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by Stanislaus Amsikan

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CAPACITY BUILDING IN MARKETING OF ORGANIC AGRICULTURAL PRODUCTS TO SUPPORT SUSTAINABLE DEVELOPMENT

By

Stefanus Yufra Menahan Taneo

Management Study Program of Ma ChWlg University, Malang
E-mail : stefanus.yufra@machung.ac.id; yufrataneo@yahoo.com

Abstract

Organic agriculture can be expected as a solution to overcome economic and environmental impacts of agricultural development with four principles: food security, food safety, poverty reduction, and environmentally sound agricultural practices. Therefore, in 2000 the Indonesian Ministry of Agriculture launched "Go Organic 2010" program targeting Indonesia to be one of the biggest organic producer countries by 2010. Apparently the target was not achieved since by the end of 2010 farmers involved in marketing initiative of organic products make up only 0.02% and their total organic certified land is less than 1% of the total agriculture of the country. Domestic market value of organic products in 2010 was USD 5 - 6 million and it was still left behind other Asian countries such as China, Japan, India, and Thailand. Many factors contribute to the low performance of organic agricultural development. One of the main factors is low capacity or market access for organic products. This paper will explore capacity building by identifying hinder and push factors of market development for organic products. Many farmer organizations still find it difficult to communicate with government, private sector, and other stakeholders. This article will elaborate stakeholders' role in supporting marketing of organic products such as government, university, NGOs, private sector, and financial institutions. Cooperation within whole stakeholders along the supply chain will improve marketing performance of organic products and foster organic agricultural development. Empirical studies will be provided to support the idea that organic agriculture improves food security, food safety, reduces poverty, and is environmentally friendly.

Keywords: *organic agriculture, sustainable development, capacity building, poverty reduction, marketing, stakeholders.*

1. Introduction

Organic agriculture is being developed and aimed at reducing negative impacts of Green Revolution (GR) that has been implemented in Indonesia since 1960s as an attempt to ensure food security by increasing agricultural productivity. Green Revolution, in fact, has increased productivity dramatically

but it creates some crucial problems. Wahono (1999) identified 24 studies that had been done on the impacts of GR in Java during the period of 1968-1994. The impacts were grouped into four categories (1) access to capital, (2) access to input, (3) access to employment, and (4) access to income. All of the researches came up with the same conclusion that the GR had created class division in the Javanese rural society, between those who benefited from the GR and those who did not. The unfortunate people of the GR are labourers and peasants whereas the benefited people are those who have land more than 0.5 hectares. Conway and Barbier (1990: 11) stated that "The Green Revolution has had a dramatic impact on the Third World, particularly in terms of increasing the yields of the staple cereals - wheat, rice and maize. However, despite impressive results, it also suffers from problems of equity and failures in achieving stability and sustainability of production".

Organic agriculture can be expected as a solution to overcome economic and environmental impacts of agricultural development with four principles: food security, food safety, poverty reduction, and environmentally sound agricultural practices (FAO, 2010). According to the Codex Alimentarius Commission, "organic agriculture is a holistic production management system that avoids use of synthetic fertilizers, pesticides and genetically modified organisms, minimize pollution of air, soil and water, and optimizes the health and productivity of interdependent communities of plants, animals and people" (Muller-Lindenlauf, 2009). Organic product refers to a product that is produced under organic agriculture manner. Paull (2006) explained that organic farming was coined by Lord Northbourne in his book *Look to the Land* published in 1940 to point out that farming as an organism to describe a holistic, ecologically-balanced approach to farming as contrast to what he called chemical farming which relied on imported fertility and cannot be self-sufficient nor an organic whole. This is different from scientific use of the term, "organic" to refer to a class of molecules that contain carbon, especially those involved in the chemistry of life.

Food and Agricultural Organizations provided some countries data to prove that organic agriculture helped farmers to help themselves because it emphasizes local resources and local ecological knowledge, brings farmers together in their

community; and farmers' and consumers' groups work to support markets cut out monopolies and increase farm incomes. The deep roots of the organic agriculture movement connect farmers, consumers, and their markets, improving economic conditions and creating a vibrant rural community. From the consumer sides, international demand for organic products is increasing by more than 25% per year (FAO, 2010).

Therefore, Indonesian Ministry of Agriculture launched «Go Organic 2010» program in 2001 targeting to be one of the biggest organic producer countries by 2010. The target was not achieved since by the end of 2009 farmers involved in marketing initiative of organic products only 0.02% with total organic certified land less than 1% of total agriculture of the country. Domestic market value of organic products in 2009 was USD 5 - 6 million and still left behind other Asian countries such as China, Japan, India, and Thailand (JOA, 2010). Many factors contribute to the low performance of organic agricultural development in Indonesia. One of the main factors is low capacity or market access for organic products.

The purposes of the article are to identify parties involved (stakeholders) and to propose possibilities in capacity building for marketing of organic agricultural products to support sustainable development. In order to avoid misperception the article will discuss the principles of organic agriculture and sustainable development first then followed by marketing development of organic products in Indonesia, the problems faced, and parties involved in marketing organic products.

2. The Principles of Organic Agriculture and Sustainable Development

There are four principles for organic agriculture that have been adopted by organic community under the coordination of International Federation of Organic Agriculture Movement (IFOAM)(FAO, 2007). These principles are:

- a. principle of health: organic agriculture should sustain and enhance the health of soil, plant, animal and human as one and indivisible;
- b. principle of ecology: organic agriculture should be based on living ecological systems and cycles, work with them, emulate them and help sustain them;

- c. principle of fairness: organic agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities;
- d. principle of care: organic agriculture should be managed in a precautionary and responsible manner to protect the health and well being of current and future generations and the environment.

These principles are currently translated by IFOAM into international benchmark for organic standards throughout the world (Brister, 2009). National standard on organic food production in Indonesia that was released in 2002 (SNJ 01-6729-2002)(BSN, 2008) is also adapted from IFOAM standards.

Organic agriculture principles are in line with sustainable development. The World Commission on the Environment and Development defined sustainable development as ..development which meets the needs of the present, without compromising the ability of future generations to meet their own needs.. (Whitehead, 2003: 5). This definition highlights the need to apply a long-term perspective to current activities and impacts, in order to safeguard the interests of future generations and promote environmental stability. Current rate of population growth and economic development will put growing pressure of finite resources, as mankind produces more waste than can be safely processed, and destroys habitats, species, and heritage features. Thus, sustainability has three bottom lines: environmental factors, economic factors, and social factors.

Food and Agricultural Organization breakdown these three bottom lines of sustainable development into four dimensions based on the key mandate of FAO since its founding: (a) food security, (b) food safety, (c) poverty reduction, and (d) environmentally sound agricultural practices (FAO, 2008).

Food security includes food availability, access, stability, and utilization. Availability refers to having sufficient quantities of food of appropriate quality, supplied through domestic production or inputs, food aid and net imports. Food access refers to the access, by individuals, to adequate resources and entitlements for acquiring appropriate foods for nutritious diet [entitlements are defined as the set of all commodity bundles over which a person can establish command given the legal, political, economics and social arrangements of the community in which

he or she lives (including traditional rights such as access to common resources).¹¹ To be food secure, a population, household or individual must have access to adequate food at all times. They should not risk losing access to food as a consequence of sudden shocks (e.g. an economic or climatic crisis) or cyclical events (e.g. seasonal food insecure). The food utilization aspect of food security refers to ways in which food contributes to an adequate diet, clean water, sanitation and health care, and in turn, to a state of nutritional well-being where all physiological needs are met.

Based on the above discussion it can be concluded that organic products produced by organic agricultural practices and meet organic food standards are in line with sustain

able agricultural principles and therefore they support sustainable development.

3. Market Development of Organic Products in Indonesia: opportunities and challenges

3.1 Market Development

Organic agriculture in Indonesia started in early 1980s, is mainly individual initiative and scattered in some regions, mostly in Java. It was initiated by non-governmental organizations (NGOs) which work with small farmers. They develop pilot projects in different regions as individual actions.⁵ In 1984 Bina Sarana Bakti (BSB) Foundation is founded. The foundation is the first organic agriculture training center in Indonesia which has successfully trains more than 1 0.000 farmers and organizations all over Indonesia until now (Surono, 2007). Nowadays, organic products arise as a market niche.

The development of organic agriculture can be observed from demand for organic products.² The demand for organic products has been growing sharply both in domestic and in international market. During 2001 - 2005 the demand for organic products in domestic market increased about 600% (JOA, 2006).³² The following are characteristics of domestic market for organic products:

- key commodities: rice, vegetables, fruits, mushroom, eggs, milk that are produced by small farmers;

- mostly raw and simple processed products;
- concentrated in big cities;
- main consumers: medium and high income people;
- mostly not certified or self-claimed organic;
- marketing channel: conventional: supermarket, restaurant; special: outlet, direct selling;
- imported products: processed food, both certified and not certified;
- market value USO 5-6 million.

Before 2005 it was less than IO outlets and retailers located in Jakarta and surrounding and Yogyakarta. The main commodities are rice and vegetables but after 2005 there is a sharp increasing to more than 20 outlets, retailers and restaurants found in Surabaya, Medan, and Balikpapan besides Jakarta and Yogyakarta (Surono, 2007). According to Ariesusanty (2011), there are two types of organic market in Indonesia, mainstream supermarkets and specialized organic stores that sell only organic products. There is no information about quantity of organic commodities sold in the market. Based on types of crop and organic agricultural land shown in Table 1 it is indicated that there are variety of organic commodities in Indonesia.

Table I. The Use of Agricultural land and crop grown in Indonesia, 2009

Main land	Main crop type	Organic agricultural land ha
Agricultural land and crop, no details	Agricultural land and crops, no details	9,013
Arable crops	Cereals	560
	Medical and aromatic plants	2,913
	Mushrooms	1
	Vegetables	92.3
Arable crops total		21,524
Permanent crops	Cocoa	2,386
	Coconut	936
	Coffee	31,580
	Fruits, tropical and subtropical	18
	Medicinal and aromatic plants, permanent	849
	Nuts	3,574
	Tea/mate	206
Permanent crops total		39,549
Total		52,133

Source: Indonesia Organic Alliance (2010)

Organic agriculture development is still a high priority and a challenge. According to Willer, Helga, and Kilcher (2011), the leading countries by area of organic agriculture in Asia are China (1.9 million hectares) and India (1.2 million hectares). Timor-Lester has the most organic agricultural area as a proportion of total agricultural land (almost seven percent). The largest organic area in the world is Australia (12 million hectares), followed by Argentina (4.4 million hectares), and the US (1.9 million hectares). Even India was the largest producer in the world in 2009, that was 677,257 followed by Uganda (187,893) and Mexico (128,826). The leading countries for organic market size in 2009 are US (18.8 billion euros), Germany (5.8 billion euros), and France (3 billion euros), and the leading countries for organic certifiers in 2010 are Japan, USA, and South Korea.

According to Partap (2010), there are a number of reasons why Asian countries will encourage growth of the domestic organic sector:

- improved health or reduced health risks for farmers, farm workers, and consumers;
- protection of natural resources (e.g. water) and biodiversity;
- improved quality of soils and thereby a long-term high productivity;
- improved market access;
- improved profitability in farming;
- increased rural employment opportunities.

3.2 Opportunities

Organic agriculture has a great opportunity to be developed as the global market for organic food and drink are sharply increasing by years. Global market for organic food and drink sales expanded by roughly five percent to 54.9 billion US dollars in 2009 (Willer and Kilcher, 2011). They also reported that global revenue has increased over three-fold from 18 billion US dollars in 2000 and double-digit growth rates were observed each year, except in 2009. Healthy growth rates are envisaged to restart as consumer spending power rises and as more countries come out of economic recession. The country with the largest markets are the US, Germany, and France; the highest per capita consumption is Denmark, Switzerland, and Austria (Willer and Kilcher, 2011).

Domestic markets for organic products have emerged and are gaining ground. Opportunities of increasing organic market demand and supply in Indonesia, to some extent, are pushed or pulled by the following factors:

- as prices of fuels and chemical fertilizers soar, the idea of going organic becomes more attractive to farmers, especially rice farmers. "The recent price (The Jakarta Post, 2011);
- Indonesian government has committed to promote organic agriculture since 2001 by launching the program so-called "Go Organic 2010" even though it was not successful (The Ministry of Agriculture, 2005);
- increasing demand for organic products that is indicated by increasing trader, retailer exporter of organic products, increasing production center and therefore increasing type of commodities which are sold in the market (Surono, 2007);
- increasing number of certifiers (Surono, 2007).
- increasing demand for safety foods (Saragih, 2001; the Ministry of Agriculture, 2009);
- There is an opportunity to have premium price for organic products when early entering to the market (Taneo, 2002).
- Endowment factors, that are natural resources as the raw material for organic agriculture practices are easy to be found locally and indigenous knowledge are strongly support organic agriculture. The endowment factors contributed to the low cost of production of agricultural products in developing countries, such as Indonesia, and therefore have comparative advantages in producing green products (Scialabba, 2000).

3.3 Challenges

Marketing of organic agricultural products face some constraints and challenges come from external and internal the producers. Surono (2007) identified the following constraint and challenges:

- low quality of organic product especially of small farmers because of lack of knowledge, limited support facilities, and lack of extensionist;

- farmer, especially in green revolution belts, still dependent on chemical fertilizer using;
 - lack of support facilities such as organic inputs, on-farm technology, harvest and post harvest facilities, and working capital;
 - government more focuses on technical development rather than combined with market orientation;
 - less support from the government in terms of policy and program on organic agriculture. Even, mainstream policy on conventional farming still becomes the basic constraint on organic agricultural development, and low incentives for organic farmers ;
 - consumer awareness and education still very limited;
- A field research done by Taneo (2002) found that:
- farmers do not have access to the consumers of organic products;
 - The selling price of organic rice that is sold locally by the farmers in several areas in Malang is as high as the conventional one, Rp 5.000 per kg on the average.
 - There is no standard for organic products so that it is difficult to define whether a product is organic or not. There were some producers have their own brand/label without any official approval or self-claimed as organic product.

Standardization or certification for organic products is one of the main issues in marketing of organic products. Since 2008, it has been established by Indonesian Government through the National Standardization Institution (NSI) using the Guideline for Organic Food Certifiers. Currently seven national certification bodies have the Competent Authority of Organic Agriculture (OKPO) accreditation and seven international certification bodies operating in Indonesia. The problem is organic products produced by about 95% is farmers are low educated and therefore limited access to the certification bodies. Moreover, certification process takes time and costly.

Another challenge is about trade-off between productivity and sustainability. The government and farmers are more concerned about higher productivity in order to meet the needs, especially rice as the staple food. The

productivity of organic agriculture even has been an international discourse. For example, *Soil* Association published that organic agriculture has productive capacity to feed the world (Hweleet and Melchert, 2008), however other publications such as Smil (2001) and Conner (2008) pointed out some facts that organic agriculture can not feed the world that means it has low productivity.

Market constraint and challenges not only stem from market access and capital but also from government regulation and production and post harvest sector as pointed out in Figure 1.



Figure 1. Market Constraint and Challenges for Organic Products
Source: adapted from Surano, 2007.

4. Capacity Building in Marketing to Support Organic Agricultural Development

4.1 Definition of Capacity Building

Capacity is an elusive concept so that in the literature it is described both as a process and an outcome; as dynamic and multidimensional (Parker *et al.*, 1998). Goodman (1998) describes capacity as "the ability to carry out stated objectives". In general terms, capacity building is a process of activity that improves the ability of a person, group, organizations, or system to meet its objectives or to perform better" (Fort, 1999; Brown 2001). Therefore, capacity building in marketing refers to process that improves the ability of a fam1er, farmer group, agribusiness organization, or marketing system to support organic agriculture and sustainable development.

The UNDP defines capacity building as a long-tenn continual process of development that involves all stakeholders; including ministries, local authorities, non-governmental organizations, professionals, community members, academics and more. Capacity building uses a country's human, scientific, technological,

organizational, and institutional and resource capabilities. The goal of capacity building is to tackle problems related to policy and methods of development, while considering the potential, limits and needs of the people of the country concerned (UNDP, 1991). The UNDP outlines that capacity building takes place on an individual level, an institutional level and the societal level (UNCEPA, 2006):

- **Individual level.** Capacity-building on an individual level requires the development of conditions that allow individual participants to build and enhance existing knowledge and skills. It also calls for the establishment of conditions that will allow individuals to engage in the 'process of learning and adapting to change'.
- **Institutional level.** Capacity building on an institutional level should involve aiding pre-existing institutions in developing countries. It should not involve creating new institutions, rather modernizing existing institutions and supporting them in forming sound policies, organizational structures, and effective methods of management and revenue control.
- **Societal level.** Capacity building at the societal level should support the establishment of a more interactive public administration that learns equally from its actions and from feedback it receives from the population at large. Capacity building must be used to develop public administrators that are responsive and accountable.

4.2 Capacity Building for Stakeholders in Marketing of Organic Products

Many parties involved in marketing of organic products both individuals and organizations. Capacity building in marketing of organic products should consider all of the parties involved or stakeholders in order to achieved maximum performance. Marketing for organic products plays an important factor in detemlining organic development. Beller marketing performrnnce will increase organic agricultural productivity, reduce poverty, improve food security, assure food safety, and improve quality of environment subject to sustainable development principles.

Table I (appendix) shows that rice productivity is lower than the traditional one but the revenue per Ha and profit per harvest is significantly higher than that of traditional because the higher price received by organic rice (Rp 7,000 per kg compared with Rp 4,000 per kg). Table 2 (appendix) shows that organic farming are in 2011 is 27,425 ha engaging 254,850 poor farmers so that it can reduce poverty by 764,550 people. If organic farming continues to be developed, in 2017 organic farming area will increase to 430,059 Ha that engage 860,119 poor farmers and it will reduce poverty by 2,580,356 people.

It is cleared that capacity building in marketing for organic product needs to be done on an individual level, an institutional level, the societal level, and should be initiated by the government. At the individual level, farmer needs improvement of knowledge through several of ways, especially by training. Farmers has great role in developing organic agriculture because they are producers and consumers at the same time. Improving market access for farmers needs to be done to open possibilities for new consumers and minimize dependency on one market. Farmers need training to improve their knowledge and skills on both technical and management aspect of farming. Training can be organized or facilitated by institutions such as government, NGOs, financial institutions, and universities. Farmers are also hesitating to apply organic principles because converting conventional to organic one is high risk and therefore is perceived costly by farmers. It takes time to recover the land fertility by applying organic inputs. The productivity is lower in the early phase than that of conventional one, while farmers should apply higher organic fertilizers. In this case, government should provide incentive for farmers who convert his/her farming into organic.

Capacity building on an institutional level is designed to improve capacity of institutions that are involved in marketing of organic products. These institutions have a wide range: government organizations, private sectors, non-governmental organizations (NGOs) both national and international, and university. Table 2 summarize the role, remark, and capacity building needs to be done parties involved in marketing of organic agriculture.

Fanner organization such as farmer group, cooperative unit generally lack of knowledge and limited access to market and financial institution. Based on her study in West Java and North Sumatera, Jahroh (2010) suggested that "promotion of organic fanning through group should be accompanied by marketing channel. Through the farmer group, farmers have a venue to share information and technology. Farmers have stronger purchasing power as a group and joint marketing is a viable alternative to market their produce".

Table 2. Stakeholders Roles on Supporting Organic Products and Aspects Needs to be improved

No.	Stakeholders	Role	Remark	Needs to be Improved
1	Individual Farmer	Willingness to produce standard quality of organic products	<ul style="list-style-type: none"> Limited market access Hesitate to apply organic principles Lack of knowledge; cooperation, and networking 	<ul style="list-style-type: none"> Improve market access Provide incentive to farmers who apply organic principles Improve marketing Improve knowledge
2	Farmers'	Facilitate farmers and selling the products	Lack of knowledge and financial institution	<ul style="list-style-type: none"> Improve knowledge Improve access to market and financial institutions
3	Consumer/ Buyers	Understand and pay	Low awareness and low purchasing power	Raise awareness
4	Certification Body	Assure quality of organic products	Still limited to be access by small producers;	<ul style="list-style-type: none"> Improve access to small producers Simplify procedures and reduce costs/expenses
4	Government	Provide research, consultation, and anti extension	Still very limited actions	<ul style="list-style-type: none"> Improve action programs Effective policies Provide incentives Facilitate joint program with other institutions
5	University	Facilitate research, model, and education	Some university have program on it, but still difficult to access. Weak linking with producer	<ul style="list-style-type: none"> Incorporate in the curricula Promote and improve link and match program
6	National NGOs	Facilitate training and assistances to	Many NGOs have capacity to educate and	<ul style="list-style-type: none"> Improve cooperation and networking with

		farmers	develop organic agriculture with farmer, but lack experience on marketing aspects.	private sectors <ul style="list-style-type: none"> • Initiate joint program with local government in facilitating training and technical assistance
7	International NGOs	Facilitate development model, training, and market access	Work well so far. Many new organic agriculture projects are facilitated by international NGO.	<ul style="list-style-type: none"> • Provide training for national NGOs and scale up market access • Facilitate local government and other institutions
8	Private sector	Facilitate quality management and market access	Limited number. It is work in big modern retailer, i.e. Ranch Market, Hero, Carefour.	Improve market access for farmers to reduce channel of distribution
9	Financial institutions	Provide financing for organic agriculture project and its marketing	Limited in number and hesitate to provide insurance.	<ul style="list-style-type: none"> • Improve access to farmers and private sectors • Promote joint program with other institutions

Source: Adapted and compiled from Taneo (2002); the Ministry of Agriculture (2005; 2009); Surano (2007); the Jakarta Post (2011)

Capacity building on the societal level is under responsibility of government. Government should promote organic product through several of ways to raise awareness of the society. Raise awareness of consumers to have willingness to pay for organic products while providing incentive for producers who have willingness to produce organic products. Government can improve market access through policy to form contract farming, establishment of rural cooperatives, and tax incentive for contractors in order to reduce middle men involvement in distribution chain. Contract farming is expected as a tool to shorten distributional chain. It is aimed to give more room for farmers/peasants to reap potential benefits from organic agriculture premium price.

University has a potential role in promoting development and marketing of organic agricultural products through its three main tasks: teaching and learning process, research, and community services. Organic agriculture as a part of sustainable development can be incorporated in the curricula as a topic/subject in

teaching and learning, research topic, and raising awareness through community services concerning education for sustainable development.

5. Conclusion

Organic agriculture is an alternative solution to overcome economic and environmental impacts of conventional agricultural development with four principles: food security, food safety, poverty reduction, and environmentally sound agricultural practices. Organic agriculture is also help to reduce govenmlent subsidy for agrochemical inputs by organic inputs substitution. Therefore, organic agriculture needs to be promoted and developed.

Low capacity or limited market access for organic products is one of the most problems faced in developing organic agriculture. Capacity building for marketing organic products can be done on an individual level, an institutional level, and the societal level. Fanners are the focus on the individual level because they are producers and consumers at the same time. Farmers need to work in a group to be more effective and efficient and therefore capacity building on the institutional level become important to be done. Government plays an important role in building capacity on the institutional and the societal levels through policies and incentives.

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APPENDICES

Table I. Poverty Reduction through the Application of Organic farming Farmers' income (Organic Farming versus Conventional Farming).

Indicators	Organic farming with SRI (System of Rice Intensification)	Conventional Farming
Yield per Ha (Ton)	Hulled dry paddy grain= 5.25 Rice= 3.15	Hulled dry paddy grain= 3.6 Rice= 3.36
Total Cost per Ha	8,180,000	5,000,5000
Price per Kg (from the farmers)	Rp 7,000	Rp4,000
Total Revenue per Ha	Rp 22,050,000	Rp 13,440,000
Profit per Harvest (Rp)	13,870,000 (US\$ 1,541)	8,435,000 (US\$ 937)

Source: Lesmana and Hidayat (2008).

Assumption:

- Time for cultivation to harvest for both organic farming and conventional farming is around 120 days. Harvest time is mostly twice per annum.
- Total cost per Ha of organic farming is for 1st cultivation time that needs a lot of organic fertilizers. Total cost in 2nd cultivation time is lower than 1st cultivation time.
- Yield and profit per harvest of organic farming is for 1st harvest. Yield and profit per harvest in 2nd harvest and the following harvest time will be higher than yield and profit of 1st harvest.
- Exchange rate Rp9,000/US\$.
- Price of organic price is market price. Price of conventional rice is determined by President instruction.

Tabel 1.1: Esimation of Poverty Reduction through the Application of Organic Farming.

Year	Organic Farming Area	Poor Farmers Engaging	Poverty Reduction	
	Ha	In Organic Farming	Absolute Number	Change
		People	People	People
	106.188	412,575	181,758	
	124,810	454,899	551,000	72,264
	147,740	534,899	643,500	27,425
2012	177,210	635,820	717,450	152,910
2013	212,692	766,284	831,000	183,432
2014	255,139	919,301	961,142	220,136
2015	306,166	1,094,76	1,151,428	280,286
	377,740	1,388,090	1,464,285	
	459,210	1,674,430	1,750,358	16,071

Source: Lesmana and Hidayat (2008).

Assumptions:

- Poor farmers are categorised as the farmers who have land less than 0.6 ha
- Poor family consists of three people in average
- Poor people in Indonesia in 2007 was 37 million
- Area of organic farming is calculated based on SOEL (2003) mentioned total organic area in Indonesia is around 10.000 Ha (0.09% to total area or equals to 0.33 to total paddy area)
- During 2003 to 2008, there is increasing organic farming area 15% per year (based on demand of organic rice)
 - Average growth of organic farming area of 2009-2010 is 15%, 2011-2014 is 20%, and 2015-2017 is 25%.

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