

**THE BUILDING OF COMMUNITY CAPACITY IN RURAL AREAS  
THROUGH THE IMPLEMENTATION OF A SYSTEM OF  
RICE INTENSIFICATION  
THE TASIKMALAYA REGENCY CASE**

**THESIS**

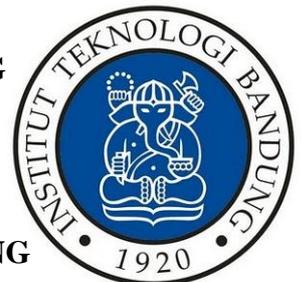
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## ABSTRACT

# THE BUILDING OF COMMUNITY CAPACITY IN RURAL AREAS THROUGH THE IMPLEMENTATION OF A SYSTEM OF RICE INTENSIFICATION THE TASIKMALAYA REGENCY CASE

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*Most of the Indonesian farmers especially in the rural areas live in deprived conditions, marginalized communities and are not highly educated. Their community capacity needs to be developed in order to increase their capabilities to face many complex problems in the future. The farmers need a new way to increase their socio-economic and cultural wellbeing. This thesis investigates System of Rice Intensification (SRI) in Indonesia and more precisely in Tasikmalaya Regency. The SRI organic is an agro-ecology farming practice which tries to balance the sustainability of environmental, economic and social dimensions of development. Its implementation carries the potential to increase the community capacity of rural areas. This research aims to examine the community capacity underlying the implementation of the SRI method in rural areas. Besides that, it aims to identify the factors affecting the implementation of the SRI method in the building of community capacity in rural areas. The conceptual model of community capacity proposed by Beckley et al. (2008) is used as the analytical base for this research. This model identifies four dimensions of community capacity: assets, catalysts, relational spheres, and outcomes. The information analyzed under this model is synthesized from interviews, documents, newspaper, internet sources, and observations of the researcher. Descriptive analysis is used to explain phenomenon in Tasikmalaya community capacity related to the implementation of SRI organic method. Findings of this research show that the community already has some of the assets that can be used to increase the community capacity, such as natural and social capital. The implementation of SRI organic could increase the human and economic capital of the farmers. I argue that cultural capital is also one of the important assets in the community besides the natural, social, economic and human capital. With the sphere of social relations which also supports the development of SRI organic, the farmers and the communities have more capabilities in their social, economic and environmental life in the future. However, the communities need aids and subsidies from the government and the private sector to be able to better use the opportunities and reduce the problems. Based on the analysis, some recommendations to develop community capacity through the implementation of the SRI organic method are explored.*

**Keywords:** *community capacity, system of rice intensification (SRI), sustainable agriculture and rural areas*

## **GUIDELINE FOR USING THESIS**

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## ABBREVIATIONS

Disperta Tasikmalaya	<i>Dinas Pertanian dan Tanaman Pangan</i> Kabupaten Tasikmalaya is the Tasikmalaya Regency of Agricultural and Food Crops Service
Bappenas	<i>Badan Perencanaan Pembangunan Nasional</i> is the national development planning board at the central government
BMPs	Best Management Practices
CIDA	Canadian International Development Agency
FAO	Food and Agriculture Organization
Gapoktan Simpatik	<i>Gabungan Kelompok Tani Sistem Pertanian Padi Organik Tasikmalaya</i> is the Farmers Groups Union of Organic Rice Farming System in Tasikmalaya
GDRP	Gross Domestic Regional Product
IFPRI	International Food Policy Research Institute
IMO	Institute for Marketecology
MDGs	Millennium Development Goals
NGOs	Non-Governmental Organizations
OECD	Organisation for Economic Cooperation and Development
PPL	<i>Petugas Penyuluh Lapangan</i> is the public officials from the agricultural local office who assists, guides and supports farmers in the field
SARD	Sustainable Agricultural and Rural Development
SLPHT	<i>Sekolah Lapang Pengendalian Hama Terpadu</i> is the training activities provided by Agricultural Service at the local level on Integrated Pest Management
SRI	System of Rice Intensification
TSA	Tefy Saina Association
UFOs	Unconfirmed Field Observations
USA	The United States of America
USAID	United States Agency for International Development
USDA	The United States Department of Agriculture
WCCD	World Congress on Communication for Development
WCED	World Commission on Environment and Development

# **Chapter I**

## **An Introduction to the Role of Rice Intensification Systems in Sustainable Agriculture and Community Capacity Building**

This research focuses on the impacts of the implementation of System of Rice Intensification (SRI) method on the development of community capacity in rural areas. The research was conducted in Tasikmalaya Regency, West Java Province, Indonesia as the case study in order to get a more focus and detailed results. Farmers in the Tasikmalaya Regency have successfully implemented the SRI method and increase their socio-economic welfare. The relationship between a successful implementation of the SRI method and community capacity building seems to be very interesting to be examined in relation to the development of models to build the community capacity in rural areas based on the agriculture sector. The main objective of this research is to examine the community capacity underlying the implementation of the SRI method in rural areas. It also aims to identify the factors affecting the implementation of the SRI method in the building of community capacity in rural areas. The examination of community capacity was using the conceptual model of community capacity proposed by Beckley *et al.* (2008). It describes four dimensions of community capacity, namely assets, catalysts, relational spheres, and outcomes.

### **1.1. Background**

Agriculture is one of the important sectors in human life in order to meet the basic needs of human beings. Development in the agricultural sector is a strategic step because it involves the various interests of human life (Setiawan, 2011). As Thomas Malthus said in 1830, population growth would increase geometrically while resources production to support the population would increase arithmetically (Rahman, 2004). This imbalanced speed of growth will contribute significantly to famine, malnutrition and/or poverty in many Asian and African countries since foodstuffs can only be fulfilled from agriculture. In addition, a variety of processed materials for clothing, rubber, fiber, etc. also needs raw materials from agriculture. Basically, countries that do not have basis in agriculture have a large dependency from other countries because the supply of foodstuffs and agricultural raw materials is derived from agricultural countries. As one of the agricultural countries, Indonesia shows the capacity to be a rice exporting country (Swastika, 2011).

Indonesia is known as the second largest country of biodiversity after Brazil. The opportunities to develop and explore natural resources are still open in line with the increasing ability of human resources. Furthermore, the growth rate of the world population will create a huge market for Indonesian tropical agriculture products. Lastly, the agriculture sector has proven able to deal with a multidimensional crisis, while the other sectors experienced a significant shock. This is related to the resources required in agriculture partly derived from nature (Setiawan, 2011).

The high population pressure and the rapid pace of urbanization and other economic activities led to a reduction in the supply of arable land per capita and a process of agricultural intensification (*i.e.* green revolution) in many Asian countries. While this process has significantly increased food production to feed the growing population, it has also entailed considerable damage to the physical environment such as unsustainable use of land and water resources (Alauddin and Quiggin, 2007).

In the green revolution era, massive investments in modern agricultural research led to a dramatic increase in yields. Modern plant breeding through genetically modified organism, improved agronomy, and the development of inorganic fertilizers and modern pesticides fuelled these advances. Unfortunately, the green revolution has also been widely criticized for causing environmental damage, high costs to farming practices, pest resistance and outbreak, poisoned agricultural workers, killing beneficial insects and other wildlife leading to important loss of biodiversity on farms and undemocratic top-down transmission of new technology and information (IFPRI, 2002; Rosset, 2000; Altieri and Nicholls, 2005). Besides that, with the green revolution, farming becomes petro-dependent and petrochemicals become the most important part of farming and, at the end, spoil the condition and quality of the soil. These facts, together with the growing awareness for the sustainability of agriculture, position the green revolution as an ecologically unsustainable farming practice (Rosset, 2000).

Furthermore, there is a growing demand for organically grown food which is considered healthier and safer especially in the United States and European countries (Magkos *et al.* 2006; Dimitri & Greene, 2000). Many reasons explain this phenomenon: organic products have less inorganic pesticides exposure, they taste better, and they have higher nutrients and antioxidants than conventional agriculture products. Besides that, organic agriculture is

more sustainable than others. Moreover, there is also a growing pressure to develop the organic farming practice in the international level such as in Europe and North America in order to increase the sustainability of the agriculture (McElroy, 2008).

Sustainable agriculture is the implementation of sustainable development in the agricultural sector. The concept of sustainable development began in late 1980 formulated as a response to the previous development strategy that focused on high economic growth which has been proven to cause degradation of the production capacity and environmental quality (Suryana, 2006). Sustainable agriculture tries to balance the three factors in the sustainable development, namely economy, social, and environmental. The balance in those three factors is very important to guarantee sustainability of agriculture. Unfortunately, changes in direction of the agricultural development to be more sustainable are not easy. To change a farming tradition that has formed over several decades requires serious effort and involvement of all stakeholders such as governments, scholars, farmers, Non-Governmental Organizations (NGOs), and the entire community including consumers of agricultural products. Sustainable methods of agriculture introduced to farmers often meet barriers such as socialization, lack of understanding of the whole sustainable agriculture concept among small farmers, and the low level of community capacity.

One of the methods or modalities of sustainable agriculture that has been implemented in many countries is the SRI, which is a rice cultivation practice that focuses on soil, crop, and water management. Mutakin (2010) stated that the SRI method can provide many benefits such as more efficient water usage because the water demand is only 20-30% of the water required by conventional rice cultivations. It uses the intermittent irrigation before panicle initiation and shallow water management from panicle initiation to maturity (Anugrah *et al.* 2008). Another advantage is the SRI could restore the soil health and fertility as well as restore the ecological balance of the land. One of the principles of the SRI method is to eliminate standing water in paddy fields because rice plant is not a water plant although it can adapt to the water (Purwasasmita and Sutaryat, 2012).

This practice is an example of sustainable development because it is an environmentally friendly farming method and sustainable from the economic and social perspectives. Originally, this concept was developed in Madagascar in the early 1980, by a French Jesuit priest. Some Asian countries such as India, China, Bangladesh, Japan, The Philippines and

Indonesia already implemented it. In Indonesia, some regions in Java, Sumatera, Bali, West Nusa Tenggara, Kalimantan, and Sulawesi tested and practiced the SRI method. From the field experiment in Tasikmalaya, Garut and Ciamis Regency, the SRI seems able to increase rice yield, price of product, farmers' income, and production and farming efficiency (Anugrah *et al.* 2008). Based on that, SRI has big chances to be developed in Indonesia in order to reduce the poverty, especially in rural areas.

In the poverty reduction program, giving a greater role to the community and placing it as the object and subject of development is very crucial. Within this framework, the functional relationship between development agents have so far been modified in accordance with the conditions, opportunities, goals, and a growing demand in society. Of course everything is based on the capacity and norms adopted by each actor. One of the important values in terms of overcoming poverty is the community capacity building. This is in line with contemporary development thinking in which development is seen as the process of personal and institutional capacity to mobilize and manage resources owned in order to improve the quality of life in accordance with the aspirations of people (Korten, 1990). In Indonesia, many deprived areas still cannot improve their level of economic welfare because the community capacity is not well developed. Rural areas in Indonesia are mainly inhabited by people who have a limited quality of human resources. Most of the farmers live in deprived conditions and marginalized communities with very limited access to resources, education and health facilities. They require the concept of community capacity building that can be applied easily and precisely targeted.

The development of SRI in Tasikmalaya was initiated in 2002 and currently has exported its products to USA and Malaysia. SRI already proved to reduce poverty and improve the level of welfare of the farmers in Tasikmalaya Regency. This development is very satisfactory; they even already got the organic certification from the Institute for Marketecology (IMO) of Switzerland. The existence of this international recognition prove that farmer groups in Tasikmalaya already introduced a system of rice cultivation and pay attention to the principles of efficiency, food security, and the sustainability of the land productivity (<http://www.antaraneews.com>, 2009).

The relationship between the SRI method and community capacity building seems to be very interesting. Unfortunately, research on this relationship is still very limited. The aim

of this research is to examine the relationship between the implementation of SRI and community capacity development in rural areas. The results of this research may become one of the considerations in the community capacity development in rural areas where still have a high potential of rice production. Basically, areas that have an agricultural base can use the agricultural sector approach to build the community capacity through for example the SRI method. That is why the research was conducted in rural areas of the Tasikmalaya Regency, West Java Province where the SRI method is well developed and succeeds in terms of poverty reduction. It assesses the community capacity of the farmer groups which already implemented SRI methods by using the conceptual model of community capacity proposed by Beckley *et al.* (2008). The model describes four dimensions of community capacity: assets, catalysts, relational spheres, and outcomes (Beckley *et al.* 2008)

## **1.2. Research Problems**

The main problem raised in this research is to what extent the implementation of the SRI method influences the building of community capacity in rural areas. In a more structured way, main research questions are formulated as follow:

1. Which is the role of the implementation of SRI in the building of community capacity in rural areas?
2. Which are the factors affecting the implementation of the SRI method in the building of community capacity in rural areas?

## **1.3. Research Objectives**

The objectives of this research are:

1. To examine the community capacity underlying the implementation of the SRI method in rural areas.
2. To identify the factors affecting the implementation of the SRI method in the building of community capacity in rural areas.

## **1.4. Scope of Research**

Scope and limitation of the research is needed in order to focus the analysis. This research is about the influence of the implementation of the SRI method in the community capacity development in rural areas. Some scopes for this research are:

1. A focus on the implementation of the SRI method in Tasikmalaya Regency,
2. The relationship between the implementation of the SRI method and the building of community capacity in rural areas,
3. A focus on the factors and roles of the SRI method in the building of community capacity in rural areas.

## **1.5. Research Methods**

There are four main activities conducted in this research, namely research background and development, literature review, data collection, and data analysis. Literature review and data collection were done simultaneously to build the theoretical base of sustainable agriculture. It has strong relationship with the sustainable development, SRI farming practice, community capacity and poverty alleviation (Chapter 2) and was elaborated in the analysis (Chapter 3 and 4). Primary data was obtained through in-depth interviews and field work observations. Meanwhile, secondary data was obtained from government's documents, farmers group's documents through visiting offices and internet browsing. This research is conducted with descriptive analysis approach using field research techniques. Descriptive analysis was chosen because of its appropriateness to portray the reality of a community and helps to get better understanding about the phenomenon within community. Furthermore, in-depth interview was chosen because it is suitable to explore more deeply the community in Tasikmalaya Regency as the case study. Up to now, the implementation of the SRI method in Tasikmalaya is success and able to increase the level of socio-economic welfare of the community in that areas. The case study method was chosen to get a more focus and detailed results (Creswell, 1998). It is because the focus is on a contemporary phenomenon within some real-life context (Yin, 2003). Further explanation about the research methods in each activity of this research is described below.

### **1.5.1. Data Collection**

Data was obtained from primary and secondary sources. Secondary sources include books, journals, articles, theses, e-newspapers, e-magazines and internet sources. Primary data was obtained through in-depth interviews and field work observations. The interviews are used as the main sources of the analysis. The field interviews involve asking questions, listening, expressing interest, and recording what was said (Neuman, 2000). Moreover, this research conducted the unstructured, nondirective, and in-depth interviewing that usually

used in the field research to obtain as much information. Therefore, the interviews were guided by several questions, and then an open-ended answer was expected from the respondents.

Interviews focused on the members of the farmer groups union (Gapoktan Simpatik<sup>1</sup>) in the Tasikmalaya Regency. Additional interviews to the local and national government officers, National Pesticide Society, SRI trainers and researchers were conducted to get a diversity of perspectives and information about the implementation of the SRI method in Tasikmalaya and other places in Indonesia. The interview process can be divided into several steps:

- a. Constructing a detailed list of questions to examine and identify the factors affecting the building of community capacity underlying on the implementation of the SRI method in rural areas (See Appendix);
- b. Identifying the group of farmers for the interviews. This research was conducted in Cisayong and Manonjaya Sub-district in Tasikmalaya Regency, West Java Province. Cisayong sub-district is an area where the implementation of the SRI method was initiated in Tasikmalaya and was followed by farmers in Manonjaya sub-district. Cisayong is also the centre of processing, grading and packaging of the organic rice before exported abroad. In Cisayong Sub-district, there are also training facilities of the SRI organic method where farmers or institutions (usually from the agricultural education institutions or agricultural field schools, local governments, and NGOs) from anywhere can learn about the best practices of the implementation of SRI organic. Meanwhile, Manonjaya is the biggest contributor of the organic rice in the farmers group union in Tasikmalaya Regency up to now. Since the implementation of SRI method, both of the sub-districts are well known as the centre of the organic rice production in Tasikmalaya Regency;
- c. Identifying the interviewees and arranging appointments with them. The interviewee should be able to answer most of the questions and so has a good understanding on the SRI method and its implementation. In this research, the main interviews were conducted to eight farmers: four farmers from each sub-district. In addition, six more interviews complement this work:
  - Head of the farmers group union,

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<sup>1</sup> Gapoktan Simpatik (In Indonesian, *Gabungan Kelompok Tani Sistem Pertanian Padi Organik Tasikmalaya*) is the Farmers Groups Union of Organic Rice Farming System in Tasikmalaya.

- Administrator of the farmers group union,
  - Public senior officer of the Tasikmalaya Regency of Agricultural and Food Crops Service (Disperta Kabupaten Tasikmalaya<sup>2</sup>),
  - Public senior officer of the Ministry of Agriculture of Republic of Indonesia,
  - Representative of the Indonesian National Pesticide Society,
  - Research institution.
- d. Conducting the in-depth interviews (face to face communication) by visiting the interviewee's house or office. This communication has advantages such as researcher can see the expression and body languages of interviewees directly. The interviews were recorded and written;
  - e. Transferring the voice records into transcriptions and typing the notes into the readable form;
  - f. Organising the interviews material into categories constructed from the theoretical framework of this thesis;
  - g. Data triangulation to verify the validity of data by incorporating different viewpoints and methods. In this research, the triangulation incorporated interview comparison between at least two respondents in the same community, researcher interpretation while in the field and electronic news collection from local and national newspapers and magazines;
  - h. The selected data based on these categories are ready to analyse.

### **1.5.2. Data analysis**

Processing of the data obtained from primary and secondary sources is done by organizing the data based on the existing conceptual framework to analyse the community capacity building. Data was analyzed by descriptive and exploratory analysis approach based on the conceptual model of community capacity developed by Beckley *et al.* (2008). In this research, descriptive and exploratory analysis is used to identify community capacity in Tasikmalaya Regency related to the implementation of SRI method. Data analysis consists of several steps:

- a. Deepening the theoretical background, especially about dimensions that influence the community capacity;

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<sup>2</sup> Disperta Kabupaten Tasikmalaya (In Indonesian, *Dinas Pertanian dan Tanaman Pangan Kabupaten Tasikmalaya*) is the Tasikmalaya Regency of Agricultural and Food Crops Service.

- b. Interpreting the reflection of each answer in accordance with the context of questions and answers that are relevant to the indicators been made previously;
- c. The organized data is displayed in a matrix of answers form the key informant to provide the necessary information for analysing and making the conclusions;
- d. Examining all possible materials (secondary data from literature review, e-newspapers, e-magazines, government documents, farmer groups' documents, interview transcription, notes and researcher observations) relevant to better understand the building of community capacity in rural areas;
- e. The next stage is to produce conclusions based on the information that has been tabulated earlier. These conclusions need to be verified further by reviewing the logical flow of the information. The purpose of the verification is to ensure the validity of the research.

Furthermore, to look at the factors that support or inhibit the building of community capacity, in every answer given by the key informants is further asked why it happened.

Figure 1.1 presents the research framework of this thesis:

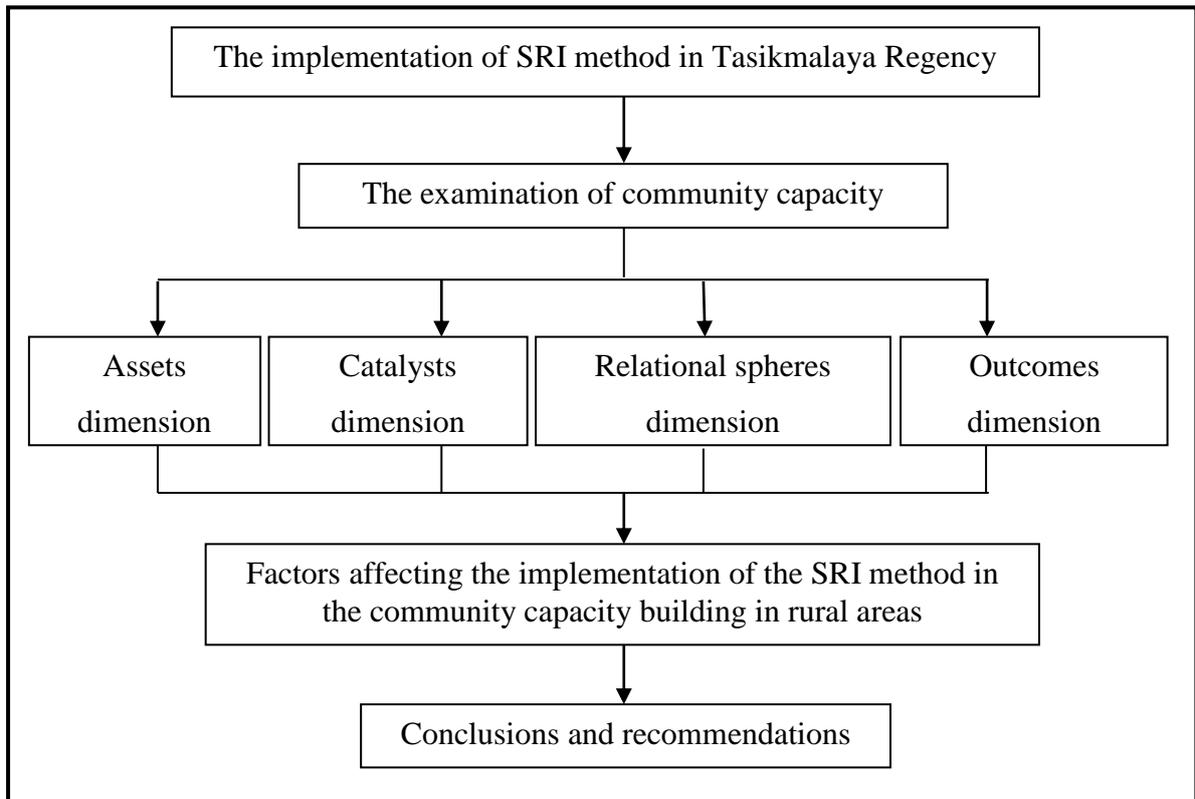


Figure 1.1 Research frameworks (Source: author).

## **1.6. Structure of the Research**

This research consists of the following five chapters:

### **Chapter I An Introduction to the Role of Rice Intensification Systems in Sustainable Agriculture and Community Capacity Building**

This chapter explains the background, research problems, research objectives, methodology, and structure of the research.

### **Chapter II System of Rice Intensification as a Catalyst of Sustainable Community Capacity**

This chapter provides a theoretical review of the sustainability concept, sustainable agriculture, SRI method, community capacity development, and poverty alleviation in rural areas.

### **Chapter III The Implementation of a System of Rice Intensification in Tasikmalaya Regency**

This chapter describes the Tasikmalaya Regency region from a physical and socio-economic perspectives as well as the paddy cultivation activities developed in this area.

### **Chapter IV The Building of Community Capacity Relying on the Implementation of a System of Rice Intensification in the Tasikmalaya Regency**

This chapter analyzes the community capacity relying on the implementation of SRI method in rural area by the conceptual model of community capacity promoted by Beckley *et al.* (2008).

### **Chapter V Conclusions and Recommendations**

The final chapter consists of conclusions of the research and recommendations for the involved parties and the further research.

## **1.7. Conclusion**

In summary, the aim of this research is to explore the relationship between the implementation of SRI method, which also can be considered as the application of the sustainable agriculture concept, and the building of community capacity in rural areas. Tasikmalaya Regency was chosen to be the area of study given the capacity and the capability of the farmers in Tasikmalaya to produce and export their organic rice production to countries such as the USA, Malaysia and Europe. **How is the**

**implementation and which factors of the SRI method that influence the building of community capacity in the rural areas are the main questions of this research.** The analytical tool used in this research is the conceptual model of community capacity developed by Beckley *et al.* (2008).

The next chapter explores and reviews the theoretical framework with a focus on the community capacity building and the SRI as well as their relationship with sustainable development and sustainable agriculture.

## **Chapter II**

# **System of Rice Intensification as a Catalyst of Sustainable Community Capacity**

### **2.1 Introduction**

This chapter reviews literature on sustainable development, sustainable agriculture, SRI, and community capacity as a means to approach contemporary agricultural challenges and for discussing the role of the implementation of the SRI method in the building of community capacity in rural areas. The first section discusses sustainable development as the basis step of the argumentation to get basic understanding on the expected future development. Section 2.3 discusses sustainable agriculture as another concept derived from the sustainable development in agricultural sector. Section 2.4 discusses the SRI method and its development including its origin concept, requirements and example of the implementation of SRI method, are thus reviewed here. Moreover, the implementation of the SRI method needs active participation from the farmers and community. Therefore, section 2.5 deals with the community capacity concept. The focus of this section is on the conceptual model of community capacity developed by Beckley *et al.* (2008). The chapter ends with a reflection about the outcomes of community capacity with a focus on the increasing of socio-economic welfare.

### **2.2 Sustainable Development**

Sustainable development has become a big issue and attracts attention from many scholars, scientists, economists, politicians, etc. The concerns about non-renewable natural resources as a limiting factor of production and environmental stability which can threaten the long-term of growth has supported the concept of sustainable development (Khan, 1995).

The concept of sustainable development began in late 1980 formulated as a response to the previous development strategy that focused on high economic growth which has been proven to cause degradation of the production capacity and environmental quality (Suryana, 2006). The concern for sustainability has become global as the present design of productive systems and consumption patterns threaten the continuity of the existing social organization (Barkin, 2010). The first definition of sustainable development formulated in the Brundtland Report, which is the result of World Commission on Environment and Development United Nations Congress (WCED), states that “*sustainable development,*

*which implies meeting the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987: 1).*

In other words, sustainable development is a development that balances the needs of present generations and future generations (OECD, 2001). This definition sets out the fundamental principles of *intergenerational* and *intragenerational* equity (Jordan, 2008). In a more detailed concept, there are three dimensions which generally recognized as the “pillars” of sustainable development (Harris, 2000: 5-6):

1. Economic dimension: able to produce goods and services continually, to maintain manageable levels of government and external debt, and to avoid extreme sectoral imbalances which damage agricultural or industrial production.
2. Environmental dimension: maintain its resource base, avoiding over exploitation of natural renewable resources or sink resources, on depleting non-renewable resources.
3. Social dimension: achieve distributional equity, adequate provision of social services, including health and education, gender equity, respect for minorities, political accountability and participation.

Kahn (1995) said that those pillars must be integrated, interlinked and coordinated in a comprehensive manner. Actually, the sustainable development concept was universally accepted after the Rio Earth Summit in 1992 as a steering paradigm to integrate economic growth, social development and environmental protection. Even the United Nations has identified environmental sustainability as one of the eight Millennium Development Goals (MDGs) to be reached in 2015 (WCCD, 2006). Unfortunately, these principles can do conflict with one another. It needs systems of governance to resolve conflicts and to arrive at coordinated policies (Jordan, 2008). That is why the implementation of sustainable development varies among the different countries and in regions within a country. There may be differences in prioritizing the pillars of sustainable development among countries, regions, societies, cultures, and individuals. These differences are not only because the unique of each community ecologically and culturally but also because the specific place-based needs, requirements, and interests in the society (OECD, 2001). Politics also has an important role in the prioritizing of sustainable development’s pillars. *“The reconciliation of these competing perspectives, therefore, is central to the development of any coherent regime and a subsequent cohesive political force for sustainable development”* (Dale,

2001: 4). So, instead of looking for the best trade-offs between the three pillars of sustainable development, searching for synergies between them became more urgent (Jordan, 2008).

Sustainable development has to be implemented in all development sectors to maximize the results or outcomes. Agriculture is one of the main sectors together with energy and the industrial sector that has the very large role to feed an expanding world population. As Harris (2000) said, the agricultural pressures on global soil and water system needs to be responded both from the production and consumption side. *“On the production side, current high-input techniques which are leading to serious soil degradation and water pollution and overdraft must be replaced by organic soil rebuilding, integrated pest management, and efficient irrigation. This in turn implies much greater reliance on local knowledge and participatory input into the development of agricultural techniques* (Harris, 2000: 21). On the other side, limit on the population growth and greater equity and efficiency in food distribution is a central importance given probable resource limitations on production (Harris, 2000).

### **2.3 Sustainable Agriculture**

The sustainable agriculture concept has evolved since the early 1980s (Amekawa, 2011) as a response to problems derived from the green revolution such as resistance and outbreak of pests, loss of biodiversity, hazards and contamination of the chemical pesticide, scale biases towards larger farms and undemocratic top-down transmission of new technology and information, among others (Altieri and Nicholls, 2005). A simple definition of sustainable agriculture is an agriculture type that focuses on producing food in a way that does not degrade the environment and contributes to the livelihood of communities (UoK, 2012). Livelihood can be defined as *“the capabilities, assets and activities required for a means of living of the society”* (Chambers and Conway, 1991: 1). From the agricultural perspective, livelihood relates to the quality of life for those who work and live on the farm, as well as those in the local community. So, there is a mutual supports between the farm and the community (UoK, 2012).

Food and Agriculture Organization (FAO) elaborated the concept of Sustainable Agricultural and Rural Development (SARD) in 1989 that implies *“the management and conservation of the natural resource base, and the orientation of technological and*

*institutional challenges in such a manner as to ensure the attainment and continued satisfaction of human needs, for present and future generations. Such sustainable development (in the agriculture, forestry, and fisheries sectors) conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technically appropriate, economically viable, and socially acceptable”* (FAO in WCCD, 2006:3).

The 1990 USDA Farm Bill states that sustainable agriculture refers to “*an integrated system of plant and animal production practices having a site-specific application that over the long term will satisfy human food and fibre needs; enhance the environmental quality and natural resource base upon which the agricultural economy depends; make the most efficient use of non-renewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls; sustain the economic viability of farm operations and enhance the quality of life for farmers and society as a whole*” (Kluson, 2012).

Sustainable agriculture also seeks to achieve three main goals: economic efficiency, environmental quality and social responsibility (Legg and Viatte, 2001; Gail *et al.* 2010). Economic efficiency means meeting an increasing global demand for food at the lowest cost, while responding to changing preferences for different foods and adjusting to structural change within the agro-food sector and in the overall economy. At the same time, sustainable agriculture requires farmers to satisfy the public’s demand for improved environmental performance, by reducing pollution from agriculture, conserving the natural resource base, and generating environmental benefits. And agriculture must achieve all of this in socially sustainable ways, by increasing farmers’ education and skills, taking account of animal welfare concerns and ensuring that working the land can provide an acceptable level and fair distribution of income (Legg and Viatte, 2001). There is a strong social cohesion aim in the implementation of sustainable agriculture that relates to the social development or community capacity.

#### **2.4 System of Rice Intensification**

A System of Rice Intensification (SRI) is a rice cultivation practice that focuses on soil, crop, and water management based on environmentally sound activities through group empowerment and local wisdom or local knowledge (Anugrah *et al.* 2008). Originally, the SRI method was developed in Madagascar in 1983-1984 accidentally by a French Jesuit

priest, Fr. Henri de Laulanie, who lived for more than thirty years living with a group of farmers. In fact, the SRI was born because of the lack of concern about the farmer's productivity in Madagascar. By its inventor, this method was named in French as *Le Systme de Riziculture Intensive*, abbreviated as SRI. In English, it is popularly known as the System of Rice Intensification or SRI. In 1990, de Laulanie formed Tefy Saina Association (TSA), a Malagasy NGO to perpetuate his work and expand the SRI method in other regions. Tefy Saina literally means "the forge of the spirit" or "shaping the spirit." In a broad sense, it means "change of mentality". This name was chosen in line with the mission of this NGO to transform or change the farmer's way of thinking in farming practices. Up to now, TSA together with various associations and NGOs gives one week training session to farmers ([www.tefysaina.org](http://www.tefysaina.org), 2012).

Since 1995, Prof. Norman Uphoff as the Director of the International Institution for Food, Agriculture and Development at Cornell University, New York, who supported by the United States Agency for International Development (USAID) began cooperating with the TSA. They introduce the SRI method around the Ranomafana National Park in the eastern part of Madagascar. Furthermore, the method has also been tested in countries such as China (Yuan 2002), Gambia (Ceesay, 2010), India (Adusumilli and Laxmi, 2010), Indonesia (Sato *et al.* 2011), Iraq (Hameed *et al.* 2011), Kenya (Mati *et al.* 2011), the Philippines (Miyazato and Mohammed, 2009) and Sri Lanka with positive results (Mediana, 2010). Figure 2.1 illustrates the general overview of the rice cultivation in the SRI method in Indonesia from preparing the seeds to the rice packaging.

The SRI method is mainly based on six principles: (1) transplanting of young seedlings, 8-15 days old during the 2<sup>nd</sup> phyllochrons, (2) shallow transplanting of single seedling per hill, (3) wide plant spacing, (4) saturated soil (intermittent irrigation before panicle initiation and shallow water management from panicle initiation to maturity), (5) intensive manual and mechanical weeding starting ten days after transplanting and continuing until the canopy closes and (6) compost application or other organic amendments (Anugrah *et al.* 2008; Stoop *et al.* 2002). It is a method of planting rice which maximizes the tillering ability of rice. Many tillers are expected to compensate for the low number of seedlings being transplanted. Also, the seedlings are planted earlier and the fields are not continuously flooded. If the tillering ability is maximized, the rice plants are greener, bigger (taller), and more resilient to pests and bad weather (Richardson, 2010).

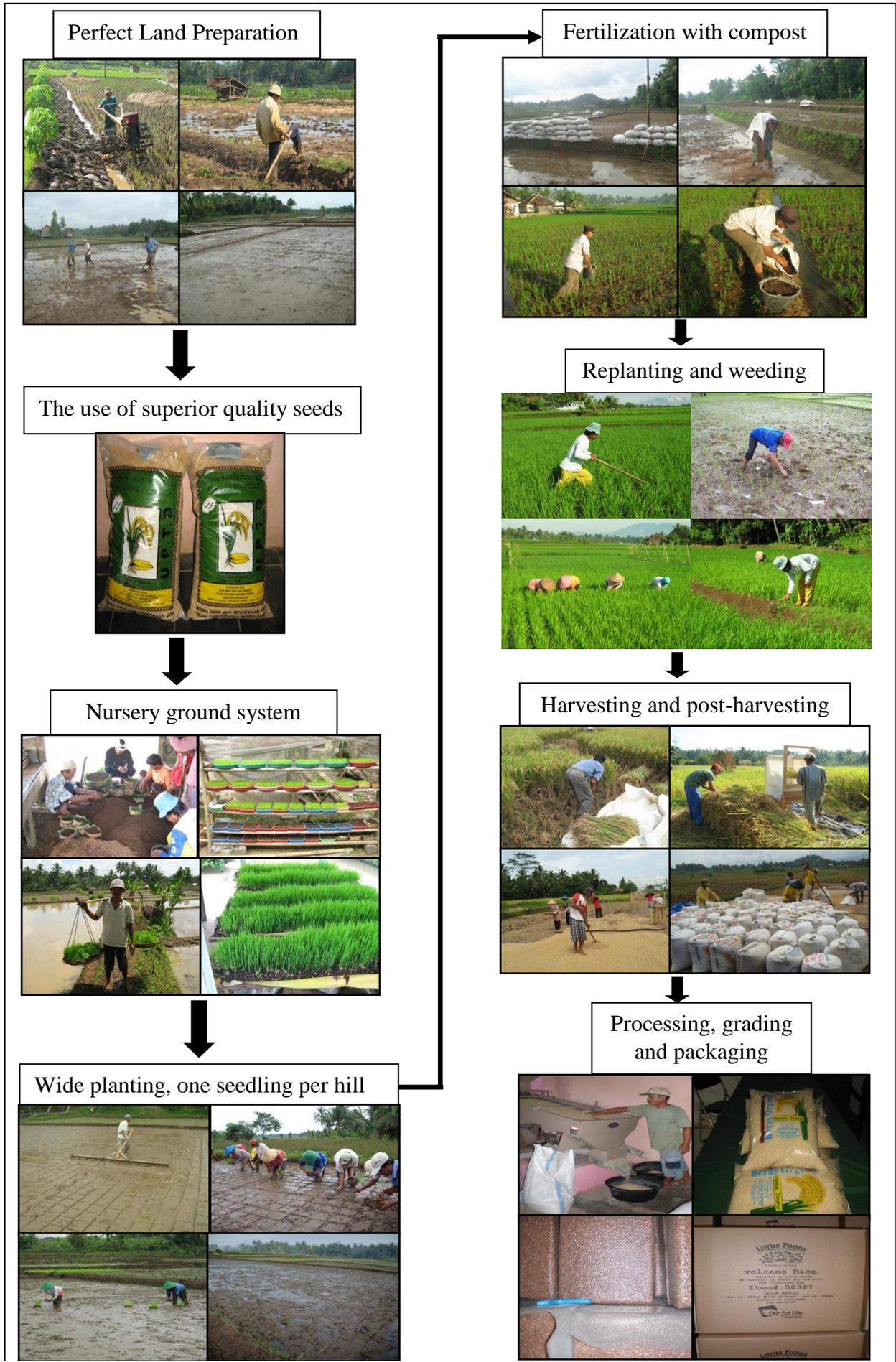


Figure 2.1 The general overview of the rice cultivation in the SRI method  
 Source: author based on pictures from the Farmers group documentation (2012).

Furthermore, the SRI does not depend on inorganic fertilizers and pesticides which are getting more expensive and sometimes scarce. SRI could have an effect on reducing unemployment and increase family incomes of farmers. Moreover, it increases the rice production with high quality of rice which contains no chemical residues, and bequeaths healthy soil to future generations. In addition, from the farmers' report –and researchers have verified– shows that SRI crops are more resistant to most pests and diseases, and better able to tolerate adverse climatic influences such as drought, storms, hot spells or cold snaps. The length of the crop cycle (time to maturity) is also reduced, with higher yields. Resistance to biotic and abiotic stresses will become more important in the coming decades as farmers around the world have to cope with the effects of climate change and the growing frequency of “extreme events”. The resistance of SRI plants to lodging caused by wind and/or rain, given their larger root systems and stronger stalks (Uphoff, 2007).

The SRI can be seen as an agroecological innovation in rice cultivation which allows farmers to increase their rice production through a shift in the management of plant, water, soil and nutrients toward a more favourable environment for the growth of rice plants (Koma, 2011; Uphoff, 1999). The term of agroecology was firstly used by Bensin in 1928 and can be easily defined as the application of ecology in agriculture (Wezel *et al.* 2009). Another explanation of agroecology is a range of simple farming techniques that increase crop yield by promoting naturally beneficial interactions between soil, nutrients, crops, pollinators, trees and livestock (Schutter, 2010). The idea is “*to go beyond the use of alternative practices and to develop agroecosystems with the minimal dependence on high agro-chemical and energy inputs, emphasizing complex agricultural system in which ecological interactions and synergism between biological components provide the mechanism for the systems to sponsor their own soil fertility, productivity, and crop protection*” (Altieri, 2002: 2)

Sustainable agriculture needs synergetic effects of agroecological farming practices to achieve the compatibility among the desired dimensions of the pillars of sustainable development (vanLoon *et al.* 2005 in Amekawa, 2011). The economic pillar utilizes agroecosystem diversity to achieve minimum reliance on external inputs and crop-livestock integration which results in increased productivity, food security, diet diversity, and stable income (Altieri, 1999), thus serving livelihood and equity goals of resource-poor farmers (Amekawa, 2011). Furthermore, these practices also enhance social sustainability

since with the reduction in pesticide use is related to better levels of safety both for farmers and consumers (Bradley, 1994 *in* Amekawa, 2011).

Regarding the environmental pillar, the soil health will be maintained through organic accumulation and nutrient recycling based on the incorporation of compost and legumes. These cultural practices will lead to desirable environmental benefits, such as increased agrobiodiversity, reduced leaching and run-off losses, and wider environmental protection (Magdoff, 1989 *in* Amekawa, 2011). Agroecology has been acknowledged as the most effective facilitator of the concept of sustainable agriculture and at the same time the least compromised critic of modern industrial agriculture (Amekawa, 2011).

Other than that, agroecological farming practices are more knowledge and labour intensive. They require understanding of ecological processes, problems and methods within given location-specific contexts. As reported by the OECD (1998) *in* Fitriani (2007) different countries have taken different approaches to promote sustainable agriculture because of differences in geography, climate, population density and level of economic development. That is why in-situ conservation, farmer participation and farmer-to-farmer extension are encouraged in the sustainable agriculture dissemination which at the end produce various synergetic effects leading to farmers empowerment. It means that these approaches also have an influence in the social pillar of sustainable development (Matterson, 2000). The social dimension of sustainable development usually related to values such as equity, solidarity, fairness and social justice among human beings that should be guaranteed from intergenerational and intragenerational perspectives (Parra and Moulaert, 2010).

Sustainability is not only about material standards of living and environmental preservation, but also about the active participation of the people in the study of natural systems and the redesign of productive systems. This participation will give the people chance to be more productive while conserving the planet's ability to host future generations. It is an approach to the problem of empowerment to solve common problems and initiate creative experiments for social innovation (Barkin, 2010). Social sustainability and social innovation are not only complementary, but also mutually reinforcing to carry out sustainability and examine local capacities leading to sustainable societal

transformations (Parra, 2012). *“It is argued that social innovation is the best way to guarantee social sustainability in strategic planning”* (Parra and Moulaert, 2010).

In spite of the success story of the SRI, this method has not widely been accepted and adopted by farmers, and created controversial opinion in many places and by many international institutions including International Rice Research Institute (IRRI) in the Philippines (Anugrah *et al.* 2008). SRI *“was not necessarily a ‘low-input’ system as was proposed by SRI advocates, but rather a ‘high-input’ system in terms of labour, organic resources, and drainage and irrigation management”* (Tsujimoto *et al.* 2009). One of the limitations of SRI method is its requirement of more labour force per hectare compared to conventional rice cultivation practices, especially if farmers are not familiar with the task of transplanting tiny seedlings and depth of planting. But once farmers are comfortable and skilled with these techniques, it will take less time because there is less plant to put in.

Another limitation is that the SRI method will spend more time for applying water compared to plantations that are kept flooded all the time. This means that it would be much easier if the fields should initially be constructed with appropriate irrigation systems that allow water to be “put on” and “taken off” at regular intervals. Moreover, weeding will take more time if there is no standing water. The purpose of weeding here is to remove or eliminate weeds in order to reduce competition of the rice plants for absorbing nutrients from the soil, water or air. Fortunately, the yields may be increased several-fold because of the increased soil aeration. At the first time, SRI can take from 50 to 100% more labour (and more skilled and exacting labour), but over time, this ratio is reduced. According to Berkelaar (2001), it can even require less labour once the techniques are mastered and confidence is gained by the farmers. Since yields can be two, three and even four times larger than with conventional practices, returns to both labour and land are much higher, justifying the larger investment in labour (Berkelaar, 2001).

Another challenge comes from agricultural researchers who said that most published and unpublished reports on SRI tend to be too optimistic. According to Dobermann (2003), these reports are incomplete in their coverage of scientific literature and lack of detailed field research. SRI approach is likely to have little potential for improving rice production in intensive irrigated systems. It may serve the needs of resource-poor farmers in areas with poor soils (Dobermann, 2003). The SRI has no inherent advantage over the

conventional system and that the original reports of extraordinary high yields are likely to be the consequence of error (Sheehy *et al.* 2003). This result trigger a comment from Sinclair and Cassman (2004) that warn scientists and peer reviewers against so-called “agronomic UFOs” (Unconfirmed Field Observations) that may be creeping into respectable scientific literature. There was no intrinsic yield advantage of SRI that could be caused by its individual techniques or some unknown synergism of the different SRI practices proposed (Latif *et al.* 2009).

Even McDonald *et al.* (2005) concluded from their desk study using secondary data that conventional Best Management Practices (BMPs) on average produce 11% higher rice yields than the SRI methods. So, the SRI proponents have overextended inductive logic to promote the SRI as a global model for advancing the yield potential of rice. There is no empirical or theoretical basis for promoting SRI as a singular method for maximizing rice productivity over other forms of intensive management. Beyond Madagascar, there is still no evidence that the SRI out-yields the conventional BMPs (McDonald *et al.* 2008). The explanations of these problems were proposed by Uphoff *et al.* (2007) who said that those researches are scientifically and methodologically flawed and of course the validity of the researcher’s conclusion concerning the SRI method need to be questioned and “*the Sinclair and Cassman commentary is inappropriate and unjustified in scientific terms*” (Stoop and Kassam, 2005: 357).

## **2.5 Community Capacity Building**

One of the main concerns of policymakers or governments is the building of community capacity to increase the ability of communities in rural and urban areas to achieve positive social, economic and environmental outcomes (Marre and Weber, 2010). Initially, the approach in the assessment of community capacity is relying on the economic stability and social indicators. It will be difficult due to the theoretical base of the community capacity is broad, not only including tangible aspects but also non-tangible or value-based aspect of community’s perspectives (Mendis *et al.* 2003). Moreover, rural areas have different characteristics and dynamics from urban areas. It is why to assess and build the community capacity in rural areas we need a different approach and strategy.

In developing countries such as Indonesia, most of the rural communities live in deprived conditions and are not highly educated. Community empowerment plays a very important

role in poverty alleviation. As stated by Goler (2001), without the active involvement of communities, poverty will continue to undermine the population of developing countries. The existence and growth of the informal sector in those countries shows that innovations in the development cannot be reached by the common public. Innovations only affect a small group of people who advance and have enough resources. *“Empowerment is about people -both women and men- taking control over their lives: setting their own agendas, gaining skills, increasing self-confidence, solving problems and developing self-reliance. It is both a process and an outcome”* (CIDA, 1999: 8). It is why food security and rural development policies have been revised in recent years placing more emphasis on holistic approaches to rural livelihoods focusing on the sustainable use of natural resources, multi-sectoral collaboration and stakeholder participation in accessing rural assets (WCCD, 2006).

According to Mendis-Millard and Reed (2006), there are concepts similar to community capacity such as community sustainability (Parkins *et al.* 2001) and community collaboration (Foster-Fishman *et al.* 2001). Mayer (1995: 2) defined community capacity as *“the combined influence of a community’s commitment, resources, and skills that can be deployed to build on community strengths and address community problems”*. A variety of community groups and institutions contribute to community capacity. Each one is a potential partner in the work of strengthening the viability and vitality of communities (Mayer, 1995). Community capacity refers not only to financial, physical and human resources contained within a community but also to its social resources (Bush *et al.* 2002).

Goodman *et al.* (1998: 259) promoted two definitions of community capacity as *“the characteristics of communities that affect their ability to identify, mobilize, and address social and public health problems”* and, *“the cultivation and use of transferable knowledge, skills, systems, and resources that affect community- and individual-level changes consistent with public health-related goals and objectives”*. Another definition was proposed by Chaskin (2001: 295) as *“the interaction of human capital, organizational resources and social capital existing within a given community that can be leveraged to solve collective problems and improve or maintain the well-being of a given community”*

Bush *et al.* (2002: 1) defined community capacity as *“the collection of characteristics and resources which, when combined, improve the ability of the community to recognize,*

*evaluate and address key problems*". Bush *et al.* (2002: 1) also promoted the community capacity index that measures capacity across four domains:

1. Network partnerships: the relationships between groups and organisations within a community or network. This also includes the quality of the relationships and partnerships involved.
2. Knowledge transfer: this covers the development, exchange and use of information within and between the groups and organisations within a network or community.
3. Problem solving: deals with the ability of the groups and organisations within a network or community to use well recognised methods to identify and solve problems that arise in the development or implementation of an activity or program.
4. Infrastructure: outlines the level of investment in a network by the groups and organisations that make up the network, including both tangible and non-tangible investments such as policy and protocol development, social capital, human capital and financial capital.

In this research, the definition of community capacity is borrowed from Beckley *et al.* (2008: 60-61):

*"the collective ability of a group (the community) to combine various forms of capital within institutional and relational contexts to produce desired results or outcomes. This definition involves distinct but related facets: (a) capital, assets, or resources; (b) catalysts; (c) mobilization of those resources through social organization and relationships; and (d) end results or outcomes. Presenting community capacity as a phenomenon with multiple facets allows researchers to analyze the dynamic mechanics of community capacity"*.

Beckley *et al.* (2008) proposed a high-generality conceptual type of community capacity in which sacrifices precision and reality but place emphasis on key relationships and processes. It highlights the interactions among the component parts that lead to community capacity outcomes. In addition, this model gives a clear and simple way for explaining the process of the building of community capacity. The model describes some community capacity concepts into a model and tool which are understandable. Moreover, it was developed from analysis of a research projects in rural Canada (Beckley *et al.* 2008).

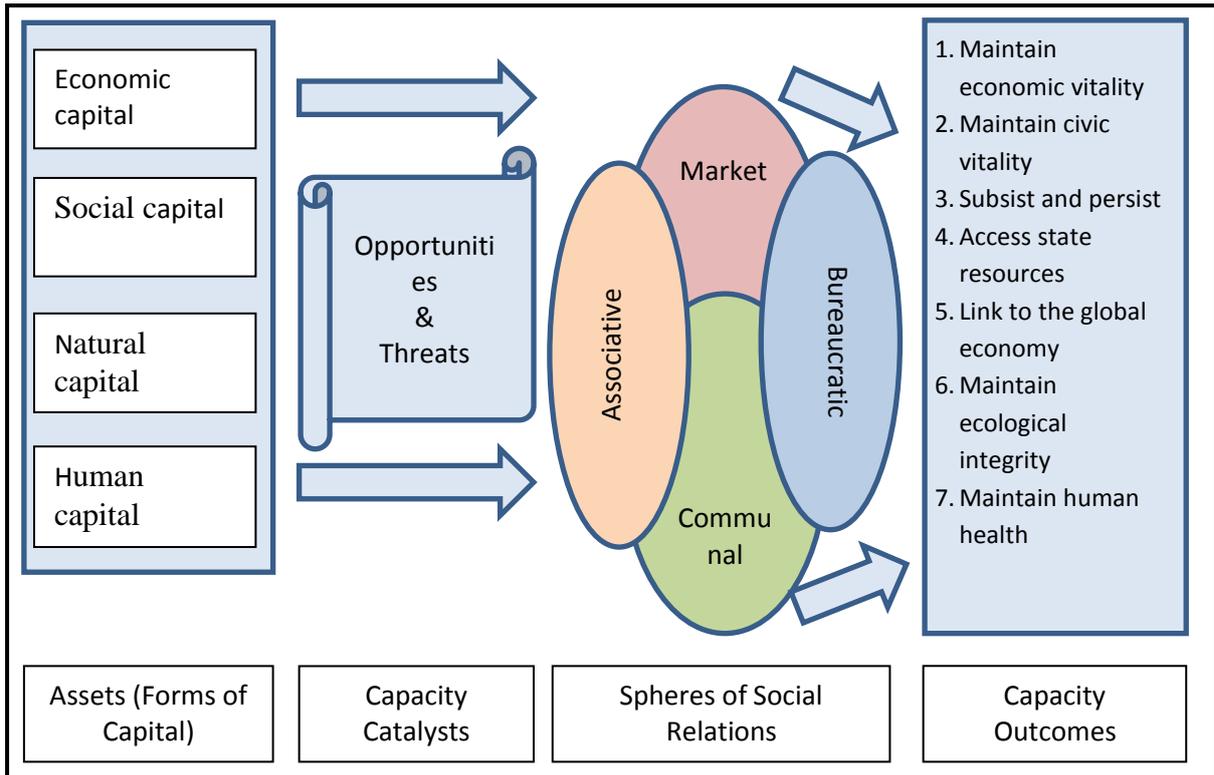


Figure 2.2 Community capacity model. Source: adapted from Beckley *et al.* (2008: 62).

Figure 2.2 shows the interaction among the dimensions in the community capacity that contributes to the capacity outcome. It portrays the relationship of four forms of capital, catalysts, four overlapping relational spheres of interaction, and capacity outcomes. The model shows the capacity catalysts (opportunities and threats) to activate the system toward desired outcomes. Spheres of social relations are the place where the organization and mobilization of the assets happen to realize the capacity outcomes (Beckley *et al.* 2008).

#### 2.4.1 Forms of Capital: Assets Underlying Community Capacity

There are many capital or assets exist in community that can be viewed as the main resources or capital in the community development. Khakee (2006) promotes three capitals that influence the community institution capacity, namely intellectual, social and political capital. Meanwhile, Beckley *et al.* (2008) identifies four main capitals of community that should be maintained and enhanced in the community capacity building: economic, social, natural and human capital.

**Economic capital** refers to the physical infrastructure and the liquid assets or financial capital. Road networks, water treatment facilities, and administrative buildings can be

categorized in the physical infrastructure. Meanwhile, organizational budgets, governmental budget, business cash flow and operating funds and household savings are the liquid assets (MacKendrick and Parkins, 2004; Beckley *et al.* 2008).

**Social capital** is viewed as the relationships among the community members and relates it to the norms and networks facilitating collective social action (MacKendrick and Parkins, 2004). In order to meet the traditional meaning of capital, Beckley *et al.* (2008) added new criteria that these norms and networks must also be used for productive ends. According to Putnam (1996), social capital represents the features of social life, networks, norms, and trust. So, the more an individual connects with other people, the more could be their mutual trust (Putnam, 1996 *in* Aguilar and Sen, 2009). Communities with high social capital not only have more economic opportunities, but also have a collaborative relationship with the governments (Putnam, 1993 *in* Cavaye, 2000). Besides that, the high level of social capital in communities still needs collective efficacy to provide the link between social capital and actual social action. “*Collective efficacy can be viewed as a construct that is task specific and one that highlights shared expectations and mutual engagement in completing that task*” (Aguilar and Sen, 2009: 428). An effective coordination and collective action can be achieved through building and sustaining social capital as a crucial part of constructing a shared sense of community that enables the participants to respond flexibly and appropriately (Davoudi and Evans, 2005). Communities who have higher levels of social capital in the terms of social networks and civic associations will also be stronger to tackle poverty, vulnerability, resolve conflicts and/or take advantage of new opportunities. In contrary, the absence of the social capital can further vulnerability of communities (Woolcock, 2001). These definitions show the importance of social capital that connect each member of the community based on sense of belonging, trust and norms to make the community safer (Marcia, 2011).

**Natural capital** remains critical for enhancing positive community capacity outcomes (Beckley *et al.* 2008). It is produced by the natural environment and sustains the community (MacKendrick and Parkins, 2004). It includes both renewable/active (self-maintaining through solar energy) and non-renewable/inactive natural capital because the fact that it does not yield services until extracted (*i.e.* fossil fuels) (Costanza and Daly, 1992).

Various aspects of **human capital** are necessary for building community capacity. Human capital relates to skills, education, and health of individuals within the community that contributes to the skill base and the economic performance of the community (MacKendrick and Parkins, 2004; Johnson & Stallman, 1994 *in* Beckley *et al.* 2008). Intellectual capital is one of the aspects of human capital. “*Intellectual capital encompasses a wide range of knowledge required for developing a broad array of policy approaches including scientific, technical and practical understanding and reasoning about ecological issues and the importance of local actions. It requires understanding about global-local relationships, inter-generational equity, social justice and geographical equality*” (Khakee, 2010: 55).

#### **2.4.2 Opportunities and Threats: Capacity Catalysts**

Community capacity cannot be built spontaneously. It can be seen as a manifest when there is a reason to act or to react (Beckley *et al.* 2008). The reasons are catalysts or mobilizers for action that could be exogenous or endogenous factors that form and develop community capacity, namely opportunities and threats (Armitage, 2005). Both of them can comprise conditioning influences that may encourage or impede community-based initiatives (Chaskin *et al.* 2001). The social and human capital present as endogenous or foundational assets can also serve as mobilizers or impediments to progress depending on their presence or absence in a community (Beckley *et al.* 2008). It is important to consider that what one person can perceive as a threat for another this could be seen as an opportunity. “*The catalysts help communities define their desired outcomes and provide reasons for mobilizing assets and relations to produce such outcomes*” (Beckley *et al.* 2008: 64).

#### **2.4.3 Spheres of Social Relations: Combining Capital to Produce Outcomes**

The forms of community’s capital and catalysts of the building of community capacity need media in the social relationship. Beckley *et al.* (2008) identifies four basic forms of these relations, namely market, bureaucratic, associative and communal relations. Further explanation about these social relations is described below.

The **market sphere** encompasses a broad range of exchange transactions that draw from all forms of capital: human, natural and financial capital. The addition of social capital (networks) acknowledges that humans develop social relations while engaging in activities

based on market exchanges (Beckley *et al.* 2008). The social embeddedness of market relations can be built based on the exchange of goods and services among relatively free actors. This participation is primarily driven by costs and benefits, and resources are allocated by supply and demand. The interactions are guided by norms that minimize misrepresentation of goods and services and failure to complete a transaction (Reimer and Tachikawa, 2008).

In general, the **bureaucratic sphere** relates to public service institutions in contrast to market institutions, although these spheres sometimes overlap (Beckley *et al.* 2008). This bureaucratic relation requires formal structures to bring together individuals and groups to meet personal and collective conditions, including the ability to operate roles and applied principles. Bureaucratic based collective action predominates in most government, corporate, and formal organizations (Reimer and Tachikawa, 2008).

**Associational networks** can be strengthened by fostering communication and mobilizing participation among individuals in the community (Chaskin, 2001). Meanwhile, associative sphere is based on shared interests and activity in voluntary condition to accomplish goals, to enjoy socializing, and to express interests or take action on items of mutual concern (Beckley *et al.* 2008). The characteristic of this relation is norms of equality, where resources are equally distributed to members. It is likely to be found where information about others' interests is available easily, interests merge, where the symbols of commitment to the goals are clear and members have access to forums for interaction (Reimer and Tachikawa, 2008).

**Communal relations** reflect a strong sense of shared identity such as ethnicity, religion, ancestry or location that develops communal relations where people are viewed as equivalent but not necessarily equal (Beckley *et al.* 2008). People may have different levels of socio-economic welfare or roles in society but, in a good communal relations, they able to work together to accomplish the community's goals. Relational qualities of the social capital functions not only as a tangible asset for individuals to call upon for support, but can also utilize to facilitate exchanges and transactions, organize activities, and support identities. Trust and reinforce of its capacity are the outcomes of the successful utilization of the relational qualities (Reimer and Tachikawa, 2008). Communal relation is one of the important factors in the social capital that could contribute to the building of community

capacity especially in rural areas. It is because rural areas have strong social relationships among the people.

Associational networks give concern on the similarity of interests between community and other parties or stakeholders in the networks to perform the goals with equal positions among the member of the networks. This relation can be seen as the external networks that should be built in order to reach the goals of the community. Meanwhile, communal relations more focus on the internal factors in the community that could strengthen such kind of internal relationship of the community.

Most of the social interactions could be happened in the intersection of one or more types. So, those individual relational spheres are not isolated. Although only one or two of them may be dominant, all four of them could operate in many situations. Usually, communities with abilities to create, maintain, and use those relational spheres effectively in all four spheres will be more likely to succeed. This applies to both intracommunity and intercommunity relations (Beckley *et al.* 2008).

#### **2.4.4 Capacity Outcomes**

According to (Beckley *et al.* 2008), the capacity to maintain or enhance economic vitality is the main goal of traditional community development. The tendency among many politicians, community developers, and business leaders has been to focus heavily, if not exclusively, on capacity outcomes in this arena. Positive outcomes in this realm may lead to enhanced quality of life (Beckley *et al.* 2008). However, we should be careful and avoid reducing the definition of development to only economic issues. Social capacity also has significant roles in the sustainable development. *“It is argued that the social is not – as often depicted – the weakest pillar of the triad but the fundamental engine of the sustainability system”* (Parra, 2012: 1)

The capacity to create or maintain a vital civic culture is closely related to the level of social capital (Putnam, 2000 *in* Beckley *et al.* 2008). Communities with strong civic culture are those where local citizens meet, discuss, exchange, and accomplish tasks in the public sphere. It may be reflected in formal activities, as found in religious worship or local government, or it may be manifested through informal activities, such as sporting events or political action (Beckley *et al.* 2008).

Subsistence skills include making use of networks, trading skills, and direct production of consumable goods. Skills and activities such as these are important for coping with extreme or dramatic disruption in society (Beckley *et al.* 2008).

There are three essential ingredients of community capacity, which are commitment, resources, and skills. The commitment refers to the community wide will to act, based on a shared awareness of problems, opportunities, and workable solutions. It refers also to heightened support in key sectors of the community to address opportunities, solve problems and strengthen community responses. Resources refer to financial, natural and human assets and the means to deploy them intelligently and fairly. It also includes having the information or guidelines that will ensure the best use of these resources. The skills include all the talents and expertise of individuals and organizations that can be marshaled to address problems, seize opportunities, and to add strength to existing and emerging institutions (The Aspen Institute, 2010).

The Indonesia government issued Presidential Instruction No. 3/2010 on Fair National Development to reduce the development gap between urban and rural areas. In this regulation, the implementation of poverty alleviation or reduction programs focused on three bases: (1) family, (2) community empowerment, and (3) micro and small enterprises empowerment (Widianto, 2010). Poverty reduction programs have a main objective to alleviate people from poverty in a series of empowerment programs. When observed, there are some fundamental weaknesses of the various poverty alleviation programs over the years. First, the mechanism for empowering vulnerable population is not optimal. This happens because the program is more oriented toward *sympathy* so that aid is more defined as *free grants* from the government. Second, empowerment programs is sensed partially, for example, the emphasis of the program was intervene only on one aspect, such as the economic or physical aspect, not integrated in a comprehensive empowerment program yet (Taufik *et al.* 2010).

## **2.6 Conclusion**

In summary, the second chapter reviewed basic concepts used in this research to build a theoretical framework that connects sustainable development, sustainable agriculture, SRI and building of community capacity in rural areas. In this research, I argue that the implementation of sustainable agriculture (i.e. SRI method) have a big opportunity to build

and increase the community capacity in rural areas, given the interdependencies between the dimensions of community capacity.

The following chapter describes the general overview of the Tasikmalaya Regency and the implementation of the SRI method in this area. It also covers the implementation of this method in Indonesia in general, based on information from the Ministry of Agriculture.

## **Chapter III**

### **The Implementation of a System of Rice Intensification in Tasikmalaya Regency**

#### **3.1 Introduction**

Tasikmalaya Regency was taken as the case study for this research since the organic farmer groups union (Gapoktan Simpatik) in this regency has gained two international certifications. One called as *organic rice* producers and another called *fair for life* certificate in 2009 from IMO Switzerland. One of the requirements to get a certificate of organically grown food is that the field to be certified has already implemented organic farming practices for at least three consecutive years. In addition to this, it is important to mention that Gapoktan Simpatik has been able to export the organic rice to the United States of America (USA), Singapore, Malaysia, Germany and United Arab Emirates since 2009 (<http://www.kompas.com>, 2009).

This chapter describes the existing conditions in which the SRI method is implemented in Indonesia in general, with a focus on its implementation in Tasikmalaya Regency. It consists of two sections. The first section presents the general overview of the region under study. The second section examines rice cultivation before and after the implementation of the SRI method. It also describes the special characteristics of the SRI method that implemented in Indonesia and Tasikmalaya.

#### **3.2 General Overview of Tasikmalaya Regency**

Tasikmalaya Regency is one of the regencies in West Java Province. Regency is the division of administrative regions in Indonesia after the province and has equal position with municipality. Regency and municipality are autonomous regions since the implementation of Act No. 22/1999 that enhanced by Act No. 32/2004 on Local Government. Further divisions of the administrative regions after the regency or municipality are sub-districts, villages and neighbourhoods as the smallest form of government.

Indonesia is the biggest archipelago country in the world extending about 2,000 km from North to South and more than 5,000 km from East to West. The archipelago stretches over more than one-tenth of the Equator between Southeast Asia and Australia. It consists of approximately 13,000 islands and about 6000 of them is inhabited. The five largest

islands are Kalimantan, Sumatera, Papua, Sulawesi and Java. Indonesian archipelago is also traversed by “the Pacific Ring of Fire” and only Java has 112 volcanoes. Centuries of volcanic activity has led to high degree of soil fertility on Java and Bali, which accounts in part for the high concentration of agricultural activities and people in these two islands (<http://www.expatrior.id>, 2012). Indonesia is divided into 33 provinces, which include two special regions and Jakarta as special capital region (see figure 3.1).



Figure 3.1 Map of Indonesia.

Source: [http://uniknyaindonesiaku.blogspot.nl/2010\\_11\\_01\\_archive.html](http://uniknyaindonesiaku.blogspot.nl/2010_11_01_archive.html), 2012.

Indonesian population in 2010 was about 237,641,326. Indonesia is the fourth largest population in the world after China, India and the USA. Most of the population resides in Java as the centre of the country's economic and political power (<http://www.bps.go.id>, 2012). The imbalances of population distribution, poverty and education level are big challenges in the development of Indonesia. Together with the adjoining smaller islands of Madura and Bali, Java accounts for just over 7% of the Indonesia land area, but these islands are populated by some 119 million inhabitants who comprise 59.5% of the total Indonesian population in 1999. By contrast, Papua represents 22% of the total land mass, yet has only 1% of the population. So vast areas of Indonesia have very low population levels ... while the majority of the people live in the island of Java and Bali. According to the national development planning board (Bappenas<sup>3</sup>), 13.33% of the population was lived below the national poverty line in 2010. Moreover, the education levels are low as Indonesians spend only 5.8 years in formal schooling on average in 2011 (<http://www.expatrior.id>, 2012).

<sup>3</sup> Bappenas (In Indonesian, *Badan Perencanaan Pembangunan Nasional*) is the national development planning board at the central government

West Java Province is one of the important provinces in Indonesia regarding the number of population, historic, and economic-political importance. With a total population of more than 43,053 million and a total of 3,710,061.32 hectares, makes West Java become province with the largest population in [Indonesia](#). Up to now, West Java is divided into 17 regencies and 9 municipalities (see figure 3.2) which consist of 626 sub-districts (<http://www.jabarprov.go.id>, 2012).



Figure 3.2 Map of West Java Province.

Source: [http://en.wikipedia.org/wiki/File:Map\\_of\\_West\\_Java\\_with\\_cities\\_and\\_regencies\\_names.png](http://en.wikipedia.org/wiki/File:Map_of_West_Java_with_cities_and_regencies_names.png), 2012.

Tasikmalaya Regency is located in the south-east of the province. So far, this regency is considered the biggest regency and has an important role in the eastern part of the province. Covering an area of 271,252 hectares, agricultural lands occupied 81.12% (220,252 hectares). Tasikmalaya Regency is divided into 39 sub-districts (see figure 3.3) and 351 villages (<http://tasikmalayakab.bps.go.id>, 2012). The climate is mostly equatorial, with temperature in low-land areas between 20°-34°C and in high-land areas between 18°-22°C. There are two seasons, the rainy monsoon season which usually lasts from November through May, followed by the dry season which usually lasts from June through October. The average of rainfall is 2,072 mm yearly and 82 days on average the number of

rain days. Tasikmalaya region is extending some 75 Km from North to South and some 56.25 Km from East to West (<http://www.tasikmalayakab.go.id>, 2012).

Based on a population census for 2010, the total population number of Tasikmalaya regency is 1,675,554 people (835,052 men and 840,492 women) with population growth rate is 0.88% and a population density of around 637 people/km<sup>2</sup>. This population is dominated by children group and productive age groups. Furthermore, based on the occupation, most of the people work on the agricultural sector, trading, and manufacture industries (<http://www.tasikmalayakab.go.id>, 2012).

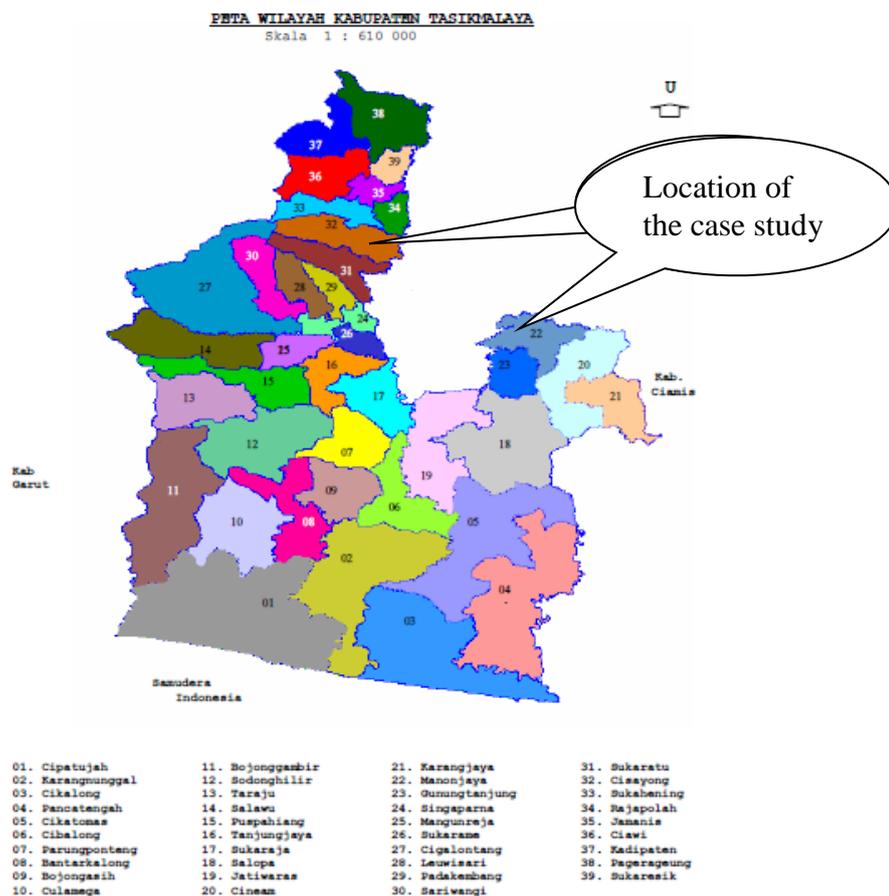


Figure 3.3 Map of Tasikmalaya Regency

Source: [http://tasikmalayakab.bps.go.id/index.php?option=com\\_content&view=article&id=70&Itemid=97](http://tasikmalayakab.bps.go.id/index.php?option=com_content&view=article&id=70&Itemid=97), 2012.

The agricultural sector plays very important roles in the socio-economical life of Tasikmalaya Regency. Its contribution to the economic income or Gross Domestic Regional Product (GDRP) of the region is more than 42% each year. From figure 3.4, it can be clearly seen that agriculture is the leading sector in the development of Tasikmalaya

Regency followed by trading and services sectors. Furthermore, based on the data from Tasikmalaya Social, Population and Manpower Service, there are 915,948 people who have works. They can be divided into three main jobs as farmers, farm workers and private sector workers as can be seen on the figure 3.5. Most of the job opportunities come from the agricultural sector (43.22%), followed by trading sector (24.75%) and services sector (11.08%). In 2009, there are 376,045 poor people who likely to work as farm workers since they have difficulty and/or limited access in order to increase their skills and education (<http://www.tasikmalayakab.go.id>, 2012).

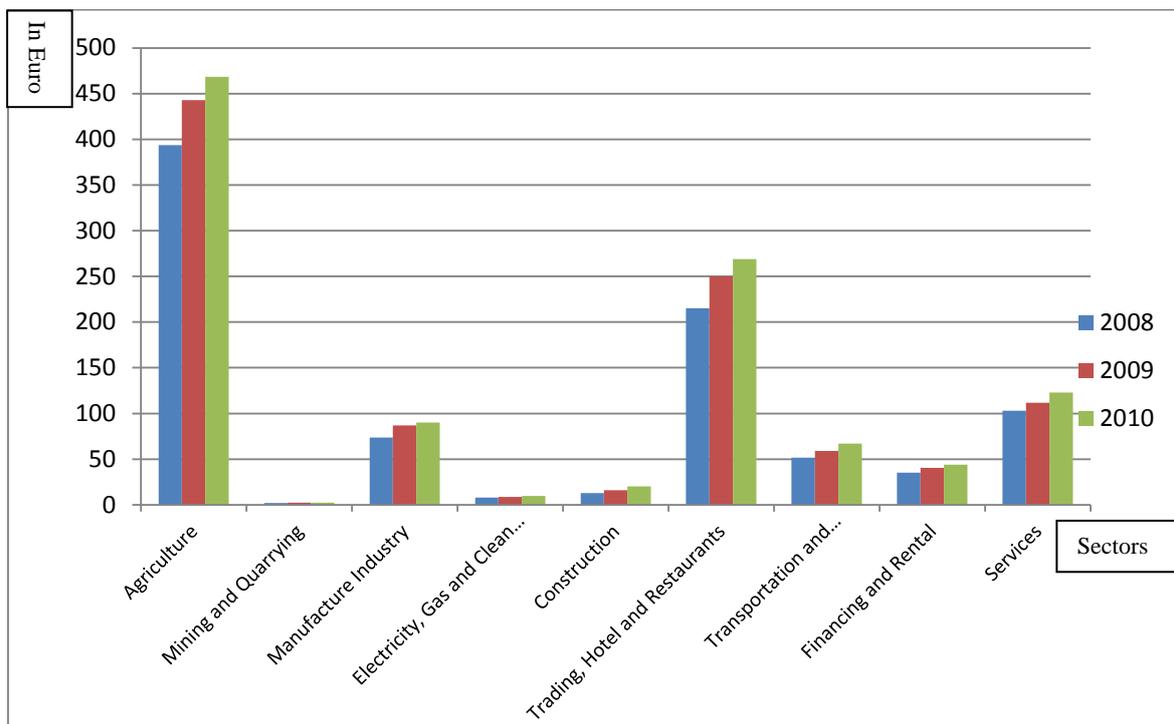


Figure 3.4. Gross domestic regional product of Tasikmalaya Regency 2008-2010  
 Source: author based on data from <http://tasikmalayakab.bps.go.id> (2012).

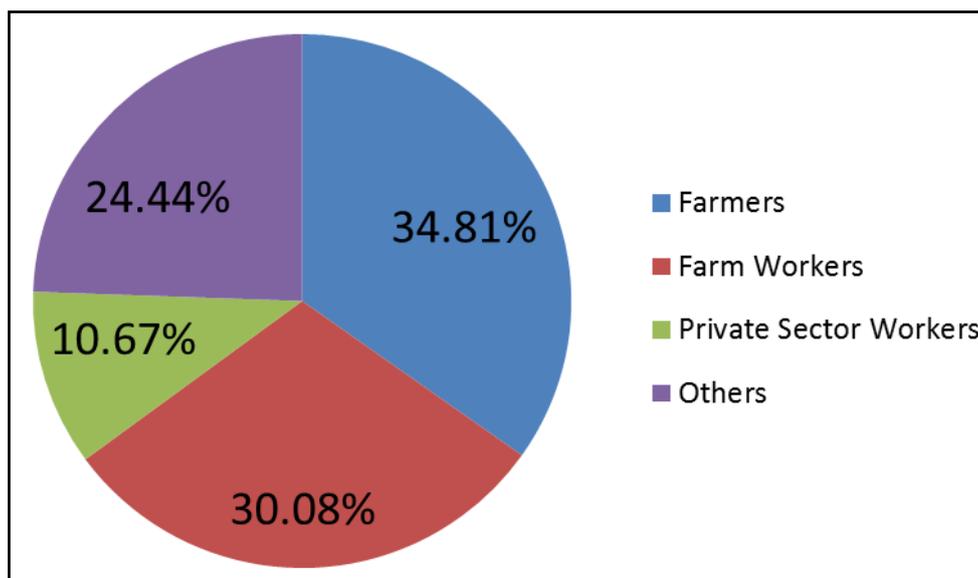


Figure 3.5 The three main occupation of the Tasikmalayan in 2010  
 Source: author based on data from <http://tasikmalaya.kab.bps.go.id> (2012).

The agricultural land area in 2010 decreased by 1.01%, but with the intensification of rice cultivation programme (*i.e.* SRI) from the local government, the rice production in 2010 increased. The production centres of organic rice are located in the Sub-districts of Manonjaya, Sukahening, Sukaraja, Sukaresik, Salawu, Cisayong and Cineam. The advantages of the organic rice development are twofold. First, it increased the rice productivity and second, it increased farmers' income due to higher price than conventional rice (<http://tasikmalayakab.bps.go.id>, 2012).

It can be clearly seen from figure 3.6 that since 2006 the rice production has increased every year. Besides the influence of the implementation of SRI methods, this escalation is also because of the enhancement of rice planting and harvesting areas. Although there is a fluctuation in the rice planting and harvesting areas, the rice production is still raising. The intensification of the rice cultivation is the key of this success. This fluctuation was caused by land-use changes and/or the opening of new rice fields. The former head of Tasikmalaya Agricultural Service said that one of the strong determinations of the local government is to make Tasikmalaya region as the production center of organically grown food, especially organic rice, in West Java Province and Indonesia. In order to achieve this goal, the local government wants to convert all existing farming fields into organic farming fields (<http://indonesia.proud.wordpress.com>, 2011).

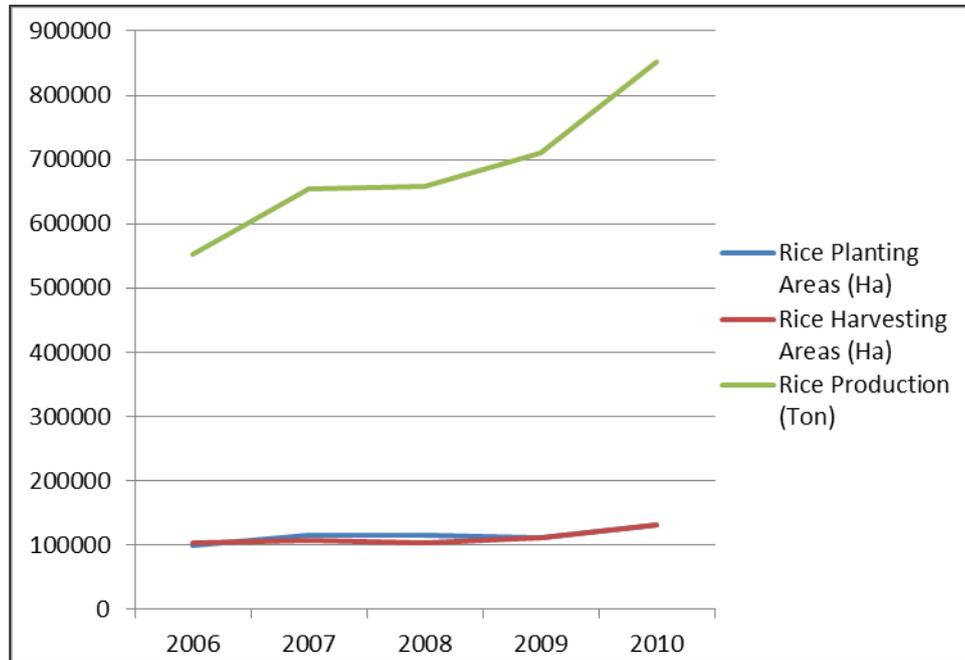


Figure 3.6 The rice planting areas, harvesting areas and rice production of Tasikmalaya Regency 2006-2010

Source: author based on data from <http://tasikmalayakab.bps.go.id> (2012).

### 3.3 The Implementation of the SRI Method in Tasikmalaya Regency

The SRI method was introduced in Indonesia in 1997 by Prof. Norman Uphoff from Cornell University in Bogor, West Java. Since then, this method is widely applied in some regencies in West Java such as Tasikmalaya, Garut, Ciamis, Sumedang, Sukabumi and Cianjur either initiated by farmers groups, NGOs and/or local government. Actually, the original method of the SRI gives freedom to the farmers whether to use agro-chemicals or organic materials as fertilizers and pesticides. The original method is further developed and combined in Indonesia with other methods namely, integrated pest and disease management, understanding of soil ecology and ecological rice cultivation. Then the new method came named as “SRI Organic Indonesia” (Purwasasmita and Sutaryat, 2012).

Moreover, the SRI method is implemented in the organic farming practices which more eco-friendly and more sustainable than conventional farming methods. Therefore, the rice produced by this method is organically grown food and of course, has a higher value in the market than conventional rice.

There are three main principles of the SRI Organic Indonesia (SRI organic from now on). First of all, this method makes one rice plant have many tillers. It can be done by planting young rice seedlings (about 7 days old), shallow planting, one seedling per hill and tenuous

(more than 30 cm) from one planting point to another point. The second principle is to eliminate standing water in paddy fields because although the rice plant able to adapt to the water, rice plant is not a water plant. The third principle is the use of composted organic materials and local microorganism (*mikroorganisme lokal/MOL*) in order to support the growth of the plants (Purwasasmita and Sutaryat, 2012).

In optimal conditions, one seedling per hill will be able to produce 43 tillers as shown in the figure 3.7. Compared to conventional rice cultivation that usually put three to ten seedlings per hill and the tillers number is only 45, the SRI organic greatly saves the seeds need. So, for an area of one hectare, farmers only need 5 kg of seeds, meanwhile, in the conventional system farmers need 35-40 kg of seeds (Interview with Researcher, 2012). In the table 3.1, we can directly see the similarities and the differences of the conventional rice cultivation method, the original SRI method and the SRI organic method.

Table 3.1 Comparison of the conventional rice cultivation method, the original SRI method and the SRI organic method

No.	Methods Aspects	Conventional Rice Cultivation	Original SRI	SRI Organic
1	Seeds' need	30-50 kg	5-7 kg	
	Seedling age	Transplanting when seedlings are 20-30 days old	Early transplanting when seedlings are 8-12 days old and has only two small leaves	Early transplanting when seedlings are 7-10 days old and has only two small leaves
	Transplanting	Remove plant from nursery and place it in the field with plunging deep into soil	Remove plant from nursery with the seed, soil and roots carefully and place it in the field without plunging too deep into soil	Remove plant from nursery with the seed, soil and roots carefully and place it in the field without plunging too deep into soil and position of the roots are horizontal
	Seedling per hill	5-10 seedlings per hill	Single seedlings per hill	
	Distances of transplanting	Randomly or in rows with distance of less than 20 cm	Plant seedlings at a distance of 25 cm or more in a square pattern	Plant seedlings at a distance of 30 cm or more in a square pattern

	Water Management	Continuously flooded through the entire growing period	Regular water applications to keep soil moist but not saturated, with intermittent dryings, alternating aerobic and anaerobic soil conditions	
	Fertilizer	Inorganic fertilizers	Compost and inorganic fertilizers if needed	Only with compost and local microorganisms
	Pesticides	Inorganic pesticides	Organic and inorganic pesticides	Only with organic or bio-pesticides
	Weeding	Twice weeding	Four times weeding on 10, 20, 30 and 40 days after transplanting	

Source: author based on various sources (2012).

The implementation of SRI organic which eliminates the use of agrochemicals may create big challenges to agrochemicals companies (national and multinational companies) since their income rely on the use of the agrochemicals by the farmers. At this moment, they seem to be sceptical with the growth of the implementation SRI organic in many regions in Indonesia. However, according to a representative of the Indonesia National Pesticide Society (2012), the agrochemicals industry would not experience significant impacts from the development of SRI organic since this method will only be applied in rice crops. They have so many agrochemical products that can be used in other crops such as corn, soya bean, vegetables and plantations. The sales of their products are not depending only on the rice crop.

In addition, there are so many centres of rice production in Indonesia where these industries could exploit this potential market to promote and sell their products. With the higher price of the organic rice compared to conventional rice, they are quite sure that the domestic market will still prefer conventional rice, at least among low income families. This means that conventional rice cultivation will still be growing and the chemical industries keep the opportunities to sell their products. Moreover, the growing demand for the organically grown food especially in the international market will encourage and increase the awareness of these industries to start developing agrochemicals that are more sustainable. To the end, this could reduce the environmental degradation from the extensive and intensive use of inorganic agrochemicals.



Figure 3.7 The tillering ability of one seedling per hill  
Source: Farmers Group Documentation, 2012

The national government through the Ministry of Agriculture started the development of SRI organic in 2005 in Tasikmalaya and Sukabumi Regency. Since then, the SRI organic was introduced in many provinces and regencies. Most of the areas including Aceh Jaya, Sleman, Tapin and Barru Regency show positive results (see figure 3.8). Regencies with poor results such as Banyuwangi, Pacitan and Ponorogo are explained by the fact that the basic principles of the SRI organic are not well implemented. Moreover, some of the farmers groups do not want to continue the implementation of SRI organic, although they got positive results, because they argued that they need more workers in the field and there is no further assistance from the local government (Interview with Public Senior Officer of the Ministry of Agriculture, 2012).

One of the biggest challenges in the implementation of the SRI organic method is the encouraging of a cultural transformation and the way of thinking among the farmers towards sustainability in agriculture which tries to balance the environmental, economic and social dimensions of development. This could happen because the farmers have been for a very long time stuck in rice cultivation practices driven by the green revolution era in which they tend to ignored ecology needs, nature needs and the long-term effect of the intensive use of agro-chemicals.

In order to overcome this problem, the local government, especially the PPL<sup>4</sup> and the farmer's group committees have to be always ready to help the farmers who have problems with their crops. Another way to steer the cultural transformation is through the internal control system. This is a mechanism where farmers groups have to be controlled in order to reduce the possibility of violations of the organic farming practices. And last way is through religion messages and local wisdom or local cultures, among others. This is where the religious leaders, traditional leaders and community leaders have an important role in disseminating the *soul* of the organic farming practices to the farmers (Interview with Public Senior Officer of the Ministry of Agriculture, 2012). Helping the farmers to find the best solution together with the other farmers in a continuous learning process will create a good interaction and communication which can strengthen social cohesion. Another advantage is that the farmers will feel calm because there is other people who cares and willing to help them in the transition process. At the end, support from all stakeholders such as the governments, farmers group and local leaders will increase the farmers' predisposition to implement the SRI organic method thoroughly.

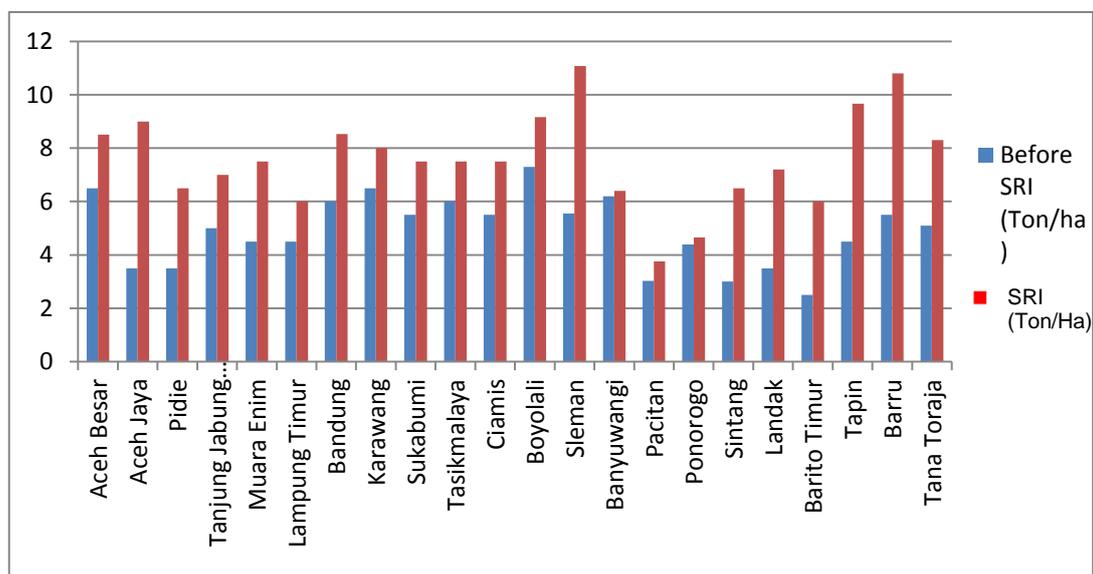


Figure 3.8 The SRI Organic Rice Production in Some Regencies in Indonesia  
Source: author based on data from Ministry of Agriculture (2012).

Meanwhile in Tasikmalaya Regency, based on the data from the Tasikmalaya Agricultural Local Office as shown in figure 3.9, the planting and harvesting areas, and production of

<sup>4</sup> The PPL (In Indonesian, *Petugas Penyuluh Lapangan*) is the public officials from the agricultural local office who assists, guides and supports farmers in the field

the organic rice have increased since 2004. The figure shows that the organic rice farming practices have been accepted by the farmers and getting more attention from all stakeholders. There is a growing number of farmers who voluntary changed from conventional into organic rice farming practices because of the double advantages of the organic rice farming.

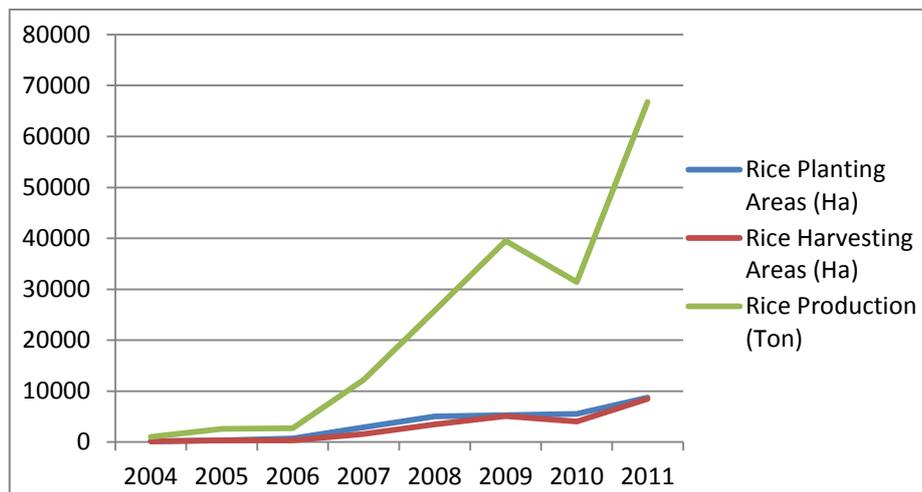


Figure 3.9 The organic rice planting areas, harvesting areas and organic rice production of Tasikmalaya Regency 2004-2011

Source: author based on data from Disperta Kabupaten Tasikmalaya (2012).

The patience, awareness, honesty, responsibility and volunteerism of the farmers are some of the keys in the organic farming practices because only the farmers themselves know exactly the implementation of organic farming in the field. Farmers who do not voluntarily implement this concept thoroughly easily claim that in their fields have applied organic farming practices but actually they still use agro-chemicals although in a small quantity. The use of agro-chemicals in the fields is strictly prohibited if the farmers want to get organic certificate from the certification institutions and in the fields that already have the organic certificate. One of the requirements in order to get an organic certificate is that the fields have already implemented organic farming practices overall at least during three years in a row.

One of the initiators of the implementation of SRI organic in Tasikmalaya Regency is Uu Saeful Bahri who currently also serves as the head of the farmers group union recall Gapoktan Simpatik. Based on an interview with him in 2012, one of the factors that contribute to the implementation of SRI organic is the awareness about the unsustainability of the conventional agricultural practices developed in the green revolution era. Farmers

are forced to just think about how to increase their productivity regardless the conditions of the soil and ecological sustainability.

Gapoktan Simpatik has applied agribusiness principles in order to increase the level of socio-economic welfare of farmers and communities. One of the principles in order to ensure the success of the SRI organic method is the availability of organic materials which can be made into organic fertilizers or composts and bio-pesticides. It can be done through the development of a business unit that concerns on the provision of the organic materials or build collaborations with cattlemen. Another principle is the development of marketing business unit which able to buy, process and sell all farmers' yields with higher price compared to conventional rice. The higher price of organic rice is very important to increase the spirit of farmers to disseminate the SRI organic method and to raise the organic rice production. The agribusiness model in the development of SRI organic can be seen on the figure 3.10.

With the increase of the social and economic welfare, organic farmers in Tasikmalaya Regency become more independent to fulfil their primary needs, education and health care facilities. They could have a brighter future than before. Their awareness regarding ecological sustainability and sustainable agriculture increases significantly since the implementation of SRI organic at the end of 1990s (Interview with Head of Gapoktan Simpatik, 2012).

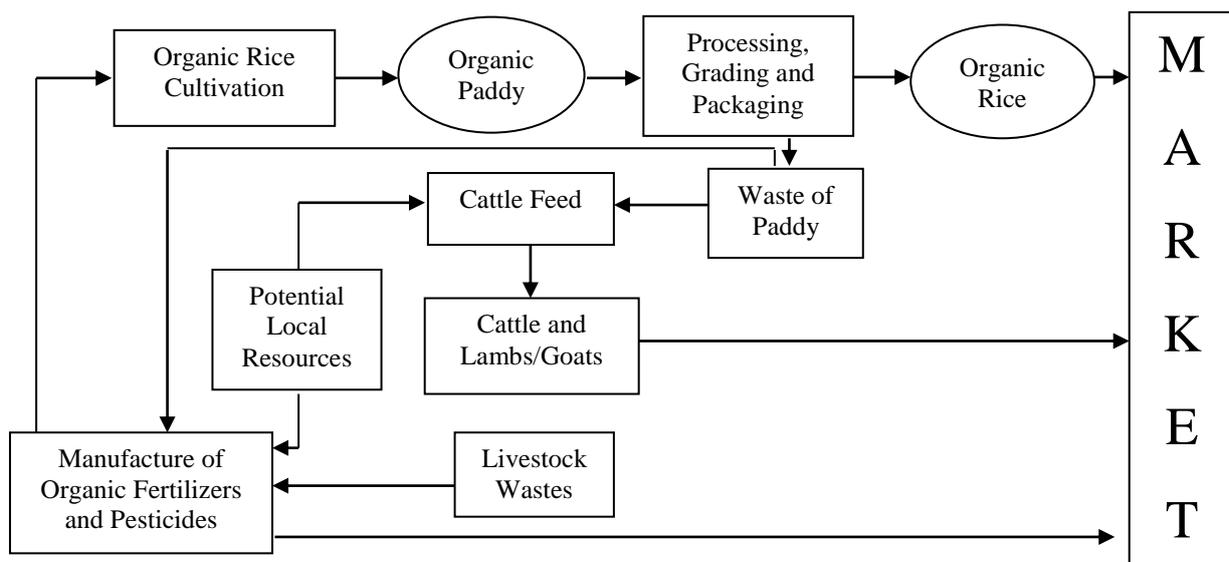


Figure 3.10 Organic rice agribusiness model  
Source: Gapoktan Simpatik Documentation, 2012

### 3.4 Conclusion

From the explanation in this chapter, we can conclude that the implementation of the original SRI method in Indonesia, especially in Tasikmalaya Regency has been developed to accommodate the local knowledge about the organic farming and integrated pest and disease management. This development has produced new organic rice farming practices known as “SRI Organic Indonesia”. The implementation of this SRI organic has shown encouraging results, such as an increase of rice productivity without the use of agro-chemicals. The increase of the demand for organic rice in the world has widely opened the opportunity to export rice production. This export can only be done if the paddy fields already has organic certificate from international certification institutions such as IMO in Switzerland. Fortunately, the Gapoktan Simpatik already received that certificate since 2009 and they are able to export their rice production to the USA, Malaysia, European Countries, etc. At the end, the socio-economic welfare of organic farmers is increased as well as their community capacity.

The next chapter presents and analyses the research findings from the interviews with the farmers, farmers groups and researcher. The analysis is based on the conceptual model of community capacity developed by Beckley *et al.* (2008) (see page 29).

## **Chapter IV**

### **The Building of Community Capacity Relying on the Implementation of a System of Rice Intensification in the Tasikmalaya Regency**

#### **4.1 Introduction**

The aim of this chapter is to examine and identify the community capacity underlying the implementation of the SRI method and to identify the factors affecting the implementation of the SRI method in the building of community capacity in rural areas. This chapter is divided into four sections after this introduction. The first section analyses the first dimension of the conceptual model of community capacity which is the assets underlying the community capacity. It explores the economic, social, natural and human capital of the community as the main assets of the community. The second section explores the catalysts for action of the community in the implementation of SRI organic concepts. The third section examines the spheres of social relations in the form of associative, market, communal and bureaucratic relationships. Finally, the fourth section discusses the outcomes of the community capacity.

#### **4.2 The Assets Underlying Community Capacity**

Rural development in Indonesia in the New Order era has managed to bring success in physical development. However, these successes have not been fully able to prepare the villagers to take advantage of the opportunities that exist in the vicinity, both created by the development process itself or for other reasons. The rural development is less underpinned by systematic efforts to develop the individuals and population capacity as a part of the community. As Jamal (2009) said, regarding the condition of rural communities' life is more heterogeneous and the governments' ability as the prime mover of development in rural areas is more limited, then to accelerate the rural development needs "togetherness" mainly driven by the society. With the active participation of villagers, some fundamental changes in the rural development can be done. In order to achieve that, we need a variety of prerequisites, one of which related to build new momentum for the growth of active participation of the society.

The implementation of the SRI organic system has been proved to increase rice productivity significantly in many regions. Besides that, with a higher price, organic rice has been able to increase the economic income of the farmers in rural areas. The

application of SRI organic in a region needs togetherness and active participation from all farmers and should be fully supported by the (local) government, farmers group and community in the concerned region. These phenomena can be seen as a new momentum in rural development where paddy fields are still widespread and productivity can still be improved.

Looking at the conceptual model of community capacity proposed by Beckley *et al.* (2008), especially its assets underlying the community capacity, the SRI organic method can still be implemented even when the community's assets is limited or low. It is because one of the *souls* of the SRI organic is to maximize the use of local resources that have been widely available among farmers itself. Livestock wastes, local microorganisms, household waste and bio-pesticides (pesticide produced from the plants) are important parts of the organic farming practices. Moreover, after a successful implementation of the SRI organic, the community's assets especially economic and human capital will increase. Eventually, the community will have more capacity and capability to overcome problems both from the inside and outside of the community and maintain their agricultural sustainability (Uphoff, 2003).

#### **4.2.1 Economic Capital**

In the conceptual model of community capacity developed by Beckley *et al.* (2008), economic capital refers to financial capital and physical infrastructure (MacKendrick and Parkins, 2004). In the form of financial capital or liquid assets, the farmer's income grew significantly (the increase went from double to even more than quadruple) with the implementation of SRI organic in one harvest time. In one year, farmers usually have at least twice harvest time depend on the water availability. One of the respondent said that net profit in the conventional rice cultivation is only € 317.9/ha. Meanwhile, the net profit after the implementation of SRI organic is around € 1315.4/ha (Interview with Farmer A as Certified SRI Organic Trainer, 2012). This increase is caused by a much reduced use of seeds and no need to buy agro-chemicals such as inorganic fertilizers, pesticides, herbicides and fungicides. Moreover, the increase of the rice productivity from 5.3 ton/ha to 8 ton/ha combined with a higher price of the organic rice increases significantly the farmer's profit. With the increase of income, farmers are better able to satisfy their basic needs, socio-cultural needs, education costs for children and have a better access to health

care facilities. Furthermore, farmers are also able to save some of their profit just in case if there are unforeseen needs in the future. Unfortunately, no of the respondents was willing to explain the exact amount of their savings (Interview with Farmer A as Certified SRI Organic Trainer, 2012). Another respondent said that usually his wife will buy jewellerys if they have a lot of money to be saved (Interview with Farmer D, 2012).

From the interview with the administrator of the farmers' group union (2012), the actual business cash flows smoothly. The biggest cost in the agribusiness management of the SRI organic is the organic certification process. It could reach up to € 42,735.04. In the first year of the IMO organic certification process, the costs are handled by the exporter. Meanwhile, in the second year of the certification, costs are handled by the government subsidy. Besides those costs, the processing, grading and packaging of the organic rice also needs a lot of money. Fortunately, the high price of the organic rice can cover these costs and the profit can be used in the development of compost production equipment and local microorganisms which can be used by the members of the farmers group. Moreover, profit was also used to develop cattle and goats in order to fulfil the needs of organic materials from the animal manure.

Those conditions show that to be able to export organic rice abroad needs investment from the government or the private sector to open the market and get organic certificate from international organic certification institution. Meanwhile, organic certificate from national organic certification institutions is just recognized in national markets. Support from the government is really needed through regulation and incentives for private sector and national certification institutions. Marketing of the organic rice is highly depending on the organic certificate. So, national organic certification bodies that supported by government should increase the capacity and capability of the certification towards the internationally recognized certificates.

Economic capital that relates to physical capital or infrastructure or fixed assets in the Tasikmalaya region also show good results. Farmers and the communities do not have any difficulties in order to get access to water, electricity, transportation, road networks, institutional building and market infrastructure. Based on my observations and interviews with farmers, the condition of these infrastructures is quite good, close enough to community's housing and affordable with the farmer's income. This condition will fully

support the building of community capacity since farmers as well as other communities can easily use the infrastructure to support their social and economic activities. A well-established communication among the member of community will increase the opportunity of the communities to develop further.

#### **4.2.2 Social Capital**

According to Putnam (1996), social capital portrays the features of social life, networks, norms, and trust. The more an individual connects with other people, the more could be their mutual trust (Putnam, 1996 *in* Aguilar and Sen, 2009). In most of the rural areas in Indonesia, the levels of social cohesion of the communities are quite strong. They are living in a harmonious way. Although they have different religions, tribes, classes and/or race, they still respect and are willing to help each other without expecting anything in return. The spirit of *gotong royong* or mutual cooperation is still alive. This condition can also be found in the rural areas in Tasikmalaya Regency. The social cohesion is much stronger than most urban places in Indonesia such as Jakarta. Most of the people are moslem producing a very strong religious lifestyle. There are many Islamic faith-based schools (*Pondok Pesantren/Ponpes*) in Tasikmalaya region. The amount of Islamic Schools which reaches 700 schools attracts many immigrant or new settlers in Tasikmalaya. The plurality of Tasikmalaya is the result of the different background of the new settlers who wants to learn about the Islam religion in those schools. The presence of these Islamic Schools is also fully supported by the local communities. As Farmer A as Certified SRI Organic Trainer (2012) said “*in order to increase the communication and social relationship among the people, there are many religion-based activities such as commemorations of Islamic memorial days and celebration of the Indonesian Independence Day as community integration events*”. Those events are very important as *ice breakers* in social relationships to reduce the gap and conflicts among societies. These events have the potential to strengthen social cohesion in the community since people get closer to each other.

As a part of the Sundanese people, Tasikmalaya residents also have Sundanese proverb namely, *silih asah* (mutual understanding), *silih asih* (mutual loving) and *silih asuh* (remind to each other). The meaning of that proverb precisely reflects the attitude of equality and openness of the Tasikmalaya people or Sundanese. All interviewee farmers

said that social cohesion is very strong since they live in rural areas where everyone knows each other and the spirit of mutual help is still high. Furthermore, this cultural live become one of the strength that should be owned by the communities in order to increase their capacity and capabilities. Cultural wealth could be one of the important assets besides the economic, social, natural and human capital, of the community that has to be maintained and enhanced. Even the strong cultural live in a society could attract tourism activities which also can be a way to develop the community capacity in rural areas. In other words, agricultural and tourism activities could be a synergy in the rural communities' development.

There are many institutions providing financial services in Tasikmalaya Regency such as banks, Islamic banks, cooperatives, micro-finance programs and pawnshops. Pawnshop is state-owned company in the field of credit that uses the mortgage system. However, the interviewees have never used these financial services but they think that they could access them easily. Rural areas in Cisayong and Manonjaya Sub-district already have good access to communication services such as mobile phone and fixed phone. Many of the farmers have a mobile phone. They also have good access to the bureaucratic services especially to the Agricultural Service such as the PPL. These conditions are very beneficial for farmers and communities in order to increase their economic capacity and develop better networks both with the government and non-government institutions including the private sector.

The farmers group supported by the Agricultural and Food Crops Service have an important role in the initial implementation of the SRI organic method. They give a lot of supports to farmers and together with the PPL, they provide assistances if farmers had a problem in the field (Interview with Farmer E as Head of Farmers Group; Farmer F; Farmer H, 2012). The farmers group facilitated the dissemination of all information, skills and knowledge about SRI organic method to farmers from land preparation to post-harvest management (Interview with Farmer A as Certified SRI Organic Trainer; Farmer B; Farmer G, 2012). Furthermore, the formal and informal local leaders including religious leaders also fully support the implementation of SRI organic concept (Interview with Farmer H, 2012). The support from all stakeholders is very important for farmers in the initial implementation of the SRI organic method. The farmers need people who can be asked directly if they have a problem in their field.

The role of networks is also “*very important in the beginning of the implementation of the SRI organic method and in sustainability of organic farming*” (Interview with Farmer A as Certified SRI Organic Trainer, 2012). Moreover, in order to get organic certificate from IMO and export organic rice abroad is very difficult. Networks will be able to support this process (Interview with Farmer C; Farmer E as Head of Farmers Group; Farmer F; Farmer H, 2012). Networks with private sector will ensure sustainability of marketing of the organic rice. Meanwhile, networks with government institutions and NGOs will increase the support for farmers to continuously implement the SRI organic method in the future.

### **4.2.3 Human Capital**

According to Johnson & Stallman (1994) in Beckley *et al.* (2008), human capital relates to skills, education, and health of individuals within the community that contributes to the skill base and the economic performance of the community (MacKendrick and Parkins, 2004). Most of Indonesian farmers especially in the less developed areas have low levels of education. Many of them are only graduated from elementary school or even some of them have not finished primary school. One of the reasons is the costs of the education that are not affordable by their parents who are just farmers or farmer workers. This reproduces poverty across generations if left alone forever. Talking about education costs, since 2009, the Indonesia National Government has been declared that the education costs for primary/elementary school and secondary/junior high school are free except for international standard schools or pioneer for international schools.

This opportunity should be exploited by farmers to increase the capacity of their children and the community in the future especially in human capital or intellectual capital. With an increasing of their income from the implementation of SRI organic and much lower costs at basic education, farmers have a bigger chance to send their children to school at least up to junior high school. As one of the farmers said:

*“Compare to my childhood, this time is much easier and more affordable, especially basic education up to senior or vocational high school level”* (Interview with Farmer C, 2012)

The implementation of SRI organic method is quite easy. Farmers can implement the SRI organic principles although they do not have high levels of education. Two of the interviewees did not finish primary school (Farmer D and Farmer G) and another two

interviewees are graduated from primary school (Farmer C and Farmer H). They only followed a five day intensive training from the certified local trainer (Interview with Farmer C; Farmer D; Farmer H, 2012). These conditions show the implementation of the SRI organic method is quite easy to be understood by farmers. In addition, the assistances provided by the farmers' group committee and the PPL from the local government make the farmers always feel calm and confidence in the SRI organic implementation. It is because people who experienced in the SRI organic always ready in the field if farmers face a problem with their crops

The successful implementation of the SRI organic is also supported by SLPHT<sup>4</sup> training in which the farmers learn how the farming practice should be done in a more eco-friendly way, from preparing the field or land to harvesting. Farmers learn through their direct experiences by making a comparison between conventional rice cultivation and SRI organic farming practices. This is a process of action and reflection against the activities carried out to foster a critical attitude of the farmers towards the environmental conditions in order to take appropriate decisions in managing their land. The SLPHT training is facilitated by the local government through the PPL (Anugrah, 2007). In interview:

*“The field condition that contributes to the increasing of intellectual and human capital of the farmers is the process of mutual learning among farmers which facilitated by the PPL in the SLPHT training activities to solve problems that arise. Farmers discuss and analyse together the emerging issues or problems to find the best solution while maintaining the principles of ecological rice cultivation”*  
(Interview with Public Senior Officer of Disperta Tasikmalaya, 2012).

Based on my observations on the field during a SLPHT meeting, the atmosphere of the meeting is relaxed, all farmers enjoy the meeting and they are able to present their findings or ideas in a forum. Moreover, they also dare to ask questions that are less obvious or ask for clarification.

The farmers' health is good and they benefit of a good access to health care facilities. When the interviews were conducted, none of the respondents showed symptoms of diseases or being unhealthy. Even an old respondent said *“although I am more than 50*

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<sup>4</sup> SLPHT (In Indonesian, *Sekolah Lapang Pengendalian Hama Terpadu*) is the training activities provided by Agricultural Service at the local level on Integrated Pest Management

*years old, I am still strong to do all my jobs as a farmer”* (Interview with Farmer C, 2012). With the increase of their income, farmers can more easily access to health care facilities and daily medicines. The Indonesia Government through the Ministry of Health since 2005 has increased the access to health care facilities of the poor families in urban and rural areas by providing health insurance for poor families. Through this program, poor families will have opportunities to get treatment from the health care facilities.

The implementation of SRI organic method will be more successful if the willingness to implement came from the farmers themselves. It can be seen as a bottom up approach in which the government role as facilitator and provides of technical assistance. The government’s roles are very important to support the existence of farmers through policies, programs, regulation, subsidies and incentives that maintain the sustainability of the agriculture in the regional and national levels. In Tasikmalaya Regency, access to government services, especially the Agricultural Local Service is easy after the reformation era in the early 2000. One of the respondents said *“since ten years ago, government officials and staffs are much more open and helpful to the societies”* (Interview with Farmer E as Head of Farmers Group, 2012). Moreover, farmers are also not too dependent on governments’ aids since the farmers group already has the capacity and capability to solve problems that arise in the fields. The use of local resources such as compost, local microorganisms and bio-pesticides greatly reduce farmers’ dependence on the external parties.

In general, the access to government services, education and health care facilities in Tasikmalaya Regency is quite easy. This condition could be exploited by communities to increase their human capital. Furthermore, with the increase of the farmers’ income will make the chance of the community capacity to grow become bigger and bigger.

The implementation of SRI organic will give maximum benefits to farmers if they apply agribusiness management in the provision of materials input (such as seeds, compost, local microorganisms and bio-pesticides), in the processing, grading and packaging of the yields and in the marketing of the organic rice (Interview with Head of Gapoktan Simpatik, 2012). Otherwise, farmers only get profit from a higher price of the organic paddy. Farmers are also encouraged to produce their own compost, local microorganisms and bio-pesticides from the local resources around them and sell it to the local market if the amount

exceeds their needs (Interview with Farmer B; Farmer C; Farmer D, 2012). As was explained in the previous chapter, the farmers also learned the entrepreneurship skills directly and indirectly through the agribusiness management from the implementation of SRI organic concepts. Meanwhile, *“in their free time, farmers are encouraged to do other productive activities such as making concrete blocks, handicrafts, etc.”* (Interview with Farmer E as Head of Farmers Group, 2012).

Leadership skills are also developed among the farmers group to prepare the future leaders. In the rural communities, usually the role of the leader is very dominant in the decision making and in building the relationship with external parties such as the governments and NGOs. In the farmers group in Tasikmalaya Regency, many ways can be done in order to prepare the next leaders such as the *“young farmers always be involved actively and be treated equally with the older farmers”* (Interview with Farmer A as Certified SRI Organic Trainer, 2012), *“young farmers are appointed to follow trainings from other institutions as representatives from the farmers group and at the end, they have to disseminate the information to all members”* (Interview with Farmer B; Farmer E as Head of Farmers Group, 2012). *“Young men are trained to be leaders by giving them more responsibility in the religious and non-religious activities”* (Interview with Farmer F, 2012). These realities show that there is a systematic approach to prepare the next leaders who will be able to bear the burden as the leader. There are some criteria for the next leader such as education background, attitudes and the logical thinking especially in simplifying the complex problems to be delivered to farmers (Interview with Researcher, 2012).

In the SRI organic farming practices, local knowledge or local culture is acknowledged and synchronized with the farming practices such as local wisdom about nature (Interview with Farmer A as Certified SRI Organic Trainer, 2012). Tasikmalaya region originally was one of the Pakuan Pajajaran Kingdom's territories with the King of Siliwangi as the last king before the kingdom collapsed. Before disappearing, he delivered the last message called *Wangsit Siliwangi*. In this message even already explain about the phenomenon of global warning which followed by climate change or irregularities (*el-niño* and *la-niña*) and various agricultural destructions. To be able to get out of this problem, farmers need to set up biomass-based management intelligently and carefully, so to use organic compost in order to improve the soil ecosystem (Purwasasmita and Sutaryat, 2012). The story of the *Wangsit Siliwangi* is used to awaken farmers about the *right* rice cultivation practices in

accordance with the values of Islam, the religion of the majority of farmers (Interview with Farmer F, 2012). One of the teachings of Islam is respecting all God's creatures and caring for nature for the future generations. Furthermore, the Islam teaching also emphasizes the importance of people (farmers) to try as hard as possible and the results are depending on the God disposes. It emphasizes the importance of praying to God in order to always get good and abundance of yields. Therefore, in Indonesia and in Tasikmalaya in particular, *“the SRI stands for Sabar, Ridho dan Ikhlas (Patience, Blessing from the God and Sincerity). In addition to ease the pronunciation by the farmers is also to sensitize the farmers on the importance of those three elements in the SRI organic cultivation”* (Interview with Researcher, 2012). Those explanation show that there is a cultural value in the community which also has an important role in the implementation of the SRI organic method.

The farmers' experiences in the past that have for decades applied conventional rice cultivation should be replaced by a new mind-set that gives more respect to nature, land, water, plants, animals and humans as an interdependent ecosystem. In the beginning, farmers must be convinced to make them aware and moved to SRI organic farming voluntarily and independently (Interview with Farmer A as Certified SRI Organic Trainer, 2012). Farmers who have already involved in the integrated pest management training can use their experiences and make them more independent. These experiences in the organic farming are disseminated to other farmers through the communication in the farmers group's discussions (Interview with Public Senior Officer of Dispersa Tasikmalaya, 2012). So, farmers who do not have any experiences in organic farming practices will have no difficulty in the implementation of the SRI organic since many actors including the PPL always ready to help farmers in the field (Interview with Farmer C; Farmer D; Farmer H; Farmer E as Head of Farmers Group, 2012).

#### **4.2.4 Natural Capital**

Natural capital that produced by the natural environment and sustains the community is important for enhancing positive community capacity outcomes (Beckley *et al.* 2008). Tasikmalaya Regency is known as one of the areas where the land is fertile and suitable for the development of agriculture. Centuries of the volcanic activities of the Mount of Galunggung has led to high degree of soil fertility in Tasikmalaya. Furthermore,

Tasikmalaya area is also crossed by six major rivers, namely River Cilangla, Cimedang, Cisanggiri, Cipatujah, Citanduy, and Ciwulan. Both factors give to the agriculture sector higher chances to be developed successfully. Tasikmalaya region has the maximum rainfall annually is 4,631 mm and the minimum rainfall is 804 mm. So the rainfall is relatively high. Moreover, the alluvial soil type, climate, weather, temperature, water and air quality are also support for the crops cultivation (<http://www.tasikmalayakab.go.id>, 2012). All interviewee farmers (2012) said that the access to clean water and irrigation water can be obtained from the well ground and spring or river water respectively. It means that farmers have enough support from nature conditions to support their farming activities.

Agricultural and farming are activities that will always be depend on the natural resources especially the soil and water. High quality of them will ensure the high level of productivity of the crops. It is very important to maintain the soil, water and environmental sustainability in order to meet the future generations' needs of foods and other agricultural products. The SRI organic method is not only concerns with the soil and water quality, but also the balance of ecosystem on the whole. It will maintain the soil health through organic accumulation and nutrient recycling and at the end will lead to desirable environmental benefits, such as increased agrobiodiversity and wider environmental protection.

### **4.3 Community Capacity Catalysts: Opportunities and Threats**

There are many events that might support the implementation of the SRI organic method in Tasikmalaya Regency. These events could be exogenous or endogenous factors that form and develop community capacity, namely opportunities and threats (Armitage, 2005). Both of them can comprise conditioning influences that may encourage the community-based initiatives (Chaskin *et al.* 2001). The internal factors that encouraged the movement from the conventional rice cultivation to the SRI organic method were stagnation in the rice production of conventional rice cultivation. In addition to this, farmers are tired of poverty and wish to increase their economic welfare and they express growing awareness in soil health and give more respect to nature (Interview with Farmer A as Certified SRI Organic Trainer, 2012).

Conventional rice cultivation which largely depends on the use of agro-chemicals has spoiled significantly the soil quality (Interview with Farmer B, 2012). The poor soil condition made the rice production to decline (Interview with Farmer E as Head of

Farmers Group, 2012). Furthermore, the high price and scarcity of agro-chemicals especially fertilizers and pesticides are also frightening farmers. When planting seasons comes, the fertilizers are often *disappeared* from the market. It makes the price more expensive (Interview with Farmer C; Farmer F; Farmer H, 2012). The use of chemical fertilizer in conventional rice cultivation forces farmers to get a debt since they have no money in the early planting seasons. Usually, farmers will pay the debt after the harvest time. Unfortunately, the yields are often not satisfy and cannot cover their debts. Moreover, the price of conventional rice is lower than organic rice (Interview with Farmer E as Head of Farmers Group, 2012). These conditions make farmers stuck in the vicious circle of poverty. This powerlessness is also encouraging farmers to shift to the SRI organic since they realized that would not depend on agro-chemicals anymore (Interview with Public Senior Officer of Disperta Tasikmalaya, 2012). In other words, farmers simply want to increase rice production and their levels of economic welfare (Interview with Farmer B; Farmer C; Farmer D; Farmer F; Farmer H, 2012).

Meanwhile, global warming has led to climate change and various disturbances in rainfalls and dry season i.e. *la-niña* and *el-niño*. Furthermore, the world food stocks are not balanced with population growth. One of the factors is due to crop failure in some countries. Moreover, the increased production of bioenergy (which means diverting food supplies for energy raw materials) also contributes to reduce world food stocks. These conditions trigger the global food crisis in 2008. There was a very high increase in food prices that unaffordable by many countries that depend on imported food. On average, the increasing of the food prices was 20%. At the same time, a number of food producing countries shut down or restrict their exports.

Furthermore, there is a growing demand for organic food which is considered healthier and safer than conventionally grown food. In addition, organic products have less exposure to inorganic pesticides, taste better, and have higher nutrients and antioxidants than conventional agriculture products. The implementation of SRI organic is also affected by these factors. The external factors that contribute significantly are higher price of organic rice compared to conventional rice (Interview with all interviewee farmers, 2012). The implementation of SRI organic will give double advantages, namely increase the yields (Interview with Farmer E as Head of Farmers Group, 2012) and reduce the input costs. Moreover, the intensive suggestion and explanation from the farmers group and the PPL

are also important factors in the shift of the rice cultivation (Interview with Farmer C; Farmer F; Farmer H, 2012).

#### **4.4 Spheres of Social Relations**

The community capacity outcomes are derived from combinations of the assets that catalyze by the opportunities and/or threats and occurred within established social relations. Organization and mobilization of the assets in order to realize the capacity outcomes need spheres of social relations as the media or the place (Beckley *et al.* 2008). The building of community capacity through the implementation of the SRI method also exploits these social relations to reduce the threats and make use of the opportunities to develop further. Formal and informal networks are used to maximize the benefit of the SRI organic method for farmers as well as communities in general.

##### **4.4.1 Market Relations**

The role of the market or private sector is very important especially in the marketing of the organic rice. The farmers can directly sell their organic rice in the local or regional markets, but they will need other parties (private sector) to sell the rice in the national and international markets. As stated by Farmer A as Certified SRI Organic Trainer (2012):

*“The private sector deals with certifications from domestic and international institutions and with international markets to export organic rice to the USA and many other countries”.*

Farmers group committee that supported by government should be able to build new networks with private sector to handle the marketing of organic rice. Government could organize activities such as exhibitions and workshops to promote the organic rice as new business opportunities that can be exploited by private sector. Investments from the private sector are very needed in the implementation of the SRI organic method, not only in the marketing of the organic rice, but also in the development of the SRI organic method in other regions. One thing to keep in mind is the involvement of the farmers group both in the development of the SRI organic method and in the marketing of organic rice. This involvement will encourage farmers to develop themselves both in the terms of economic and social development. They able to increase their economic welfare and quality of life at the same time since they will be more recognized in the social interaction.

#### **4.4.2 Associative Relations**

In the early implementation of the SRI organic method, the role of the farmers group is quite important especially to give technical assistance to farmers and find solutions to tackle problems in fields such as water, soil, pests and diseases (Interview with Farmer A as Certified SRI Organic Trainer; Farmer B; Farmer F, 2012). Moreover, the farmers group also provides materials and/or equipment to get the best results (Interview with Farmer B; Farmer H, 2012). Meetings in the farmers group are the arena where farmers can discuss with other farmers and the PPL in order to find the best solution. This interaction will increase the farmers' analytical ability (Interview with Farmer C; Farmer D; Farmer E as Head of Farmers Group, 2012).

External networks of the farmers with the government and NGOs also have important roles in order to increase the awareness of the farmers in the agroecological farming practices. Government and NGOs could give supports, assistances and show their high commitment to help farmers dealing with problems in the fields especially in the transition from conventional rice cultivation towards the SRI organic method. Farmers group usually has limitation in the financial sources. Meanwhile, in the processing, grading and packaging of the organic rice need lot of money. Certification processes also need a big amount of money. Farmers group would not be able to cover these costs in the early implementation of the SRI organic. Subsidies or very soft loan should be provided by government to tackle this financial problem.

#### **4.4.3 Bureaucratic Relations**

In the early implementation of SRI organic in Tasikmalaya, *“the government ignored our trial, luckily, the success story of the SRI organic made the government from local, provincial, and national level turn to support us and facilitate the dissemination of this new concept into many regions in Indonesia”* (Interview with Farmer A as Certified SRI Organic Trainer, 2012). After the government fully support the SRI organic method, many programmes, funds and technical assistance were provided by the government in order to increase the dissemination of this agriculture method. It still continues to this day by making many pilot projects in several regions (Interview with Farmer E as Head of Farmers Group, 2012). The local government through the PPL is one of the important

people who always ready to help the farmers (Interview with Farmer C; Farmer D; Farmer E as Head of Farmers Group; Farmer F, 2012).

Government's roles to support the development of the SRI organic method should be increased and enhanced. Government should encourage farmers to implement this method *i.e.* transmigration areas where the fields still have high potential as the center of rice production. It should be done considering rice as the main staple food of most of the Indonesian people. Programs, subsidies and incentives that fully support the agricultural activities and agricultural sustainability *i.e.* the SRI organic method should be provided by the government. It is not only to ensure the food security in the future, but also to bequeath the high quality of the soil, water and environment for the next generations.

#### **4.4.4 Communal Relations**

There are many things that could be strengthening the communal relationship that will be beneficial for the implementation of SRI organic such as similarities in religion, occupation, tribe and education (Interview with Farmer A as Certified SRI Organic Trainer, 2012). Moreover, most of the farmers have similarities in the way of thinking, in the level of socio-economic welfare (Interview with Farmer B, 2012), in the cultural and social life (Interview with Farmer C, 2012) and in the languages (Interview with Farmer D, 2012). In addition, most of the paddy fields have geographical similarities in the topography, annual rainfall, climate, water, air quality and type of the soil (Interview with Farmer E as Head of Farmers Group; Farmer H, 2012).

Social relationship or social interaction among farmers and communities has significant effects on the development of the SRI organic method. Besides the discussions of the technical terms in the conventional farming practices, there are many opportunities in the daily conversation to influence the way of thinking of farmers towards a more sustainable farming practices such as the SRI organic. Daily conversations among the farmers will increase the awareness of farmers about the environmentally farming practices and social capital of the community.

## **4.5 Community Capacity Outcomes**

The implementation of the SRI organic could bring many positive outcomes for farmers and the community as a whole, since they have good and enough assets to be exploited, strength and opportunities that can accelerate the agriculture development and spheres of social relations that fully support the SRI organic development. The ability of the community to grow can be seen from the economic, social, ecological and health aspects.

### **4.5.1 Maintain Economic Vitality**

The ability to maintain the economic vitality is the one of the main outcomes of the successful implementation of the SRI organic method. As was stated by Farmer A as Certified SRI Organic Trainer (2012):

*“If the farmers are consistent and committed in implementing the SRI organic farming method, I’m sure that they can enhance their level of economic and social welfare, independently, without any dependence to other people or the government”.*

Another farmer said:

*“I believe that the farmers can increase their welfare, fulfil the basic and secondary needs including the needs of education for their children, health, and social-cultural life. The farmers will not be dependent anymore of the assistance from the government or other people to fulfil their needs”* (Interview with Farmer E as Head of Farmers Group, 2012).

Most of the farmers show their confidence about their future especially from the economic perspective. With the advantages from the SRI organic especially in the reduced of the input costs, much higher yields and higher price of organic rice will give the farmers brighter future (Interview with Farmer C, 2012) and able to enhance their levels of socio-economic welfare (Interview with Farmer G, 2012).

### **4.5.2 Maintain Civic Vitality**

In the social life, since the community already has strong social cohesion and combined with the increase of the socio-economic welfare as the results of the implementation of SRI

organic, most of the farmers believe in the ability of the community to maintain the civic vitality. From the interview with Farmer B (2012) said:

*“I think the life of the farmers and the societies will be more dynamic and with the strong social cohesion and moral-religious life, the civil development will be much easier than before”.*

Meanwhile, Farmer E as Head of Farmers Group (2012) said that the social life of the farmers will increase. In the level of community, farmers think that the community will have more capacity and capability to solve many problems in the future. Moreover, Farmer F (2012) said that the communities will be able to increase their knowledge because the farmers are able to get access to education for their children, access to health care, *etc.*

#### **4.5.3 Subsist and Persist**

With the implementation of the SRI organic method, farmers and community will be able to use their own resources in a more effective and efficient ways to solve the problems in the future. In addition, with a reduced gap between the richer and the poorer, the community will be stronger and more dynamic to face future challenges (Interview with Farmer A as Certified SRI Organic Trainer, 2012). The community will be stronger and more resilient to deal with threats, challenges, obstacles and interferences in the future both from inside and outside the community since education, health, and socio-cultural life increase and enhance in line with their economic welfare (Interview with Farmer B; Farmer E as Head of Farmers Group; Farmer F, 2012).

In the implementation of the SRI organic method, farmers are highly encouraged to use their own resources that already available in their surroundings. Household wastes and manure of cattle are important substances of compost. Local microorganisms as another important material also can be made by farmers themselves. These capacities will reduce the farmers' dependency on the other parties and enhance their capacity and capability to develop further. In addition, the communities as a whole also benefit directly and indirectly from these conditions. The increase of the socio-economic welfare of the farmers will significantly improve the resilience of society to deal with the future challenges of globalization.

#### **4.5.4 Access State Resources**

The big attention from the government to increase rice production and, at the same time, maintain environmental sustainability can be used by the farmers group to get some funds and/or technical assistances in the implementation of SRI organic. Farmer E as Head of Farmers Group (2012) said:

*“The farmers group can make proposals of activities of the farmers to increase their capacity and capability or productivity and the government will give assistance in technical and/or financial terms as long as the activities are relevant with the farmer’s needs and budget plan from the government”.*

The proposal of the farmers group usually will be easily approved by the government to get financial assistance if the activities have proven to be successful elsewhere (Interview with Farmer F, 2012). Furthermore, the transformation of the government system in Indonesia that gives autonomy to the municipality or regency government levels has many benefits from the regional development perspective. It is because the local government has more authorities for allocating the local budget in line with the local assets and local needs. Then, the autonomy could increase the ability of the local government to design and provide policies, regulations, programmes and funding which are more suitable with the needs of the local communities. At the end, these will increase the community capacity and accelerate the regional development.

#### **4.5.5 Link to the Global Economy**

The success of the organic rice exports to the USA and many other countries shows that with strong determination and hard work of the farmers, farmers group, governments and private sector we can do things that were previously thought as impossible. *“Certification from international bodies is evidence that our products have been recognized internationally”* (Interview with Farmer A as Certified SRI Organic Trainer, 2012). Farmer E as Head of Farmers Group (2012) said:

*“With the organic certificate from IMO Switzerland, we can export our rice to several countries such as the USA, Malaysia, Hongkong, UEA, Germany, and the Netherlands. As long as we have high commitment with the organic farming, we don’t have any difficulties anymore to sell our product in the international markets”.*

The ability to export the rice organic production will be possible only if there is a network with the private sector which willing to invest their capital in the certification process from the international organic certification institutions. Meanwhile, the organic certificate from the national organic certification bodies is only recognized in the domestic markets. Here, the role of the government is really needed to provide such kind of easiness or tax relief or subsidies for the private sectors who want to exploit this opportunity, since the demand for the organic rice is very high and still continues to grow in line with the healthy life style that in expansion.

#### **4.5.6 Maintain Ecological Integrity**

In the implementation of the SRI organic method, the ability of the farmers to maintain the ecological integrity is undoubtedly. SRI organic method makes farmers more aware of the importance on a healthy soil, balance with nature, eco-friendly farming practices and sustainability of the agriculture (Interview with Farmer A as Certified SRI Organic Trainer; Farmer E as Head of Farmers Group, 2012). Soil health is one of the key concepts in the SRI organic method where the soil ecology is much more appreciated than conventional farming practices (Interview with Farmer B, 2012). In conventional rice cultivation, the soil is exploited by the farmers without giving the soil sufficient organic materials. The practices of the SRI organic method are also relevant with the teachings of Islam as the farmers' religion (Interview with Farmer H, 2012). The use of agrochemicals such as inorganic fertilizers and chemical pesticides is strictly prohibited in order to restore the soil ecological health. Moreover, the use of compost mixed with the local microorganisms as the main fertilizers of the plants also significantly increase the health of the soil. If necessary, plants can also be given such kind of foliar or leaf fertilizers from organic materials which are also made from the household materials (Interview with Researcher, 2012).

Furthermore, some of the practices in the conventional rice cultivation methods such as continuous flooding of rice plants, burning of the rice straw in the fields and immersion of the chemical fertilizers are also abandoned since these practices released greenhouse gases such as CH<sub>4</sub>, CO<sub>2</sub> and N<sub>2</sub>O respectively. The release of these gases will exacerbate the impacts of the climate change. In addition, weeding is also carried out more frequently. This treatment will increase the soil aeration that would be very beneficial for the plants'

roots to absorb the soil nutrients to produce much more grains with good quality. The practices of the SRI organic show that this method more eco-friendly and more environmentally sustainable than conventional rice cultivation method.

#### **4.5.7 Maintain Human Health**

With the increase of the economic welfare, *“I believe that farmers will be able to maintain their health since they can easily get access to health care facilities and buy more nutritious foods”* (Interview with Farmer A as Certified SRI Organic Trainer, 2012) and at the end, the health problems will be much easier solved by the farmers (Interview with Farmer F; Farmer G, 2012). Combined with the aid of the programmes from the government in the health sector, farmers and poor families have better chance to maintain and enhance their health level.

There is a direct effect of the implementation of the SRI organic method to the farmers' health. The method that strictly avoids the use of inorganic pesticides will increase the farmers' health level. In the conventional rice cultivation, inorganic pesticides and fungicides are used regularly and sometimes excessively. Farmers are usually not followed the manual instruction and recommended dosage of the pesticides or fungicides. Unfortunately, inorganic pesticides would be a dangerous poison to the farmers if the manual instructions and recommended dosage do not run properly. The inconvenience in the wearing of full personal protective equipment usually makes farmers lazy to wear them. With no use of the inorganic pesticides, farmers can significantly reduce the exposure of those toxic materials and increase their health.

#### **4.6 Conclusion**

Actually, the community already has some of the assets that can be used in order to increase the community capacity especially natural and social capital. The implementation of the SRI organic method could increase human and economic capital of farmers. The farmers group, with assistances from the government and private sector, will be able to exploit the opportunities to gain organic certificate from IMO and then export their organic rice production abroad. With the sphere of social relations which also support the development of SRI organic, farmers and communities have more capacity and capability to develop their social, economic and environmental life in the future. The next chapter

elaborates the conclusions from this research and provide some recommendations and further study about the implementation of SRI organic concept and the building of community capacity especially in rural areas.

## **Chapter V**

### **Conclusions and Recommendations**

#### **5.1 Conclusions**

The building of community capacity in rural areas needs to pay attention to the local assets or local resources that exist in the community. Since most of the rural areas in Indonesia have a high development potential in the agricultural sector (*i.e.* rice cultivation), community capacity building should recognize and benefit from this potential in order to increase the communities' ability to maintain and enhance their economic, social, cultural, health vitality and environmental sustainability. With the increase of awareness on the agriculture sustainability and demand for organically grown food, the Indonesian rice farmers should be able to use this opportunity to improve their socio-economic conditions and enhance their community capacity.

SRI organic is one of the farming practices which tries to balance sustainability of environmental, economic and social dimensions of development. From the results of the analysis based on the conceptual model of community capacity developed by Beckley *et al.* (2008), this thesis shows that the implementation of the SRI organic method carries the potential to increase the community capacity of rural areas in Tasikmalaya Regency. Most of the rural communities or farmers in Indonesia already have natural and social capital to develop the agricultural sector. In the form of natural capital, centuries of volcanic activity has led to high degree of soil fertility on Java, Sumatera, Sulawesi and Bali Island, including in Tasikmalaya Regency. In addition to this, this region has high rainfall in average and sufficient to fulfil the water demand of farming activities. These resources when combined with *proper* rice cultivation *i.e.* the SRI organic method will give significant contribution for the development of the region. Meanwhile, from the social capital perspective, strong social cohesion that already exist in rural communities in Tasikmalaya Regency support the transmission and development of the SRI organic method in this area. Local culture of the Tasikmalayan people *i.e.* mutual understanding, mutual loving and remind to each other ease the development of this method.

The successful implementation of the SRI organic method could increase the human and economic capital of the farmers. There are many advantages of this method such as eliminates the use of agro-chemicals, increases rice yields and higher price of the organic

rice compared to conventional rice. These advantages will greatly increase the farmers' income which at the end could increase their access to education and health-care facilities as well as reduce their dependency on the other parties especially from the government.

The soul of the SRI organic such as the use of local resources which eliminates the dependence on the use of agrochemicals and combined with the local wisdom and local cultures contributes to the development of community capacity in rural areas. There are local stories such as the *Wangsit Siliwangi* that was used to increase the awareness of farmers about the *right* rice cultivation practices in accordance with the values of farmers' religion.

The network development and agribusiness management are the key success of the implementation of the SRI organic method. Networks with private sector will ensure sustainability of marketing of the organic rice. Meanwhile, networks with government institutions and NGOs will increase the support for farmers to continuously implement the SRI organic method in the future. Moreover, the agribusiness management will be successfully developed only if the SRI organic method is implemented over a widespread area. It is because the organic certification process and the processing, grading and packaging of the organic rice require a lot of money. These costs can only be covered if the production of organic rice exceeds break-even point of the certification and processing costs of the organic rice. Although the SRI organic method could increase the rice productivity, it has to be added with the implementation of the method in a large area.

Meanwhile, support from all levels of government through policies, programs, and funding and/or technical assistance is very crucial in the early step of the implementation of SRI organic. It is because in order to open and export the organic rice production to the international market, the farmers' fields have to get an organic certificate from the international organic certification institutions. Some of the keys to get the organic certificate are the patience, awareness, honesty, responsibility and volunteerism of the farmers since only the farmers themselves who knows exactly how to implement organic farming in their field considering that the use of agro-chemicals in the fields is strictly prohibited.

There are many internal and external factors that contribute to the development of the SRI organic method in Tasikmalaya. Internal factors such as stagnation in rice production, poor

soil condition as the impacts of the green revolution and the strong desire of farmers to increase their levels of socio-economic welfare make this new method easily accepted and implemented by the farmers. Meanwhile, external factors such as the global warming, the growing demand for organic food and the higher price of organic rice compared to conventional rice foster the implementation of the SRI organic method.

Spheres of social relations that contribute to the building of community capacity in rural areas are market, associative, bureaucratic and communal relations. These social relations should be built to reduce the threats and make use of the opportunities to develop further. Formal and informal networks are used to maximize the benefit of the SRI organic method for farmers as well as communities in general.

The increase of economic welfare of farmers could improve the capacity and capability of the community from the economic, social, ecological and health perspectives. The advantages from the SRI organic especially in the reduced of input costs, much higher yields and higher price of organic rice will enhance the farmers' socio-economic welfare. Furthermore, the community will be stronger and more resilient to deal with many problems in the future both from inside and outside the community since education, health, and socio-cultural life increase and enhance in line with community's economic welfare. Another important outcome is the farmers' ability to maintain ecological integrity through the implementation of the SRI organic method. This method makes farmers more aware of the eco-friendly farming practices and sustainability of the agriculture.

## **5.2 Recommendations**

For the context of Indonesia, the role of the local culture and/or local wisdom towards a new innovation or way of thinking is very important and will influence the success or failure of the implementation of new methods (Cahyanto *et al.* 2012). So, encouraging a cultural transformation towards sustainability in agriculture (*i.e.* SRI organic) could be done through religion and local wisdom, among others. Societies who have a more open culture will be easier to adopt, adapt and implement the new concept and more successfully than the other societies.

I would argue that *cultural capital* is also one of the most important assets of the community capacity that could be improved besides economic, social, human and natural

capital as Beckley *et al.* (2008) proposed. Here, the term of cultural capital refers to the definition by Berkes and Folke (1994:128) as “*factors that provide human societies with the means and adaptations to deal with the natural environment*”. Cultural capital could be developed and enhanced from many sources such as traditional ecological knowledge, cultural diversity, collective action frameworks, institution building, evolution of cooperation, social learning and new environmental ethics (Berkes and Folke, 1994). Rural communities in Tasikmalaya Regency already have such kind of traditional ecological knowledge through the *Wangsit Siliwangi* story. Its combination with the new insight of ecological farming practices in the implementation of the SRI organic method will improve the cultural capital of that community. It carries the capacity to develop sustainable relations between societies and their natural environment. Much of effective management of local resources occurs at the local level and tends to be community-based, both for rule making and rule enforcement (Berkes and Folke, 1994). Furthermore, cultural capital plays an important role in how societies use natural capital to “create” human-made capital since the human-made capital is generated by the interaction between natural and cultural capital (Berkes and Folke, 1994). In other words, cultural capital is the interface between natural and human-made capital.

Nowadays, agroecology involves various approaches, not only to deal with crop production and protection aspects, but also in new aspects such as environmental, social, economic, ethical and sustainable development (Wezel *et al.* 2009). The SRI organic method as an agroecology concept can be seen as a sustainable development strategy. It focuses on food resilience, conservation of natural resources and agrobiodiversity as well as empowers rural social movements (Wezel *et al.* 2009). Empowering rural community as a community capacity building will ensure that communities take control of their own learning in such a way that enables them to effectively address the needs and issues that are on their agenda (Department for Social Development, 2008).

Considering the capacity of the implementation of the SRI organic method in the development of rural areas, in the socio-economic terms and its community capacity, the government could use this opportunity to accelerate rural and regional development where agricultural potential is high. Some of the important aspects that have to be considered by the government are:

1. SRI organic is a rice cultivation which largely depends on the local resources and the active participation of the farmers in the field. The patience, awareness, honesty, responsibility and volunteerism of the farmers are really needed to gain the best results of the SRI organic;
2. Farmers group, formal and informal local leaders and the PPL have very important roles in the early implementation of SRI organic since its application needs material and immaterial supports, deep understanding about the concept and a transformation of way of thinking of the farmers towards the farming system which gives more respect to the nature and environment towards sustainable agriculture,
3. The government should also develop at least two networks. Firstly, the networks that provides the material input of the SRI organic such as compost, local microorganisms and bio-pesticides with the maximum utilization of the local resources which already exist in the community. And the second network is for processing, grading, packing and selling the organic rice production to the local, regional, national and even international markets.

This research was conducted in the areas where farmers are already successfully implementing the SRI organic method. Farmers in Tasikmalaya Regency implement the SRI organic method with their own awareness. They begin without receiving much support from other parties, especially the government. The implementation of this method extensively in the surround community makes the break-even point can be reached easily. It is very important to implement the agribusiness concept thoroughly from the provision of input materials to the marketing of organic rice that beneficial to farmers. Unfortunately, some of the pilot projects in other regencies are collapsed and the farmers do not want to implement this new method. Perhaps, such conditions in the Tasikmalaya Regency are not emerged in those areas. Factors that contribute to this failure are interesting for further studies by simultaneously examining or testing the cultural capital of the society as one of the assets in the community which also contributes to the building of community capacity.

### **5.3 Reflection**

I conducted the interviews in May and early June 2012 in Tasikmalaya Regency and Ministry of Agriculture in Jakarta are the main sources of this thesis. However, I face some difficulties regarding to data collection in this regency. This thesis cannot cover the whole

area of the regency. It is because the locations are quite large and it is not easy to access. Moreover, I select only some stakeholders such as local and national government, national pesticide society, two farmer groups and farmers group union as the representatives of farmers. Due to the limited time and funding, I did not conduct interviews with other stakeholders such as the NGOs who actively promote the SRI organic method in Tasikmalaya Regency, the exporter company of organic rice and companies that introduce the method as part of their corporate social responsibilities (CSR). These factors may impact to quality and quantity of information about the building of community capacity in rural areas through the implementation of the SRI organic method. In addition, the results of this research should not be generalized since the research focuses only in the Tasikmalaya region. The implementation of the SRI organic method in other areas may get different results from the Tasikmalaya Regency case. There are some advantages of the qualitative study such as flexibility of the process and deeper understanding of the topic. However, the disadvantage of this method refers to the bias of information from the interviews since I can influence the quality and quantity of information during the interview processes. The use of voice recorder also makes the interviewees feel uncomfortable and seemed afraid to answer all questions.

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## APPENDIX

List of Questions in the Community Capacity Evaluation (Adapted from Beckley et.al, 2008 and MacKendrick and Parkins, 2004)

Dimension	Indicator	Criteria	Questions	
Assets	Human capital	Farmer's education level	What is the average level of the farmer's education?	
		Professional training on the SRI method	What kind of informal training on SRI method has been followed?	
		Demographic information	Data will be obtained from the government office.	
		Farmer's health	Which is the level of farmer's health?	
		Access to health care	How to get access to health care facilities?	
		Access to government services	How to get access to government services?	
		Access to education	How to get access to education facilities?	
		Entrepreneurship	To what extent entrepreneurship skills are developed among the farmers?	
		Leadership	To what extent leadership skills are developed among the farmers?	
		Indigenous knowledge	To what extent indigenous knowledge is developed among the farmers?	
	Life experience	To what extent life experience influences in the implementation of SRI method?		
	Economic capital	Financial capital or liquid assets	Farmers' income	How much in the average of farmer's income before and after the implementation of SRI method?
			Households savings	How much in the average of households savings before and after the implementation of SRI method?
Business cash flow and operating funds			How is the business cash flow and operating funds?	

	Physical capital or infrastructure or fixed assets	Water	How is the access to water?	
		Electricity	How is the access to electricity?	
		Transportation	How is the transportation access and facilities?	
		Institutional building such as schools, government office, health care facilities	How is the access to the institutional buildings?	
		Market infrastructure	How is the access to the market?	
	Social capital	Social organizational aspects	Social cohesion	How strong is social cohesion in the community?
			Religious and cultural institutions	How many institutions in religious and cultural activities? How high the level of participation in those activities?
			Local representative in the legislative bodies	Are there any local representatives in the legislative bodies? How big is their influence to the communities?
		Social capital infrastructure	Financial services, institutions	How is the access to get financial services?
			Communication services	How is the access to communication services?
			Bureaucratic services	How is the access to governmental services?
			Community organizations	Which is the role of community organizations in the implementation of SRI method?
			Community integration events	Is there any community integration events? What are the results?
			Networks	To what extent the role of networks in the implementation of the SRI method?
		Capacity Catalysts	Opportunities and Threats	What are the internal factors in the society that trigger the implementation of the SRI method?

		What are the external factors in the society that trigger the implementation of the SRI method?
Spheres of Social Relations	Market relations	Which are the roles of the private sector in the implementation of the SRI method?
	Associative relations	Which are the roles of NGOs and farmer groups in the implementation of the SRI method?
	Bureaucratic relations	Which are the roles of the public sector or the government in the implementation of the SRI method?
	Communal relations	Which factors in the community which contributes to the development of the SRI method?
Capacity Outcomes	Maintain economic vitality	With the implementation of the SRI method, to what extent the community can maintain and enhance the economic capacity?
	Maintain civic vitality	With the implementation of the SRI method, to what extent the community can maintain and enhance the civic vitality?
	Subsist and persist	With the implementation of the SRI method, to what extent the community can subsist and persist?
	Access state resources	With the implementation of the SRI method, to what extent the community can get access to state resources?
	Link to the global economy	With the implementation of the SRI method, to what extent the community can maintain and enhance the link to the global economy?
	Maintain ecological integrity	With the implementation of the SRI method, to what extent the community can maintain ecological sustainability?
	Maintain human health	With the implementation of the SRI method, to what extent the community can maintain and enhance the human health?