnership Contract	<ul style="list-style-type: none"> <li>• There is no franchise fee</li> <li>• The terms &amp; condition is more lenient</li> <li>• Process is easier and faster</li> </ul>	<ul style="list-style-type: none"> <li>• Technical assistance is not provided</li> <li>• Need down payment for the planting materials (around 10% – 50%, it depends on the level of trust and the capacity)</li> <li>• Less secure on the supply of planting materials</li> <li>• The payment condition is more tight</li> </ul>

*Learning from Palm Oil experience on Franchise of Seedlings*

**Franchise of Palm Oil Seedlings by IOPRI**

The Indonesian Oil Palm Research Institute (IOPRI) became the franchisor of an oil palm nursery business. IOPRI offers three options of franchise model, i.e. franchise of seeds, franchise of seedlings, and franchise of variety. In the franchise of seeds, IOPRI will provide the seeds to be germinated and planted by the franchisee. In the franchise of seedlings, IOPRI will provide germinated seeds to be planted by the franchisee. In the franchise of variety, IOPRI will provide pollen for pollination in the clone garden of the franchisee. Among the three types, the franchise of seedlings are preferred to be implemented by the franchisee, because implementation is simpler.

In the franchise of seedlings, IOPRI provide a soft loan, supervision, and initial assessment. In addition, IOPRI also provides market support and the right to use the IOPRI logo/brand for their business and products. The soft loan is provided with the scheme of 75% of the seeds price. It means the franchisee only needs to pay 25% of the seeds price, and the rest will be paid based on the agreed schedule during a one year term.

The application and selection process are as follows:

- The candidate submits an application to IOPRI. The candidate preferably is a legal entity.
- The candidate fills in the application form, and agree to be assessed
- IOPRI will conduct initial assessment for the feasibility
- The assessment result will be submitted to the management for approval
- After approval, both parties will sign franchise agreement

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## 4. The Challenges and Opportunities

### 4.1. The Challenges

Currently, nursery development is facing several challenges, such as marketing, competition with other commodities, certification, etc. Understanding of the challenges is needed in order to mitigate the business risk. Below are some challenges that were identified during the assessment:

- **Marketing.** Marketing often becomes a challenge for the nurseries, especially for the new players. The new player does not usually have a market for their seedlings. At the beginning, they usually sell their products to the farmers in the surrounding area. However in the long run, they need to expand the market. Several nurseries are located far from the road or invisible from the road. The nursery is unseen by the potential buyer and the operators have difficulties in expanding their market.

One of the potential buyers are government programs. However, the nursery is required to have legality if they want to supply to this market. Currently, most of the nurseries do not have a business permit and certification for their products. Therefore, they are not eligible to participate in the bidding

- **Certification.** Based on the new regulation, all seedlings that are produced and distributed should be certified. As the cost of certification will be the burden of the nursery, it will increase the operation cost of nursery. In addition, currently the certification cost has not been standardized, so the certification cost will vary. It will distract the competition. The certification cost consist of the cost of certification audit and cost of the certification label. The cost of label is a variable cost, but the certification audit cost is fixed cost. The biggest component on the cost of audit is the cost of survey and it is charged to the nursery. The cost of survey includes the transportation and accommodation of the surveyor team.

The cost of the survey is similar for all sizes. As most of the nurseries in the GP-SCPP area are small scale nurseries (91%), they will have difficulties to comply with the regulation because their capacity is small. The cost of audit is more expensive when it is divided by small number of seedlings produced in the small scale nursery compared to the bigger one. Thus, the certification cost for the small size nursery is relatively high in comparison with their sales turn over.

- **Competition with other nurseries.** The nurseries have to compete with other nurseries in the provinces as well as with nurseries in other provinces in terms of price of the seedlings. The average market price of seedlings (top grafted) in Sulawesi is around IDR 7,000. However, several competitors offer a lower price, especially the nurseries which supply to the institutional market in bulk. In Sulawesi, the district of Soppeng is well-known as a major cocoa seedling producer. The top grafted seedling price in Soppeng is between IDR 5,000 – 7,000, even for the government program, the nurseries in Soppeng still could sell the seedlings at IDR 3,500 – IDR 5,000 per



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seedling. Bin Radji Farm, one of the nurseries in Polewali Mandar, also sell top grafted seedlings at IDR 5,000 per seedling.

In general, the Sumatra area has better prices for seedlings. It is because the nursery business in Sumatra is less developed than in the Sulawesi area. In West Sumatra, one of the nurseries which was facilitated by the Program, sell its seedling at IDR 8,000.

- **Competition with other commodities.** As cocoa productivity declines, farmers become less enthusiastic to grow cocoa and replace it with other agricultural commodities. The rise of the palm oil industry in Indonesia has increased the number of palm oil plantations as well as the area of plantation. In Indonesia, the area of palm oil grew 11.5% in the period of 2012 to 2015, from 10.13 million ha (in 2012) to 112,600 ha (in 2015).
- **Financial capacity.** Most of the cocoa farmers in Indonesia are smallholder farmers who have limited financing capacity. On the other hand, a replantation program requires a significant amount in investment cost (around IDR 55 million per hectare). In addition, the farmers will also lose the income before the new trees will produce the beans. They need financial support to cover the replantation cost as well as to cover their household expense during the unproductive period.
- **Risk Management.** In many cases, the nursery operated by farmer groups do not have clear roles, responsibilities, and the profit sharing scheme. When all members are responsible, usually it means no person will take responsibility. Everybody thinks that the other person will take care of the nursery, resulting in a lack of maintenance which leads to low seedling production and damaged nursery facilities. When this happens, nursery operations stop and the business becomes inactive. This unclear situation can be seen in the story of nursery of Bunga Coklat in section 3.1.1.

Most nursery operators who received support from the Program are farmers. In several cases, they lack management and entrepreneurship skills. Thus, the nursery operation lack the business aspect, especially the marketing and financial aspects. Therefore the operation is less sustainable. As a result, the nursery operation is seen as a burden, rather than being seen as a source of additional income. Lack of capital to cover the operating and maintenance cost stops operations.

- **Lack of capacity of the nursery operator.** In several cases, the nursery operators who received support from the Program have not had the knowledge or skills to operate the nursery. For example, Pak Aman, a nursery operator in Polewali Mandar, does not have basic knowledge on nursery operation, e.g. how to top graft. His knowledge on nursery management is based on his experience in managing a small nursery that is operated to fulfill his own garden needs. Currently, he receives support for the development of a large nursery with a capacity of 25,000 seedlings. Naturally, managing a personal nursery with the capacity of only dozens of seedlings is significantly different from managing a commercial-sized nursery. Lack of knowledge on the technical aspects will increase the operating risk.

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Therefore, a candidate nursery operator should receive training on nursery management, in the technical aspects as well as in the business aspects, and followed by monitoring and coaching in order to make sure they are able to implement the knowledge and skills obtained from the training in their nursery. It is recommended the large nursery operators be a professional nursery operator, because the large size nursery needs more time and focus.

## 4.2. The Opportunities

Although there are several challenges, there are opportunities for the cocoa nurseries in Indonesia. Some of the opportunities are as follows:

- **A growing awareness of the importance of the superior planting materials.** By introducing side and top grafting, farmers become familiar with superior planting materials. Afterwards, farmers are interested in using superior planting materials thus creating demand for the superior planting materials. In many cases, the farmers are less enthusiastic with the free government seedlings program, because they learn from the previous government program that the quality of the seedlings were poor. So, many nursery growers are still optimistic with the future of superior seedlings that they produce.
- **Indonesia aims to become the world's second largest cocoa producer.** Currently, Indonesia is the 3<sup>rd</sup> largest cocoa producers in the world. The government of Indonesia is aiming to be world's second largest producers by 2020 (Detik Finance, 2017) and it would happen by replacing the majority of aging trees in almost all of the cocoa farming areas.
- **Market potential.** Referring to the Statistik Perkebunan Indonesia, around 532,954 ha or 31% of the total area is damaged.<sup>3</sup> Assuming there are 700 trees per ha, the total damaged trees is around 373 million trees. In addition, most of the cocoa trees are old. As an illustration, the average age of a cocoa farm in the GP-SCPP areas is 18.3 year (Cocoatrace, 2017), whereas the ideal viable commercial productive age is up to 25 years. This condition needs rehabilitation and a replantation program in order to revitalize the productivity.

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<sup>3</sup> Statistik Perkebunan Indonesia 2015-2017: Kakao

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## 5. The Sustainable Nursery Development

### 5.1. Lessons learned

Based on the experience from the nursery support program, there are some lessons to learn for the improvement as described below:

#### 5.1.1. Selection of nursery operator candidates

The nursery operator candidate is one of the crucial factors for the sustainability of the nursery business. Therefore, it is necessary to have a proper selection process. If the nursery support is provided to the farmer group, then the groups needs to appoint one person as the nursery operator. In addition, the group needs to have an agreement with the operator on the roles and responsibilities of the operator and the roles and responsibilities of the farmer group. This agreement is needed in order to avoid disputes in the future.

The nursery operator candidate should be a person who has demonstrated entrepreneurship skills and has strong commitment to develop nursery. The candidate can be selected from the farmers who already run a business (such as cocoa bean trading, agro-inputs traders, etc.), or other person who have commitment and capacity to manage the nursery business.

#### Feasibility Assessment

The feasibility assessment is needed to minimize the potential risk. The assessment will include technical aspects and business aspects. The assessment form can be seen in Appendix 1. The key criteria are as follows:

- Available land area for nursery should be minimum 800 m<sup>2</sup> (enough space for 30,000 seedlings)
- The area should be flat, access to direct sunlight, but it should not be exposed to frequent strong winds, storms, and flooding
- The site should be reasonably close to cocoa growing areas and located in a strategic location (visible from the road and accessible for transportation)
- The site must have a good supply of fresh water at any time (even during the dry season) and supply of planting media
- There is a sufficient potential initial market for the seedlings in the surrounding area
- The area is a secure area (from pests and diseases and the theft)
- Status of the land is clean and clear
- The site is outside the protected area
- The site is far from an archeological/historical protected site
- The owner has the capacity and commitment for investment sharing on the nursery development (at least 50% of the project cost, exclude the land value and the cost of business permit)

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- The operator candidate demonstrated entrepreneurship skills and has clear roles and responsibilities

### Investment sharing

In the nursery support program, it is recommended that the nursery development cost is shared between the nursery owners and the program. The contribution from the nursery owners will enhance sense of the ownership. The project cost and the investment sharing portion will be discussed with the candidates at the outset. The owner candidates should contribute at least 50% of the project cost (exclude the land value). The contribution can be in the form of the nursery construction, and the Program can support the equipment and materials (polybag, seeds, etc.).

### 5.1.2. Technical assistance

In addition to the financial support, the Program will also provide technical assistance to the nursery operator. The technical assistance will consist of training on the nursery management and the on-going coaching after the training.

- **The nursery management training.** This training will consist of technical aspects (agriculture aspects) and business aspects (financials and business management). The training will be conducted before the nursery start its operation.
- **Ongoing monitoring and coaching.** After the training, the Program will conduct monitoring and on-going coaching to the nursery operators to make sure the nurseries are well managed. It is expected that the staff who conduct the coaching have experience on nursery business with agriculture and agribusiness background.
- The technical assistance will be provided for one year. After one year, if the nursery operators still need the technical assistance, it is expected that they pay for the services. The cost can be shared among the nurseries that received the service.

### 5.1.3. Access to Market

Actually, the farmers who sell the beans to the buying unit/trader are the potential buyers for the seedlings. Therefore, it would be better if the seedlings can be linked and marketed to the farmers who sell the beans to the cocoa buyer. In this model, the trader becomes an investor of the nursery. It would strengthen the position of the trader and will increase the quantity and quality of the cocoa beans supply in the long term.

If the farmers have the capacity to pay the seedlings, the farmer can pay the seedlings in cash. The trader can provide seedling for free as trading incentives. For example, if the farmer delivers good quality beans, the trader can give some seedlings for free. However, if the farmers do not have the capacity to buy in cash, the nursery (trader) can provide a loan scheme for the seedlings which will be paid back when the farmers sell the beans, the trader (who is the owner of the nursery) will deduct the payment for the bean as loan repayment.

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The buying unit can support the cocoa trader by linking the trader and the farmers to the financial institution which can provide a loan for replantation. Through this mechanism, the farmers will receive loan facility for the replantation program, and it will be a potential market for the nurseries. In the long-term, the cocoa production will increase, and it will benefit both the farmers and the cocoa buyer.

## 5.2. Business Model Strengthening

Minister of Agriculture regulation number 50/Permentan/KB.020/9/2015 and Minister of Agriculture decree number 314/Kpts/KB.020/10/2015 stipulate that the seed production activities must have a Business Permit on Seeds Production (*IUPB/Izin Usaha Produksi Benih*) and the seedling distribution must be certified and labelled. The government will supervise the production and distribution of cocoa seedlings through their Seedling Supervisors (*PBT/Pengawas Benih Tanaman*). The small nurseries will have difficulties in complying with this regulation, because most of them do not have business legality and they don't have knowledge on how to get a legal permit. In addition, they think that the certification process is costly. When they participate in the certification process, there are several additional costs for participating in seedling certification, such as the cost of certified planting materials (seeds and bud woods), the cost of certification audit, and the cost of labelling. For illustration, the price of certified seeds produced by Hasfarm is IDR 700 – 800 per seedling, and the bud wood cost is IDR 1,500 per bud wood that can be used for two seedlings. The cost of labelling is IDR 300 per seedling. The cost of the audit is IDR 150 per seedling, exclude the transportation and auditor accommodation during the certification audit. The transportation and accommodation cost can vary depending on the location, and this cost is the major cost of certification.

From a market perspective, the cocoa seedlings are needed for rehabilitation and replantation of the less and unproductive cocoa trees. It means there is a potential market for the cocoa seedlings. However, the revitalization of cocoa farm requires a significant amount of capital, and farmers have limited capital and lack of access to finance. The cost of revitalization is not just the cost of seedlings, but also the cost of land clearing and replantation. In addition, the farmer will lose their income until the new farm can generate income, although, this could be partially substituted by intercropping or income from other sources. Therefore, the revitalization program needs a financing mechanism that will support farmers on getting the funds. It is expected that the availability of financing support for the revitalization program will attract more cocoa farmers to replant and it means it will increase the demand for the cocoa seedlings.

Based on the new regulation, the nursery must have a business permit and the product must be certified and labelled. Individual nursery, especially the small nurseries, will have difficulties in complying with the new regulation. Considering the above situation, a sustainable business model must be developed for the nursery business, especially for the small nurseries that are the majority of nurseries in Indonesia. In order to strengthen their position and create synergy, the small nurseries are suggested to assemble in one

organization. The nursery organization can facilitate the certification process collectively, and it will reduce the cost.

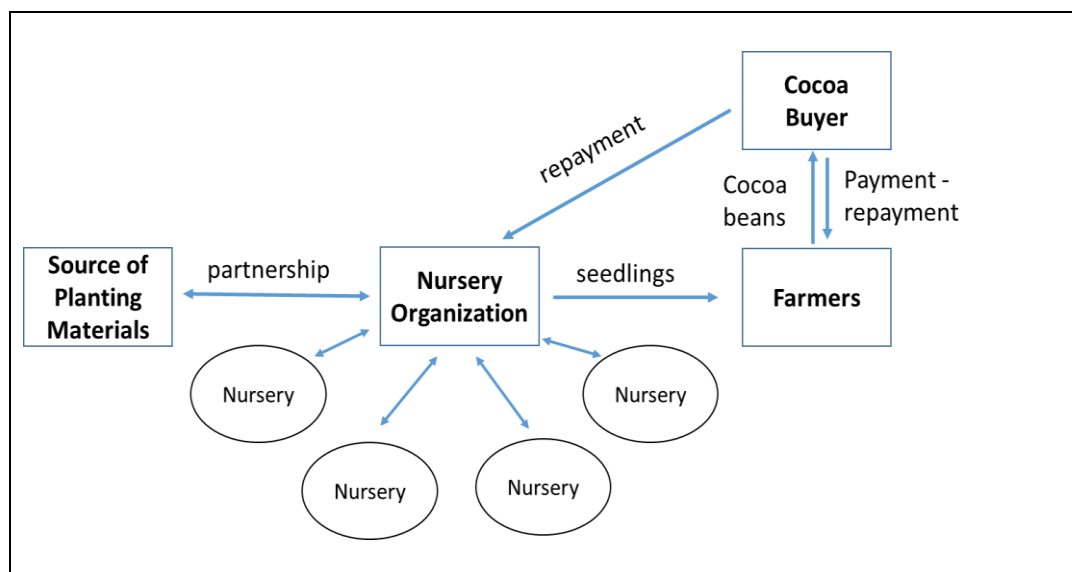
The nursery organization can play the role of facilitator that can provide services to the members collectively. In order to play its role effectively, the nursery organization can apply for the business permit and the certification on behalf of the members. When the organization has a business permit and certification, the organization can be collective marketing for the seedlings produced by the members, and the members do not need to have their own business permit. This will reduce the cost of registration and certification. The legal status of the nursery organization will provide access to the institutional market and participate in the procurement bidding for cocoa seedlings.

In addition, the nursery organization can be partnering with several parties in order to strengthen the business and secure the sustainability of the nursery business:

### 1. Partnership with Certified Planting Materials and Cocoa Buyers

This nursery organization will facilitate the needs of the nursery members collectively. The nursery organization develop partnership with certified planting materials producers in order to secure the certified planting materials as required by the regulation. The nursery organization can also support the marketing activities of the members through collective marketing. In addition, the nursery organization can also develop a partnership with cocoa buyers. In the partnership, the nursery organization can sell the seedlings to the farmers who supply the beans to the buyer and provide financing facility. The buyer on behalf of the nursery organization will deduct the payment based on the agreed repayment schedule, and transfer the repayment portion to the nursery organization.

Figure 4. Partnership model – option 1



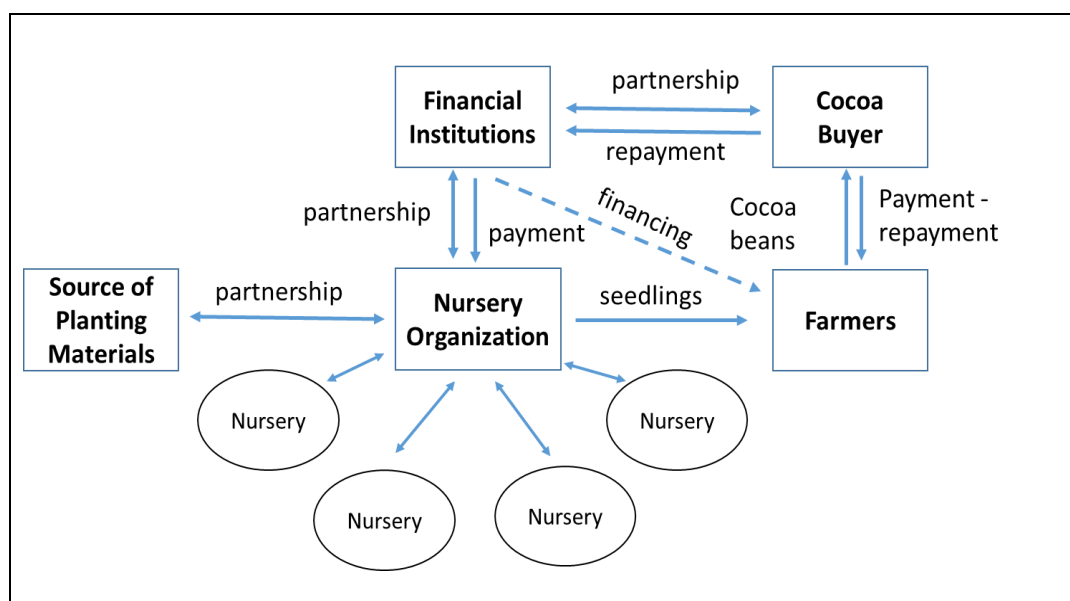
## 2. Partnership with Certified Planting Materials, Cocoa Buyers and Financial Institution

If the buying station has limited financing capacity, they can develop a partnership with financial institutions that are able and willing to provide financing for the revitalization of cocoa farms. In this partnership, the financial institution will provide a financing facility to the farmers for replantation activities. However, it is not provided in cash, but in the form of goods that are needed for replantation. This mechanism will avoid the utilization of the financing scheme for consumptive purpose.

In the case of seedlings, there are four parties involved in this model, i.e. the nursery, the buyer, the farmer and the financial institution. The financial institution will pay the nursery organization for the seedlings delivered to the farmers and this payment will be recorded as a loan. The farmer will make repayment when they sell the beans to the buyer. The buyer will deduct the payment for loan repayment based on the agreed repayment schedule and transfer the money to the financial institution.

One of the potential financial mechanisms is the Forest Development Financing Center (*BLU Pusat Pembiayaan Pembangunan Hutan*). This institution manage revolving fund to support investment in forestry and environment sector. The revolving fund can be used for reforestation/replantation. This institution offer two types of financing scheme, i.e. loan and revenue sharing. Both schemes have a relatively long grace period (the maximum grace period is 8 years). Thus, this model could potentially be used for a replantation program.

Figure 5. Partnership model – option 2



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Notes:

- Source of planting materials is an institution who provide certified planting materials
- Nursery Organization is an organization that play the role as coordinator and facilitator of the small nurseries. This nursery organization can be formed as a cooperative or big nursery that has a legal entity. The nursery organization also play a role in standardizing the seedlings produced by the members through standard SOP.
- Cocoa buyer is a buying station/buyers that buy cocoa beans from the farmers.
- Farmer is a cocoa farmer who is interested in replanting their cocoa farm and they sell the cocoa beans to the cocoa buyer.
- Financial institution is an institution that provides a financing scheme for replantation of the cocoa farm. The financing scheme can be in the form of planting materials and other agro-inputs.



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## Appendices

Appendix 1. Assesment Form for Nursery Candidate

Appendix 2.The cost estimation of various nursery capacity

1. Small nursery (capacity 5,000 seedlings)
2. Medium (capacity 10,000 seedlings)
3. Large (capacity 25,000 seedlings)

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## Appendix 1. Assessment Form for Nursery Candidate

### I. Technical Aspect

No	Pertanyaan	Hasil		Komentar
		Ya	Tidak	
1	Petani GP-SCPP dan telah mengikuti Pelatihan GAP dan GEP			
2	Terdapat calon pengelola yang ditunjuk dengan hak dan kewajiban yang jelas			
3	<p>Ketersediaan lahan yang layak untuk nursery yang akan dibangun, dengan ketentuan :</p> <ul style="list-style-type: none"><li>- Status lahan yang jelas dan tidak bermasalah</li><li>- Lokasi strategis (terlihat dari jalan raya dan akses transportasi yang mudah)</li><li>- Lahan cukup untuk membangun nursery dengan kapasitas sesuai rencana</li><li>- Ketersediaan air untuk penyiraman yang berkesinambungan (termasuk saat musin kemarau)</li><li>- Kontur tanah datar dan tidak tergenang air saat hujan</li><li>- Lahan yang terbuka dengan pencahayaan matahari yang cukup</li><li>- Di sekitar lokasi terdapat kebun kakao</li><li>- Disekitar lokasi calon kebun nursery tidak ada penyakit VSD (minimal 100 m)</li><li>- Sanitasi lingkungan area calon nursery baik</li><li>- Aman dari gangguan hama dan gangguan keamanan</li><li>- Lokasi berada di wilayah hutan lindung</li><li>- Lokasi tidak berdekatan/ tidak berpotensi</li></ul>			

	mengganggu situs arkeologi/situs sejarah			
4	Mempunyai pengetahuan teknis budidaya dan bisnis pembibitan dengan baik			
	Memiliki keinginan untuk belajar dan mengembangkan usahanya			
5	Apakah sudah ada kebun induk (sumber benih) tersertifikasi di kabupaten setempat?  Apakah sudah ada kebun sumber bud wood tersertifikasi di kabupaten setempat?			

## II. Business Aspect

No	Pertanyaan	Hasil Aessment
1	Potensi Pasar: <ul style="list-style-type: none"> <li>• Luas lahan kebun kakao dalam wilayah nursery yang akan dibangun (ha)</li> <li>• Umur rata-rata kebun Kakao yang telah ada (thn) ?</li> <li>• Potensi lahan baru yang akan dikembangkan untuk tanaman kakao (Ha) ?</li> </ul>	
2	Jumlah Petani SCPP yang telah dilatih GAP dalam wilayah yang akan didirikan Nursery (orang) ?	
3	Jumlah (unit) dan luas nursery yang telah ada (Ha) dan jumlah bibit yang tersedia (batang) ? Berapa kapasitas produksi seluruhnya (batang/tahun)	
4	Jarak dengan Nursery terdekat	
5	Jumlah bibit kakao bantuan pemerintah tahun berjalan dan perkiraan 2 tahun yang akan datang (batang) ?	

6	Klon bibit unggul yang tersedia di pasaran dan telah tersertifikasi ?	
7	Alasan-alasan Petani memilih bibit unggul ?	
8	Harga jual rata-rata bibit unggul yang tersedia ?	
9	Kendala utama yang dihadapi petani dalam mengakses bibit unggul ?	

### III. Other aspects

No	Pertanyaan	Hasil		Komentar
		Ya	Tidak	
1	Bersedia menerapkan prinsip GAP dan manajemen Kebun Nursery dengan baik			
2	Bersedia berkontribusi biaya pembangunan/pengembangan dan pemeliharaan Nursery, yang meliputi : <ul style="list-style-type: none"> <li>- Biaya material pembangunan rumah bibit</li> <li>- Biaya tenaga kerja untuk pembangunan rumah bibit</li> <li>- Biaya bahan tanam, media tanam, dan tenaga kerja</li> <li>- Biaya tenaga kerja pemeliharaan/perawatan bibit</li> <li>- Biaya pengurusan Izin Usaha Produksi Benih (IUPB) dan sertifikasi benih</li> </ul>			
3	Bersedia untuk memberikan saran teknis kepada petani pembeli bibit tentang tata acara pengelolaan kebun bibit yang baik			
4	Bersedia untuk mengikuti pelatihan-pelatihan peningkatan kapasitas			

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	terkait pengelolaan nursery yang baik yang diselenggarakan oleh GP-SCPP ataupun pihak yang lain.			
5	Bersedia dimonitoring secara periodik oleh staff GP-SCPP.			
6	Bersedia menerima kunjungan kebun nursery oleh pihak GP-SCPP maupun mitra kerjanya			
7	Bersedia berbagi informasi dengan GP-SCPP terkait kebun pembibitan kakao yang dikelola			
8	Bersedia untuk dipublikasikan dalam media publikasi GP-SCPP maupun mitra kerjanya			

## Appendix 2. The cost estimation of various nursery capacity

### 1. Small nursery (capacity 5,000 seedlings)

No	Description	Unit		Cost/Unit	Total Cost
		Qty			
<b>A</b>	<b>Construction</b>				
1	Kayu	2	M3	1,500,000	3,000,000
2	Plastic UV	60	mtr	40,000	2,400,000
3	Paranet	1.0	unit	1,800,000	1,800,000
4	Jaring keliling	50	mtr	5,000	250,000
5	Paku	10	kg	20,000	200,000
6	Instalasi listrik	1	package	200,000	200,000
7	Bambu	10	btg	20,000	200,000
8	Upah Pembuatan bangunan	14	Hok	100,000	1,400,000
<b>Sub Total</b>					<b>9,450,000</b>
<b>B</b>	<b>Material</b>				
1	Top Soil	6	ret	250,000	1,500,000
2	Kompos	50	sak	30,000	1,500,000
3	Pupuk SP36	2	sak	115,000	230,000
4	Folior (Kristalon)	2	bks	35,000	70,000
5	Polybag	50	bks	10,000	500,000
6	Benih bina	5,500	seeds	1,000	5,500,000
8	Entres	2,500	btg	1,500	3,750,000
9	Plastik Entris	5	kg	35,000	175,000
<b>Sub Total</b>					<b>13,225,000</b>
<b>C</b>	<b>Equipments</b>				
1	Gerobak	1.0	pcs	600,000	600,000
2	Skop	1.0	pcs	85,000	85,000
3	Cangkul	1.0	pcs	100,000	100,000
4	Gunting	1.0	pcs	85,000	85,000
5	Dinamo Air	1.0	pcs	500,000	500,000
6	Pisau Okulasi	1.0	pcs	200,000	200,000
7	Selang	100	mtr	5,000	500,000
8	Kran air	2	unit	20,000	40,000
<b>Sub Total</b>					<b>2,110,000</b>
<b>D</b>	<b>Upah kerja (biaya)</b>				
1	Pengisian Polybag + Kompos	5,000	lbr	250	1,250,000
2	Penyusunan Polybag	5,000	lbr	200	1,000,000
3	Peyiraman dan Penancapan benih	3	Hok	100,000	300,000
4	Naungan daun Kelapa	2	Hok	100,000	200,000
5	Upah Penyambungan (Sambung pucuk)	5,000	phn	750	3,750,000
6	Upah Perawatan	6	bln	500,000	3,000,000
7	Biaya Label	5,000	phn	300	1,500,000
<b>Sub Total</b>					<b>11,000,000</b>
<b>Total</b>					<b>35,785,000</b>

## 2. Medium (capacity 10,000 seedlings)

No	Description	Unit		Cost/Unit	Total Cost
		Qty			
<b>A</b>	<b>Construction</b>				
1	Kayu	4	M3	1,500,000	6,000,000
2	Plastic UV	120	mtr	40,000	4,800,000
3	Paranet	2.0	unit	1,800,000	3,600,000
4	Jaring keliling	65	mtr	5,000	325,000
5	Paku	15	kg	20,000	300,000
6	Instalasi listrik	2	package	200,000	400,000
7	Bambu	20	btg	20,000	400,000
8	Upah Pembuatan bangunan	20	Hok	100,000	2,000,000
<b>Sub Total</b>					17,825,000
<b>B</b>	<b>Material</b>				
1	Top Soil	10	ret	250,000	2,500,000
2	Kompos	100	sak	30,000	3,000,000
3	Pupuk SP36	4	sak	115,000	460,000
4	Folior (Kristalon)	4	bks	35,000	140,000
5	Polybag	100	bks	10,000	1,000,000
6	Benih bina	11,000	seeds	1,000	11,000,000
8	Entres	5,000	btg	1,500	7,500,000
9	Plastik Entris	10	kg	35,000	350,000
<b>Sub Total</b>					25,950,000
<b>C</b>	<b>Equipments</b>				
1	Gerobak	1	pcs	600,000	600,000
2	Skop	1	pcs	85,000	85,000
3	Cangkul	1	pcs	100,000	100,000
4	Gunting	2	pcs	85,000	170,000
5	Dinamo Air	1	pcs	1,000,000	1,000,000
6	Pisau Okulasi	2	pcs	200,000	400,000
7	Selang	100	mtr	5,000	500,000
8	Kran air	2	unit	20,000	40,000
<b>Sub Total</b>					2,895,000
<b>D</b>	<b>Upah kerja (biaya)</b>				
1	Pengisian Polybag + Kompos	10,000	seeds	250	2,500,000
2	Penyusunan Polybag	10,000	seeds	200	2,000,000
3	Penyiraman dan Penancapan benih	5	Hok	100,000	500,000
4	Naungan daun Kelapa	3	Hok	100,000	300,000
5	Upah Penyambungan (Sambung pucuk)	10,000	phn	750	7,500,000
6	Upah Perawatan	6	bln	1,000,000	6,000,000
7	Biaya Label	10,000	phn	300	3,000,000
<b>Sub Total</b>					21,800,000
<b>Total</b>					68,470,000



### 3. Large (capacity 25,000 seedlings)

No	Description	Unit		Cost/Unit	Total Cost
		Qty			
<b>A</b>	<b>Construction</b>				
1	Bangunan Nursery	1	unit	45,700,000	45,700,000
2	Tambahan material & upah	1	package	5,380,000	5,380,000
3	Tower air	1	package	14,404,000	14,404,000
4	Pondasi	1	package	38,029,000	38,029,000
5	Sprinkle, irigasi, dll	1	package	4,400,200	4,400,200
<b>Sub Total</b>					<b>107,913,200</b>
<b>B</b>	<b>Material</b>				
1	Top Soil	24	rit	250,000	6,000,000
2	Kompos	250	sak	30,000	7,500,000
3	Sekam	5,000	kg	450	2,250,000
4	Pupuk SP36	5	sak	125,000	625,000
5	Folior (Kristalon)	10	bks	35,000	350,000
6	Pesticida	1	paket	250,000	250,000
7	Polybag	250	kg	28,000	7,000,000
8	Benih bina	27,500	seeds	1,000	27,500,000
9	Entres	12,500	btg	1,500	18,750,000
10	Plastik Sungkup	25	kg	35,000	875,000
11	Plastik tali	2	kg	35,000	70,000
12	Plastik rafia	1	kg	18,000	18,000
<b>Sub Total</b>					<b>71,188,000</b>
<b>C</b>	<b>Equipments</b>				
1	Gerobak	2	pcs	600,000	1,200,000
2	Sekop	2	pcs	85,000	170,000
3	Cangkul	1	pcs	100,000	100,000
4	Gunting	4	pcs	85,000	340,000
5	Pompa Air	1	pcs	4,000,000	4,000,000
6	Pisau Okulasi	4	pcs	200,000	800,000
7	Selang	50	mtr	6,500	325,000
8	Kran air	3	unit	20,000	60,000
9	Tank semprot	1	unit	400,000	400,000
10	Spraying safety equipment	1	unit	150,000	150,000
11	Terpal plastik 15 x 4 m	1	unit	100,000	100,000
12	Ember	1	unit	15,000	15,000
<b>Sub Total</b>					<b>7,660,000</b>
<b>D</b>	<b>Upah kerja (biaya)</b>				
1	Pengisian Polybag + Kompos	25,000	seeds	250	6,250,000
2	Penyusunan Polybag	25,000	seeds	200	5,000,000
3	Upah Penyambungan ( Sambung pucuk)	25,000	phn	750	18,750,000
4	Upah Perawatan (2 orang)	6	bln	1,000,000	12,000,000
5	Biaya Label	25,000	phn	300	7,500,000
<b>Sub Total</b>					<b>49,500,000</b>
<b>Total</b>					<b>236,261,200</b>