CHAPTER 3

The Cooptation of GOs and NGOs and the Small Scale Farmers in Nan Province under Global Seed Market Integration

3.1 Introduction

In Chapter 2 I show that the neoliberalization of agrobiodiversity through the shifting of seed regime and restructuring of (agro)biodiversity conservation is far from being monolithic but complicated processes among heterogeneous actors. Now, it is important to learn from a certain case study to understand the particular conditions that affect the small-scale farmers' livelihood struggles. I agree with Ferguson (2010: 183) that to understand the various uses of neoliberalism, we cannot see neoliberalism as an evil essence or an automatic unity. Rather, it can be reconfigured to the political projects in various ways. Based on the case study of a village in this dissertation, I argue that there are still several conditions that need to be investigated in order to assess the actually existing neoliberalism that affects the small-scale farmers' livelihood. By this, it helps avoid rushing to the conclusion that "neoliberalism is bad for poor and working people, therefore we must oppose it" (Ferguson 2010: 166).

This chapter, then, aims to show the cooptation of GOs and NGOs in the seed-related production and conservation with a village in Tha Wang Pha District, Nan Province (see Figure 3.1 for the map), as a case study in order to understand what happened when a small village was integrated into the global seed market.

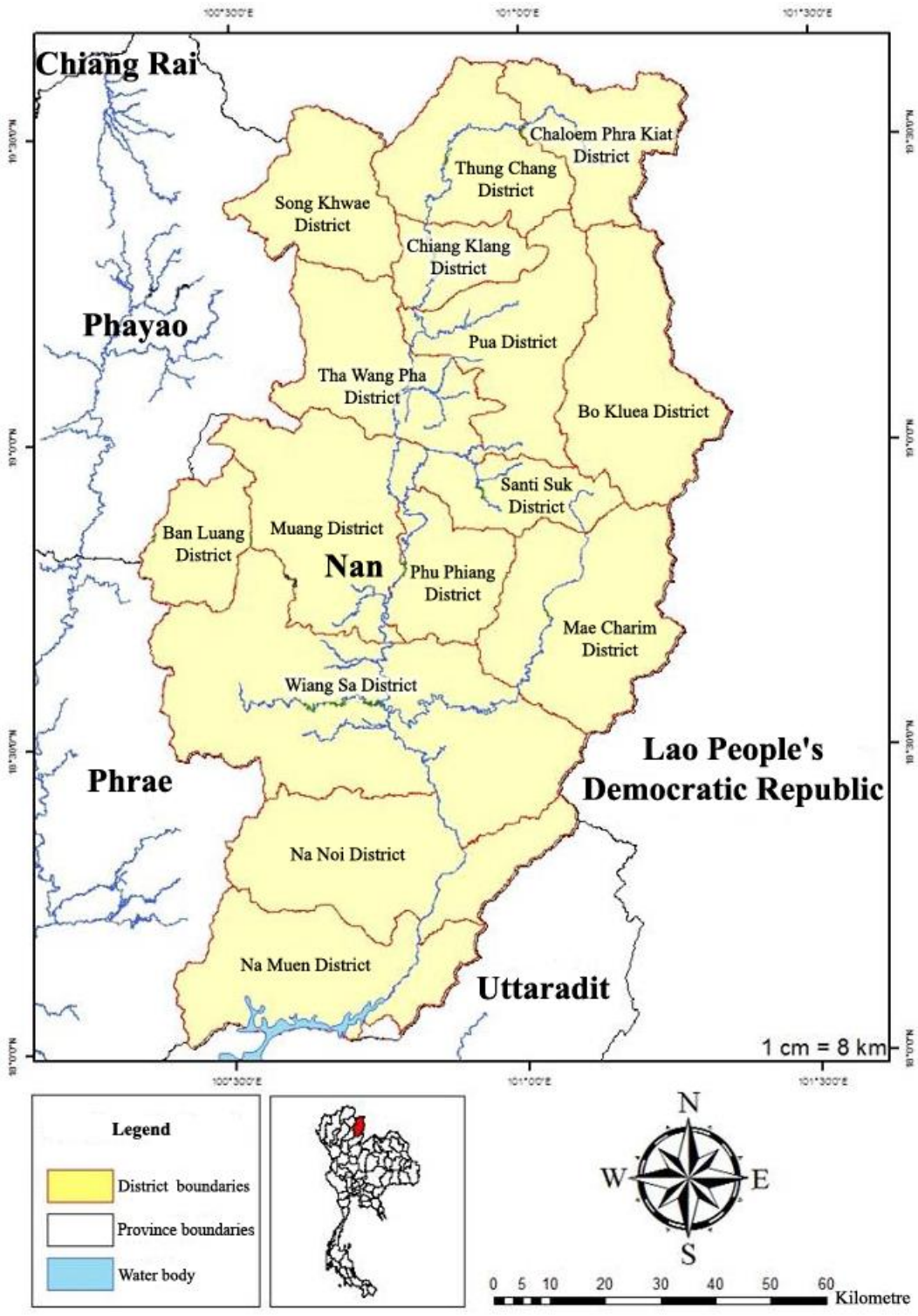


Figure 3.1 Map of Nan Province

In this dissertation, Baan Ta Kob (anonymous name) was chosen and would be later called TK Village. The village is about 50 kilometers from Nan City. Indeed,

TK Village can be seen as a crossroads of state-led development, market forces and NGOs' advocacy, contributing to the multi-faceted, complicated, conflicted processes of commodification and conservation of agrobiodiversity. Here, the three conditions experienced by TK villagers, the demographic, socio-economic and environmental aspects, will be explained to better understand such changing circumstances.

There are five parts in this chapter. In order to situate the livelihood landscape of TK farmers, the first shows some broader situations that can be reflective of the role of the state and private seed sectors in reshaping seed manipulation in the rice and vegetable seed sectors in Nan Province. The second focuses on the demographic transition of TK Village. The third illustrates the socio-economic conditions where TK villagers rely on the agricultural and non-agricultural sector, contributing to the diversity of livelihoods. The fourth describes the contemporary agricultural environmental conditions in TK Village. The last is the chapter conclusion.

3.2 Roles of the state and private sectors in promoting small-scale farmers in Nan Province to use, produce and conserve seeds

This part focuses on the effort of the Thai government to implement the development schemes that, in part, linked to plant seed manipulation. The plant genetic materials, in this sense, were the key elements in the assemblage of not just the scientists but also the development agencies in public and private sectors. In order to see the complicated directions of how several actors influenced seed manipulation in different ways, I divided this swction into two aspects for the rice and vegetable sectors, respectively. By the rice sector, the case of the seed cluster and the effort of the state agricultural extension were taken into account. By the vegetable sector, the role of the private sector and its efforts in launching the development schemes as CSRs would be shown.

3.2.1 Rice in the making of Seed Cluster and new rice merit festival

In terms of rice as agrobiodiversity, Nan occupied the third position of rice diversity in Thailand when considering from the rice accessions that the government had collected TRVs from Nan Province and stored them in the national gene bank. In the national gene bank of Thailand in the 1990s, based on Chaweewan Wuttiyano (2000), there were 5,928 traditional rice varieties which were collected from 75 provinces of Thailand (see also APPENDIX I); if classified by area cultivated, there were 3,893 lowland rice varieties, 1,746 highland rice varieties and 289 deep water rice varieties. If looking at the list by variety traits, there were 3,905 non-glutinous rice varieties and 2,023 glutinous rice varieties. The top ten provinces were Chiang Mai (386), Pattalung (272), Nan (255), Phrae (211), Pitsanulok (208), Pattani (203), Mae Hong Son (194), Ganjanaburi (171), Sukotai (154), and Nakorn Sitammarat (149), respectively. Notably, 5 of the 10 provinces are located in Northern Thailand.

When focusing only in Nan Province (see Chaweewan Wuttiyano 2000 and also APPENDIX 8 of this dissertation), there were 255 traditional rice varieties. When classified by variety traits, there were 207 glutinous rice varieties and 48 non-glutinous rice varieties. When classified by the cultivated area, there were 92 lowland rice varieties, 162 upland rice varieties and 1 floating rice variety. When classified by district, it was found that there were 49 rice varieties in Sa District, 45 rice varieties in Chiang Klang District, 39 rice varieties in Pua District, 37 rice varieties in Muang District, 28 rice varieties in Tha wang Pha District, 17 rice varieties in Thung Chang District, 12 rice varieties in Na Muen District, 11 rice varieties in Na Noi District, 11 rice varieties in Mae Charim District, 4 rice varieties in San Thi Suk District, 1 rice variety in Ban Luang District and 1 rice variety in Song Kwae District. However, the number of rice varieties collected seems questionable, I argue, especially when looking at the number of rice varieties in San Thi Suk District and Ban Luang District and the diversity of the geographical diversity covering the mountains and valleys in both districts. It begs to question whether the farmers really used only a single rice variety in Ban Laung District and 4 varieties in San Thi Suk District.

In 2009, the FAO and the Thai government had celebrated World Food Day, "Achieving Food Security in Times of Crisis", in Nan Province (see Figure 3.2). This event was promoted to Nan people in many places by installing a lot of billboards (about 2x3 meters) on the roadside with the message, "Nan people proud of hosting World Food Day". Also on this occasion, the representative of the FAO in the Asian Pacific Region had announced the FAO agenda on world food security. Based on the souvenir books (see Prateep In-Sang, et al. 2009) distributed at that event, a message from the FAO Director-General, Jacques Diouf, was published to direct the global concern to the global food crisis in relation to some certain causes, including (1) the rapid and sharp increase of food prices, (2) the financial and commercial dependency of developing countries through the global economy integration, and (3) the global crisis that spread the economic shock to the world population, in particular the poorest 71 countries. On this occasion, NGOs and farmers participated in a roundtable session on "Alternatives, Survival for Nan People and Self-Reliance on Food" (see Figure 3.2).

Figure 3.2 FAO Food Security Day Celebration hosted in Nan Province (left) and a roundtable session by NGOs and a farmer (right)

The global food security agenda, based on the event hosted in Nan Province, can reflect the emergence of the global development agenda in a local context. However, it should be noted that the government of Thailand selected Nan as the place to show not only the government's response to such a global agenda but also the

response to the royal initiatives. As the Minister of Agriculture and Cooperatives (see Prateep In-Sang, et al. 2009: 11) stated that:

> "For Thailand, although it is an agricultural country, there are still a lot of poor and hungry people. Nevertheless, Thailand has been provided the royal grace by HM the King, who is concerned about the people, through royal initiatives and agricultural development projects. HM the King has provided the Philosophy of Self-Sufficiency Economy as guidance for Thai people and the Thai government, in particular the Minister of Agriculture and Cooperatives has taken for granted the national development for supporting the farmers and those who are disadvantaged with poverty and enhancing them to get good-quality, safe and sufficient food".

Also, I saw that there were many government projects exhibited in the World Food Day Celebration in Nan Province, such as the Royal Forestry presenting projects under the royal initiatives of the Queen on forest conservation, the Department of Rice presenting the royal initiative of HM the King on rice improvement and Thai rice variety conservation, and the royal initiative of HRH Princess Sirindhorn on plant genetic resources. Interestingly, a remark by HRH Princess in 2005 at Kasetsart University on GM rice technology was also shown. On a billboard, the remark stated that:

> "I have heard that the foreign land had developed the modified rice to produce more iron. We have several kinds of local rice genes, so it is useless to do that. The cross breeding between the general plants and the modified plants has already been patented, though; Thai farmers have to be supported by foreign" [in Thai: ได้ยินว่า ต่างประเทศมีการพัฒนาข้าวดัดแปลงพันธุกรรมเพื่อให้สามารถสร้างธาตุเหล็กได้มากขึ้น เรามีพันธุ์ข้าวพื้นบ้านดีๆ หลากหลายมากมาย ไม่มีความจำเป็นต้องทำเช่นนั้น การ

ผสมข้ามของพืชทั่วไปกับพืชดัดแปลงพันธุกรรมที่ต่างประเทศจด

สิทธิบัตรไว้แล้วจะทำให้เกษตรกรไทยต้องพึ่งพาต่างชาติ].

In addition to hosting the World Food Day, a programme implemented by the Provincial Agricultural and Cooperatives Office of Nan Province was an example of such a response to the Global agenda. In the Agricultural Development Strategies 2010 – 2013 of the Provincial Agricultural and Cooperatives Office of Nan Province (2011), it stated a provincial vision that "Nan Province is a place of producing safe agricultural commodities, using natural resources worthily, developing farmers and agricultural institutions to live with sufficiency and sustainability". Referring to the Strategic Development Plan of Nan Province in 2011, the Provincial Agricultural and Cooperatives Office of Nan Province (2011) had run activities to support farmers to conserve TRVs.

In other words, not only NGOs but the so-called traditional plant varieties were also constructed by the government agents. A book by Provincial Agricultural and Cooperatives Office of Nan Province (2011: Forward section) described that:

> "TRVs are the ancestral wisdom collected from the past. They are a source of food for people. TRVs can give high yield, even being grown in arid land, and they are tolerant to disease. The more important point is that they are the ancestral heritage for the next generation. TRVs are valuable to Thai people. But a lot of them are lost because of capitalism that emphasizes commercial production … Conservation of TRVs needs to give farmers and general people the knowledge TRVs because they are the ancestral heritage. So TRVs should not be stored in cold storage rooms or glass containers, but in the livelihood of the people".

In addition, under the notion of food security, the Provincial Agricultural and Cooperatives Office of Nan Province in 2011 supported an effort to establish the rice

seed production group together with other development agencies, such as Joko Learning Center, Ubon Ratchtani Rice Research Center and Phrae Rice Research Center.

The Agricultural Extension Office of Chiang Klang District also established the community rice seed production groups in collaboration with Joko Learning Center and universities under NSTDA and BIOTEC (Adisai Deetunna 2011). Based on Mr. Adisai Dethanna, who was an extension official of the Agricultural Extension Office of Chiang Klang District, NSTDA had sent MAS rice seeds to farmers in Nan Province and supported establishing the community rice seed production groups in 2010 (see also National Science and Technology Development Agency 2009: 10).

Notably, Nan is also one of the components in the growth of Thailand's seed industry which seed companies attempted to expand their business both domestically and globally. The entry of Monsanto and East-West Seed in TK Village in the 2010s can represent this situation as well. In their work, Niwat Maswanna and Kamol Lerdrat (2007: 80 - 83) noted the seed companies in Thailand had some problems in their production, such as the decline in number of growers, the increase of production costs, and the increasing number of seed companies in other countries. This meant that the effort to conserve the agrobiodiversity of the state and the effort to commodify seeds occurred simultaneously in Nan.

Those development schemes by the government, in fact, linked Nan to several agencies that had the key role in a scheme – Seed Cluster – that restructured the relations between seed companies, state, universities and NGOs (see Watcharin Meerod, et al. 2011). Thus, we need to situate Nan's farmers in the broader context of development schemes, especially the Seed Cluster, in order to understand the discursive practices of the government and elites that shaped the agrobiodiversity and farmers' livelihood landscape.

Seeing from the development of the seed cluster according to the government's agenda (the Asian Seed Hub and the World Kitchen), farmers in Nan Province were linked to the seed cluster in complicated ways. At the national level,

the government aiming to boost Thailand as the Asian Seed Hub seemed to encourage the growth of the private sector, and there were many actors linked in the seed production network. But these actors, after implementing their development schemes in Nan Province, might have seen that they also added the other agenda to their development schemes, especially when they aimed to support people in securing their life who lived in remote areas far from market access. So far, we would see later that the scheme to secure the livelihood of the farmers, in part, merged into the seed companies' schemes of CSRs.

At the national level, the seed cluster represented the assemblage of NSTDA and other organizations. According to Watcharin Meerod et al (2011), the "Seed Cluster" was composted of 72 organizations, including government agencies, universities and 60 companies (see Figure 3.3). The NSTDA conducted research projects with private businesses. Significantly at the local level, BIOTEC also had a collaboration project with an NGO, Joko Learning Center, in Nan Province, to develop a new rice variety with blast resistance (Watcharin Meerod, et al. 2011: 38). In part of this collaboration, Joko Learning Center was expected to train the farmers to become seed producers. This is the case of the *Thanya Sirin* (translated as "HRH Sirindhorn's Rice") rice variety, of which I bring to illustrate in chapter 5 to better understand the hybridized and contested knowledge in the socio-environmental movements of rice conservation and development among GOs, NGOs and farmers.

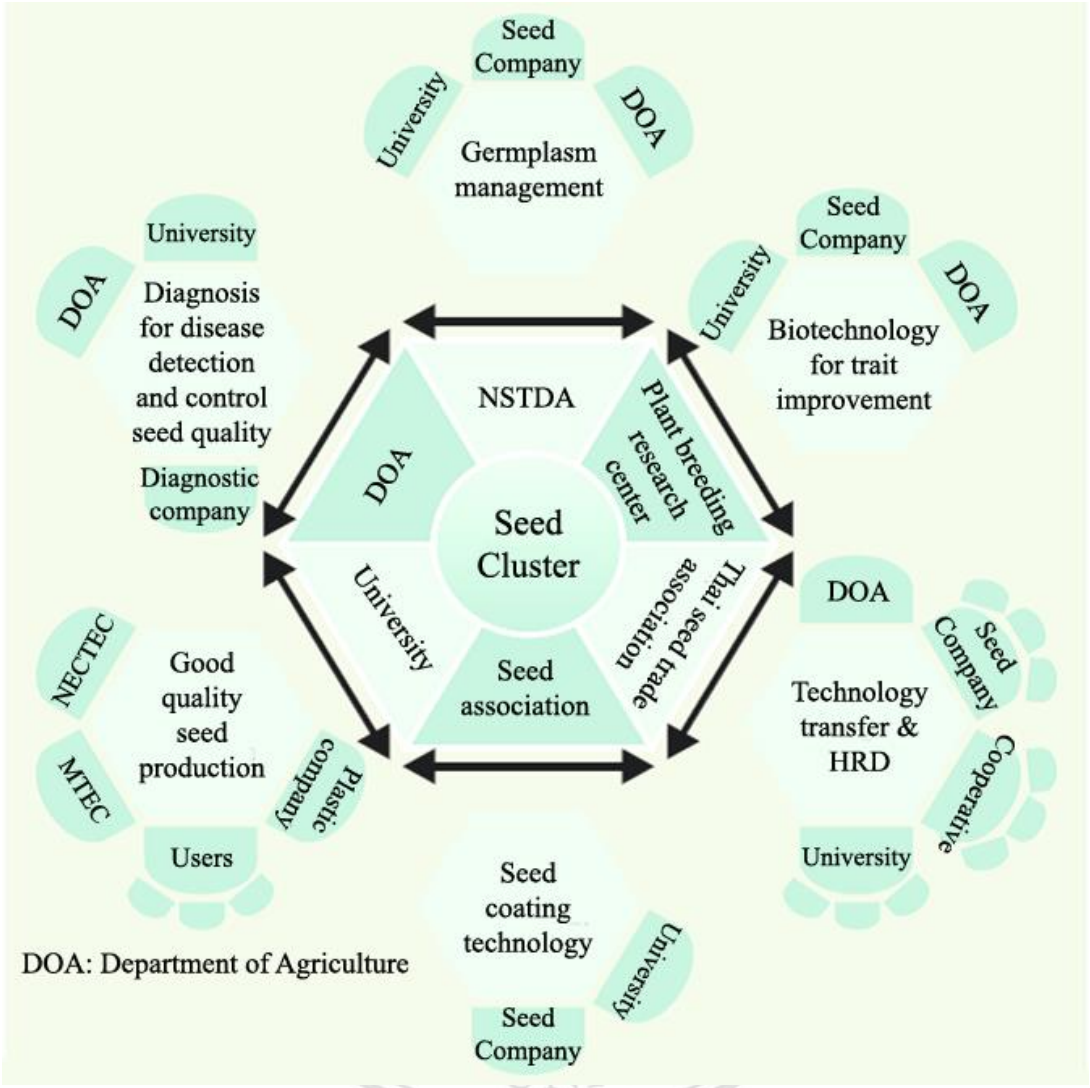


Figure 3.3 The Seed Cluster in the effort of BIOTEC and NSTDA

Source: Watcharin Meerod, et al (2011: 39)

Looking back to the Figure 3.3, it can indicate an economical model influenced by the links of actors involved in the seed industry. At the core of the network, there are the Seed Association, universities, DOA, NSTDA, plant breeding research centers and the Thai Seed Trade Association surrounded by the other sub-clusters divided by the specialization. This can be explained as the manifestation of "molecular economy" that BIOTEC and NSTDA, as a group of scientific elites, conditioned on the invented ecology for the growth of the seed industry. Notably, in the cluster model, there is no symbol that represents the small-scale farmers. They seem to have disappeared in the model. This might imply how the elites dominated

and re-positioned the farmers as not a key factor in the seed cluster. Clearly, the small-scale farmers are absent in this development model by these technocrats.

Undoubtedly, although paddy fields of small-scale farmers were utilized by scientists and farmers' labor was extracted for experiments, farmers were invisible in comparison to the scientists who had come to be known as the "provider" of biotechnology to local farmers and "contributor" to the food security of local people living in the marginal areas in Thailand.

A newsletter by BIOTEC in 2011 (see Figure 3.4) reported an event that can be seen as an effort by the elites to maintain their leading position of science and technology in the long distance order. According to this newsletter, on 24 February, 2011, in Nan Province, BIOTEC/NSTDA and the Ministry of Science and Technology, led by the Minister of Science and Technology and the NSTDA President, were granted an audience with HRH Princess Maha Chakri Sirindhorn to present 4 tonnes of Thanya Sirin rice seed to HRH. One tonne of rice seed were provided to Pariyatti Dharm Schools (Buddhism studies school), and the remaining 3 tonnes were provided to Phufa Phattana Rice Bank, both located in Nan Province. Thanya Sirin was granted the name by H.R.H. Princess Maha Chakri Sirindhorn in December, 2010. It was a new blast-resistant glutinous rice variety, developed by a rice research team from BIOTEC/NSTDA, Kasetsart University, Rice Department and Rajamangala University of Technology Lanna Lampang.

Based on this newsletter, a development of rice by MAS technology was an empirical case of the technological development that I propose that it shows the "black-box", or the complicated network, of BIOTEC and NSTDA. More than the technical practice of rice breeding, the birth of TS rice became the empirical evidence to maintain the social order by technocrats. When it was implemented where BIOTEC and NSTDA set up their main base, far from the capital of Thailand, they still had to ensure that their technology would be translated in the certain order that the technocrats could maintain their social position over the long distance network. This effort occurred while small-scale farmers, who were also part of their experimentation, were left silently behind the scenes.

Figure 3.4 BIOTEC/NSTDA presenting rice seed to HRH Princess Sirindhorn on 24 February 2011 in Nan Province

Source: National Center for Genetic Engineering and Biotechnology (2011)

Another example of an effort by the state was the Agricultural Extension Office in some districts in Nan Province that attempted to hold an annual event, the New Rice Merit. Actually, this ritual was usually held at the village level, but, in the new context, the new rice merit ritual was re-constructed by government officials to rationalize their development agenda towards rice. Such an effort, as I found in the districts of Chiang Klang and Tha Wang Pha, promoted the food security for the local farmers together by paying respect to the monarchy (see Figure 3.5). Especially, Chiang Klang District was also selected to be a place for establishing the conservation site under the Royal Initiative of the HRH Princess Sirindhorn.

In Chiang Klang District, Mr. Adisai (personal communication 2011. 2012), who worked in the Agricultural Extension Office of Chiang Klang District, explained that the new rice merit ritual, which at last became the annual festival of the Chiang Klang District, was held for the first time in 2009. In 2011, I met him in the front yard of the Chiang Klang District Office where the festival was held. On the stage, the

agricultural extension officials had arranged a pile of rice grains decorated in the shape of a tiered umbrella (ฉัตร), representing not just a religious ideology but also a royalist ideology. In 2012, I had re-visited this festival again titled "Chiang Klang People's New Rice Merit Festival of Celebration in Honor of HM The King (งานวันสู่ขวัญข้าวชาวเชียงกลางเทิดพระเกียรติพระบาทสมเด็จพระเจ้าอยู่หัว)", and met Adisai together with Dr. Patthama, who was a university lecturer conducting several rice researches about MAS rice technology. Adisai told me about the rice donation that the rice grains were "donated" by local villagers. These grains would be sold to the rice entrepreneurs. Money was then taken for establishing the rice fund which could be useful for the farmers in solving some production problems of rice, such as scarcity of rice seed for the local farmers in Chiang Klang District. In contrast to the effort to diversify rice, however, found that the rice seed contest was held and only MAS rice panicles, not TRVs, were highly promoted.

In Tha Wang Pha District, Mr. Sanit (personal communication 2012), who was the head of the Agricultural Extension Office of Tha Wang Pha District, said that the New Rice Merit festival at the district level was first held in 2010. On this occasion, rice grains were "donated" from every village in the district. In Tha Wang Pha District, the New Rice Merit Festival was held in the HRH Rice Mill annually. The primary objectives of this festival in 2010 and 2011, according to Sanit, were: a new merit ceremony held for giving the royal charity to HM King for his royal birthday anniversary; a merit ceremony or expressing the gratitude for HRH Princess Sirndhorn and for assisting HRH Princess' initiative that provided aid for people who were hit by flood since 2006 and supported the HRH Rice Mill; a merit ceremony for the district to raise funds by letting people make donations. The ultimate goal of this project was the self-reliance and cooperation of the farmers (see Figure 3.5).

Figure 3.5 Two Districts holding the annual rice festival, Chiang Klang District (left) and Tha Wang Pha District (right)

For HRH Princess Sirindhorn's Rice Mill initiative, based on Tha Wang Pha Agricultural Extension Office (2012), there were farmers in seven sub-districts in Tha Wang Pha District that attended this project aimed to produce organic rice. The project recommended farmers to utilize certain rice varieties for organic rice production, such as RD6 (obtained from Rice Research Center of Phrae Province) and Mali 105. There were also other rice varieties obtained from the Rice Department distributed for the second cropping experimentation, such as Hom Nin (หอมนิล), RD49 and Pitsanulok 2 (The Agricultural Research Development Agency (Public Organization) 2013). This was a spatial re-arrangement for establishing the community rice seed production group of the HRH Rice Mill in the future.

Furthermore, there was a private company, CP Group, which provided not only the *threshing machine*s (CP-R1000) for this project but also joined the rice field trials in order to demonstrate how to grow rice by sowing seed directly (see Figure 3.6).

Figure 3.6 *Threshing machine* CP-R1000 (left) and the field trials (right)
Source: Tha Wang Pha Agricultural Extension Office (2012) and the researcher

Under the HRH Rice Mill initiative, the irrigation in the area of Yang River was also restructured in order to supply the water for rice cultivation (see Figure 3.7). As the Yang River originates from the Phu Ka Mountain range, there are many weirs that were restructured to manage the flow of water along the watershed of the Yang River. This means that the HRH Rice Mill project influenced economic and ecological conditions in the area in order to support the farmers to produce organic rice.

Figure 3.7 Restructuring the Yang River for supporting HRH Rice Mill, the infra-structure for field trials (left) and an official map showing the targeted rice paddy fields (right)
Source: Tha Wang Pha Agricultural Extension Office (2012) and the researcher

Moreover, I found that some groups of villagers found some benefits from the project. For example, the Farm Women Group Association distributed their products

under the HRH Rice Mill. On 14 April, 2013, when I visited an OTOP shop in Tha Wang Pha District, I saw that the rice germ products were put on the shelf along with several locally processed products made by the villagers living near HRH Rice Mill, such as coffee, tamarinds, Kum rice grains and green algae (*Cladophora*) from the Nan River. In front of the Nan Hospital, for another example, I saw a billboard stating that "Rice grains obtained from HRH Rice Mill are served by Nan Hospital to the patients". This meant that the HRH Rice Mill had already connected the rural production to the consumers, like in the case of the Nan hospital (see Figure 3.8).

Figure 3.8 Rice germ food products made by a Farm Women Group Association of Don Mun village (left) and A billboard in front of the Nan Hospital (right)

3.2.2 Vegetable seed and private seed companies with their CSRs

Under the plan of the global and national agendas on the food security, not just rice seeds but also vegetable seeds were taken into the state-led development schemes which linked vegetable seeds to their use, conservation and commodification. Some projects are implemented by the public sector, but others by public-private partners. This meant that, as I will show later, vegetable seeds were connected to the assemblage of state and market forces.

One example of such connection is the effort of the Provincial Agricultural and Cooperatives Office of Nan Province that turned to focus on traditional vegetables. Traditional vegetables, based on the Provincial Agricultural and Cooperatives Office of Nan Province (2554b: Preface), were explained as:

> "The plants that inhabit the rural communities or plants that are part of the local habitat … traditional vegetables are the available food source and saved from chemical application. This picture represents the food security of rural communities in contrast to the present situation. Traditional vegetable or local plant genes are the ancestral wisdom for the household food security. Importantly, it is the ancestral heritage for the next generation".

In contrast to rice, the Provincial Agricultural and Cooperatives Office of Nan Province did not aim to support the farmers in establishing the vegetable production group while emphasizing traditional vegetable growing for household food consumption.

However, such effort had been noticed. There was a report showing that on 25 September 2014, the government, not just the private sector, aimed to form the traditional vegetable production group. In a meeting, the inspector from the Ministry of Agriculture and Cooperatives had discussed with governmental agencies, such as the Chief of Nan Governor's Office, the Provincial Agriculture and Cooperatives, the Provincial Land Development, *the Provincial* Cooperatives Auditing Office, the Chairperson of Wieng Sa Agricultural Cooperatives, the Chairperson of Pua Agricultural Cooperatives, the Chairperson of Tha Wang Pha Agricultural Cooperatives and Land Reform and the Chairperson of Agricultural Cooperatives for Bamboo Production and Trade of Yom-Jom Pra Limited, in order to cooperate with each other to achieve the project, "Happiness can grow at home" (ความสุขปลูกได้ที่บ้าน) under the Foundation of Quality Seed Sharing, under the initiative of HRH Princess Sirindhon (see Office of the Permanent Secretary for Ministry of Agriculture and Cooperatives 2014). As a mechanism of the foundation, the agricultural cooperatives offices collected and supplied vegetable seeds from farmers to the project, which distributed to other farmers who were also members of the agricultural cooperatives, whereas the project, 'Happiness can grow at home', aimed to encourage the farmers who were members of the agricultural cooperatives to use the vegetable

seeds in their production of food for household consumption and believed that this could help cut the cost of living, thus increasing their income. The project selected seven agricultural cooperatives offices in three pilot provinces: Nan Province (5 agricultural cooperatives offices), Chiang Rai Province (1 agricultural cooperatives office) and Kanchanaburi Province (1 agricultural cooperatives office) (see Figure 3.9).

Figure 3.9 Inspector of Ministry of Agriculture and Cooperatives (Left) and the vegetable seed bags exhibited in a meeting in Nan Province
Source: Office of the Permanent Secretary for Ministry of Agriculture and Cooperatives (2014)

Thus, in this circumstance, the agricultural cooperatives (ACs), as a node of the foundation, functioned in both the production and consumption sides, such as establishing the production group based on the member farmers of the cooperatives, collecting and selling vegetable seeds from the producer group and then sending them to the foundation (packing, branding, marketing), and receiving and distributing the seed packages to the user groups who were also members of the cooperatives (see Figure 3.10).

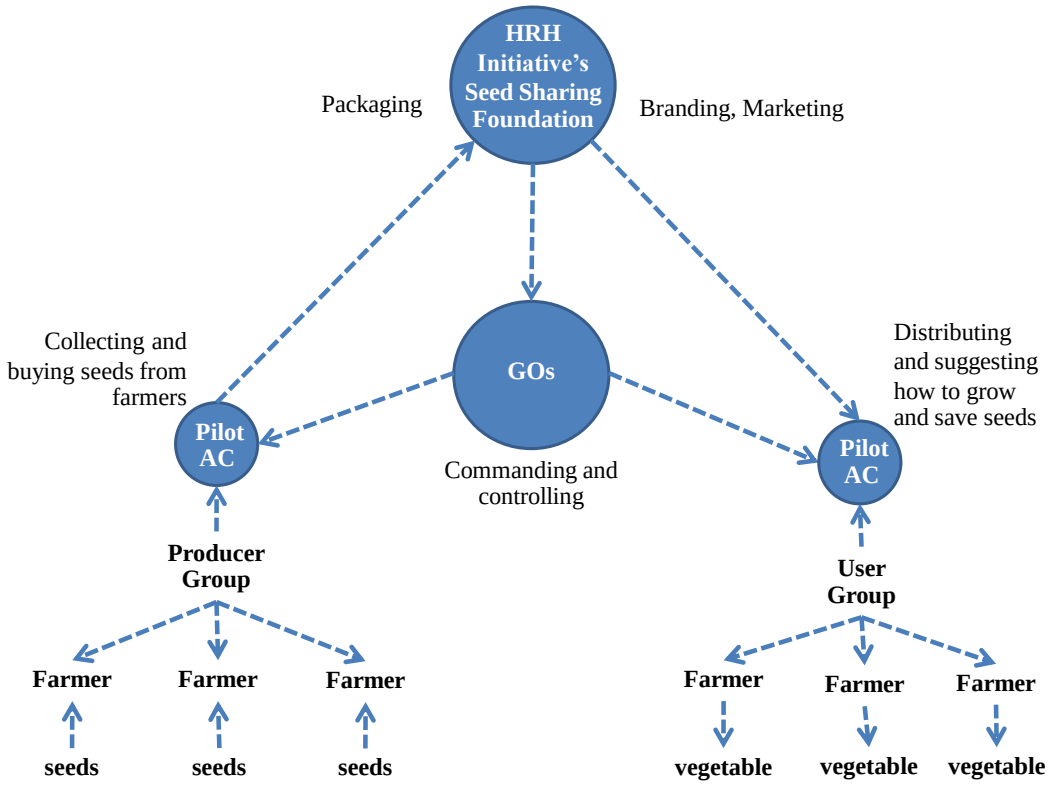


Figure 3.10 Model illustrating the initiative to establish link of seed production and consumption side under the Foundation of Quality Seed Sharing

It was also found that the private seed sector conditionally gave their products to the farmers in some areas, as well. It was found that seed companies, like East-West Seed, implemented its CSRs in Nan Province together to promote the HRH Sirindhorn Initiative in many villages located in the upland areas of Nan Province. For example, one project aimed to establish the organic seed production in Bo Klea District, and another project trained students in the same areas to grow the seeds obtained from the company in order to supply their local school with daily food (see Figure 3.11).

Figure 3.11 Trainings of organic seed production for local farmers (left) and the local students to grow vegetables for school lunch (right)
Source: East-West Seed Group (2011b; 2011c)

Moreover, in Nan Province, based on my field survey, I found that the hybrid seed production sites were mainly located in three valleys of Chiang Klang District, Tha Wang Pha District, and Wieng Sa District. In these valleys, there were paddy fields with agricultural infrastructure, in particular irrigation systems with electric water pumps and concrete dykes already installed, for supplying water necessary for the farmers to produce other crops after the rice harvest season (see Figure 3.12).

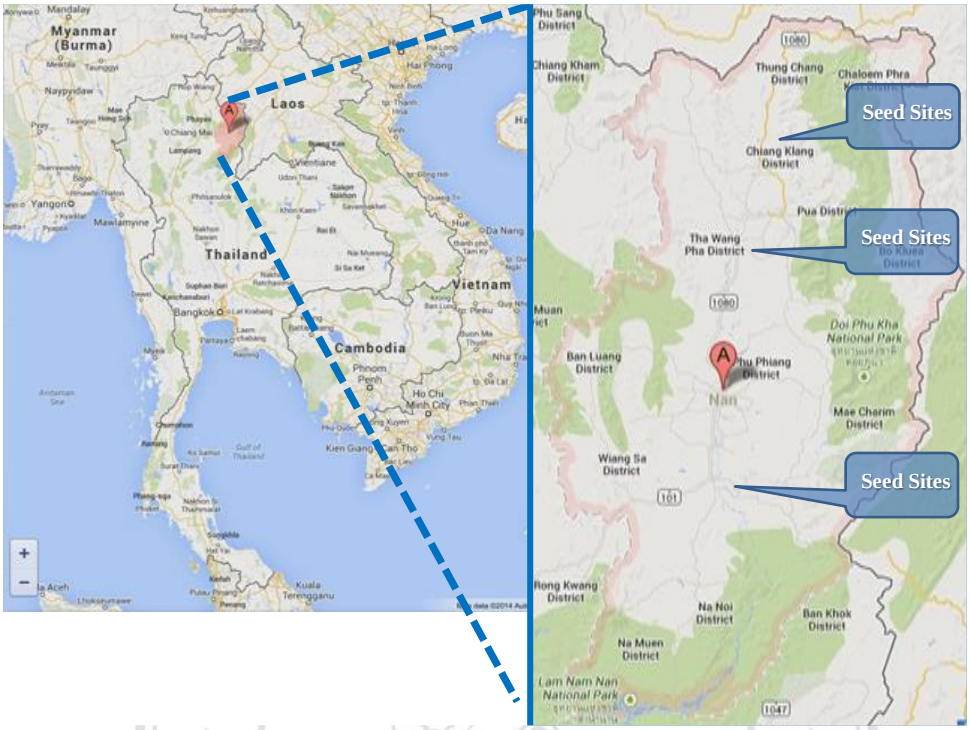


Figure 3.12 The main sites of vegetable seed production of global seed companies in Nan Province, Northern Thailand based on the research survey

An ex-staff of Chia Tai Company explained to me about the chain of seed production, which helped me see the geographical links through different labors (2013 interviewed data). First, after a successful breeding programme and getting orders from the headquarters, a seed research station in Chiang Mai Province would send the parental seeds to a seedling station located in Chiang Klang District, the northern part of Nan Province, to produce a number of seedlings. Then, seedlings would be sent to contracting farmers in the seed villages in order to grow in each farmer's plot. After the seed harvest, staff of the seed company would collect and send them to a seed testing station in Wieng Sa District, the southern part of Nan Province, for quality checking. Then, seeds would be sent to the seed factory, which was the headquarters of Chia Tai Company located in Samut Sakorn Province, close to Bangkok, for intensive quality checking and then packaging to be ready for distribution in the domestic and global markets (see Figure 3.13).

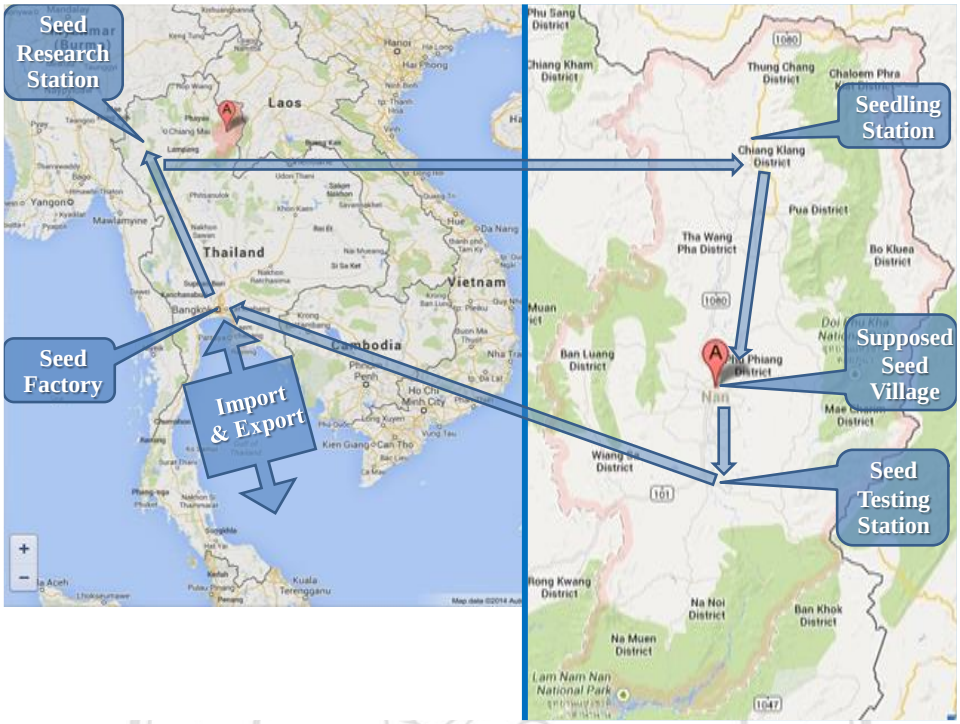


Figure 3.13 The chain of seed production of Chia Tai Company linking several sites in Nan Province

To sum up, the government linked Nan Province to the development of its agenda involving several projects that focused on certain rice varieties and vegetable seeds attached to farmers in specific places, like the lowland and highland areas. Not just the socio-economic conditions but the ecological conditions were also restructured in order to achieve the government agenda. It is also noticeable that the private sector merged their technologies to support the government projects as well. By this, Nan Province was a place where we can see many actors involved in the commodification and conservation of agrobiodiversity. The next part shows the case study of a village in order to profoundly understand the conditions in a specific area that were influenced and had become integrated into the global seed market.

3.3 TK: A village in the agrarian transitions

This part aims to explain three conditions for understanding the changing livelihood landscape of the small-scale farmers in TK Village. The demographic, the socio-economic and the environmental conditions are described, respectively, in order to understand the transitions of a village under global seed market integration.

3.3.1 Demographic condition and the contemporary household differentiation

TK is a small village located in a valley between Pua District and Tha Wang Pha District (see Figure 3.14). To the east of the village are the foothills of Phuka Mountain range, where the government had set up the Phu Ka National Park. Based on their oral history, the head man, or *Phu-Yai*, told me that their ancestors had migrated from Southern China centuries ago. According to a document, *Village Development Plan of TK Village*, which I got from the head man in 2013, "Baan TK was set up in 1567. Referring back to a story told by many generations, TK villagers had migrated from Sip Song Panna, China and (this Tai Lue group) divided into two groups. One settled down in Chiang Saen District, Chiang Rai Province. Another divided into several groups settling down along the Yang River." TK Village used to be located in the paddy field opposite side to TK Village's current location. It moved because of a flood".

Figure 3.14 TK Village in the dry season, looking north

According to the basic needs survey by the government of Thailand in 2012, the demographic data of this village (see Figure 3.15) illustrates that the population aged between 26-49 years old was the largest group; the second group was the population aged between 50-60 years old. The third group was the population aged over 60 years old. This means that this village was composed of an aging population. This is significant in the time that many actors, such as GOs, seed companies and NGOs, were launching their projects aiming to bring the rural population to farm, whereas the young population lived their lives outside the agricultural sector, many of them attempting to find jobs in the city.

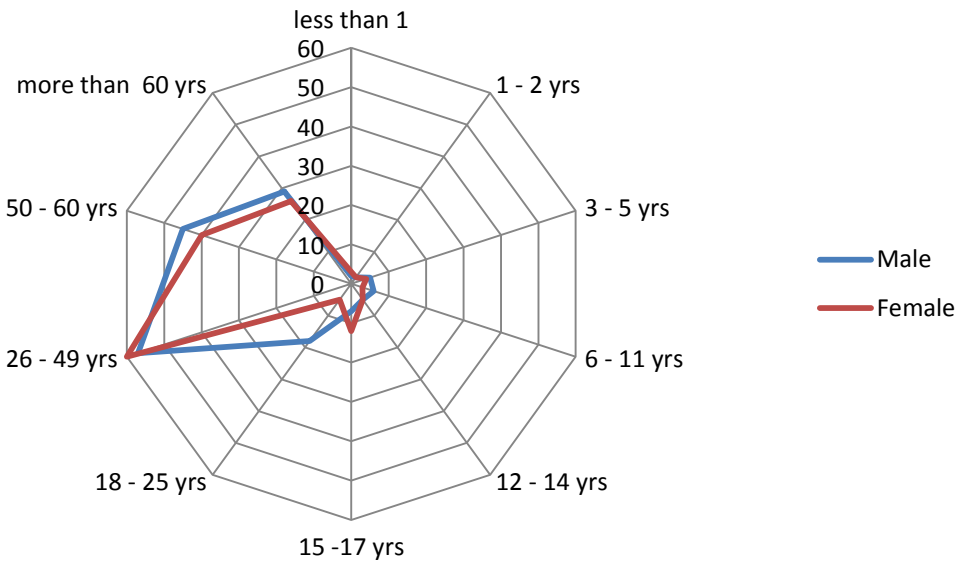


Figure 3.15 The demographic data and age structure in TK Village in 2012 based on a survey of basic needs in 2012 by the government of Thailand

In this village, there were about 510 villagers and 129 households in 2012. Most of the houses were made of wood and later added a concrete structure for the ground floor. I saw that many houses were built and shared a fence with other households. This can represent their close relationship among household groups, or this is the way we can understand the kinship in this village. One-storey concrete houses could also be seen. Based on my observation, this later house style mainly belonged to the poor or low-middle income households in TK Village (see Figure 3.16).

Figure 3.16 The styles of house in TK Village

The government survey also differentiated households in TK Village by their annual income. While the government divided the households into two groups (households with an annual income of more than 30,000 baht and one with less than 30,000 baht, thus it implies the poverty line employed by the government of Thailand), I divided into three types of household in order to see the middle group with an annual income between 30,000-100,000 baht and the groups with an annual income of more than 100,000 baht. From all household (129 HHs = 100%), the household types were 11.6 %, 86.8% and 1.55% for the rich, the middle, and the poor, respectively. Then, when considering the annual income of the villagers, we can see that the middle income group was the biggest group in the village (see Table 3.1). This can help to see the rise of the middle class in the "rural" area like TK Village. For this, the concept of the middle-income peasant in the work of Walker (2012:21-24) is useful here in applying to the case study. In other words, the middle-income peasant concept can help to explain the livelihood conditions of the farmers who were integrated into the global seed market in the contemporary Thailand.

Moreover, when considering the labour force in the household sector of TK Village, it can show the average number of household members in the overall picture is low, not more than three people a household (see Table 3.1). Notably in the wealthy household type, the average number of household members was 1.5 per household.

Table 3.1 The household types classified by annual income in TK Village

Household Classification	**Wealthy (annual income more than 100,000)**	**Middle (annual income between 30,000-100,000)**	**Poor (annual income less than 30,000)**	**Total**
Number of Households	15	112	2	129
Number of People	23	298	4	325
Averaged Number of Household Members	1.5	2.6	2	2.5
Source: Data modified from survey of basic needs in 2012 by the government of Thailand				

Based on the demographic data of TK Village, this can point to the de-agrarianization, that the agricultural sector was no longer the main source of income for the villagers in Thailand, although there were still small-scale farmers in the village where most of households were the middle income entering into contract farming. However, in the next part, I had re-classified the household groups by income in order to differentiate the household types to better apply for analysis in this research.

3.3.2 Socio-economic condition and the de-/re-agrarianization

TK Village is surrounded by paddy fields (see Figure 3.17). Like most farmers in Nan Province, TK farmers grew glutinous rice one crop per year. This was mostly for their annual consumption because there was not enough water for a second crop. Thus, most farmers preferred early-maturing rice varieties, although long maturing rice varieties were also found in use. Upland rice cultivation used to be a solution for farmers for food shortages in their households. The problem of rice and water shortages were solved when the government had promoted the new rice varieties with early maturation and high yielding characteristics and the construction of concrete

irrigation structures in the Yang River, which flows from the foothills of the Phu Ka Mountain range in 1965, contributing to more water supply for the production of cash crops after rice harvest season.

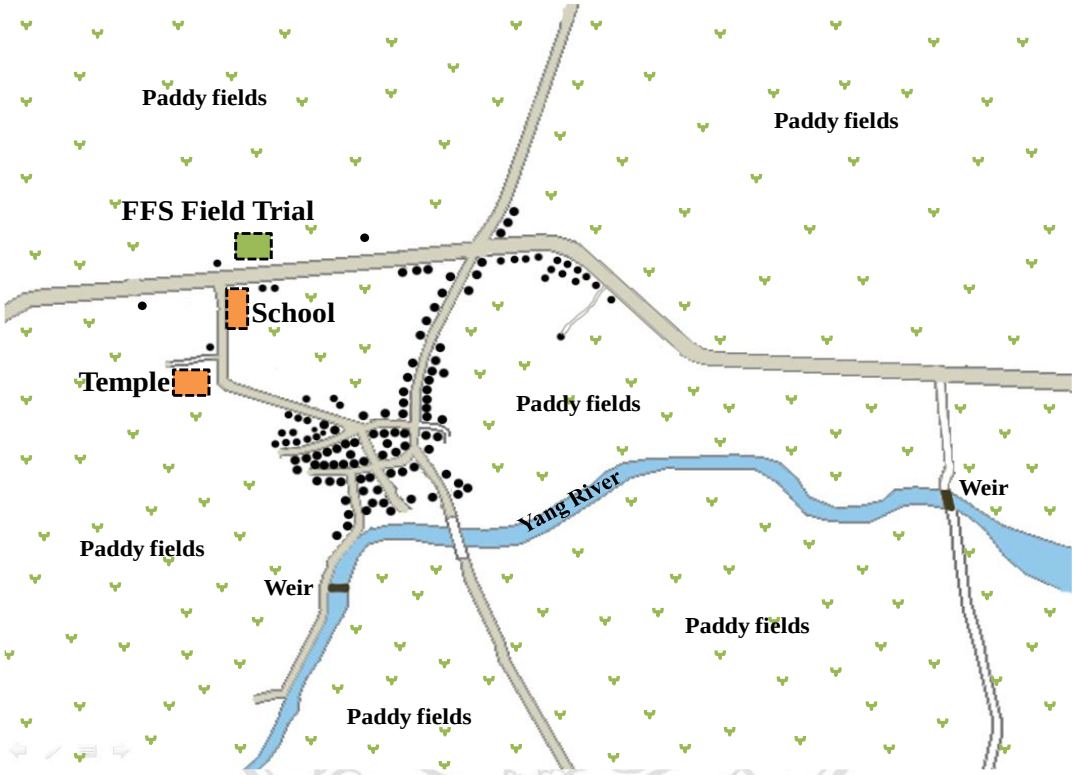


Figure 3.17 The map of a village as the field site of this study

In the 2010s, to the Northeast of TK Village in the other villages, the Thai government built two concrete weirs (see Figure 3.18). One of them was constructed under the royal initiatives. In total, there are three concrete weirs blocking the Yang River before it reaches TK Village. In 2013, the Royal Irrigation Department restructured a local ditch with concrete in order to improve the flow of water to the paddy fields.

Figure 3.18 Two weirs blocking the Yang River before reaching TK Village, the old one constructed in the 1960s (left) and the latest one constructed in the 2010s (right)

Additionally, the Yang River was blocked again by a new concrete weir at the end of the village (see Figure 3.19). This latest concrete weir, replacing a wooden one, was constructed in the 2010s by the Royal Irrigation Department. For all mentioned concrete weirs, this can point out how the Yang River was important for farmers in this valley. With intensive land use in the dry season, conflict over water access for the agricultural sector could occur among farmers in the area.

Still, the local irrigation institution, or "Muang-Fai" system, existed prior to the entry of the Royal Irrigation Department launching development in the area. This local organization was accepted by the local farmers to manage water access and conflicts over water usage in this valley. A 50-year-old female farmer told me about her experience with conflicts over water shortages in the dry season when farmers in the valley needed water for their cash crops. Prior to renovating the wooden weir to a concrete one, farmers from TK Village had disputes with farmers from other villages nearby about water extraction from Yang River. Some events were not severe, but some were. Around 2000, a lot of farmers from TK Village gathered at the wooden weir near their village. Some were angry and grabbed hoes in preparation to fight the farmers from another village located along the river. This situation subsided she told me, when the TK farmers requested the Royal Irrigation Department, the Ministry of Agriculture and the Cooperatives, to change the weir structure from wooden to concrete in 2010 because the old one was usually destroyed by floods in monsoon season and the materials, like wood, are hard to find now because of the forest reserve

enclosure and a community forest conflict with another nearby village. This can show that farmers also required the state to support their resource management. In this sense, it meant that some sections of the government were expected by the local farmers to act as the good state, while the state also benefitted from turning them into a productive force under agricultural globalization.

Figure 3.19 The condition of the wooden weir in 2009 (left) and the latest concrete structure in 2010 (right)

However, there were some areas that were located outside the irrigated areas, so farmers there mainly relied on rainfed cultivation. Also, farming in this area faced the problems of water scarcity and difficulties growing other crops after rice harvest. In the dialect of TK farmers, this area was called “Na Pha” (นาป่า, Na = paddy field, Pha = forest), or the paddy fields in the forestland. These paddy fields are mostly located far from the irrigation system, so farming in this area relies on rainfall. The rainfed paddy fields were, thus, utilized for only one cropping and then left after rice harvest.TK farmers also have different names for identifying different ecological conditions of Na Pha located around their village, such as “Na-Sang” (นาซาง, Sang = a northern dialect for a species of bamboo) for the rainfed paddy fields to the far North of the village where there are bamboo forests near Chiang Yaun Village, “Na-Mun” (นามุ้น) for the rainfed paddy fields to the far West of the village where there is a small stream called “Mun” flowing through, and “Na-La” (นาล้า) for the rainfed

paddy fields to the Southeast of the village where there is a small stream called, “La” (see Figure 3.20).

Figure 3.20 Na Pha (นาป่า) to the North (left) and to the Southeast (right) of TK Village nearby the foothills of Phu Ka Mountain range in the fallow period

The problems of rice and water shortages were solved when the government had promoted the new rice varieties with high yielding characteristics and the construction of concrete irrigation structures contributed to more water supplied for the production of cash crops after rice harvest season. At the time, the main post-rice-harvest crops were tobacco and chilies. Also, a few households still grew corn in their paddy field after the rice harvest. For tobacco and chili, the former could imply that TK Villagers became familiar with contract farming under the tobacco industry before the global seed companies established their contract schemes here.

In December 2009, I visited a couple of farmers in TK Village, including Paw Nain and Mae Kwaun. I knew them when I had been a staff of Joko Learning Center prior to conducting my PhD research. Mae Kwaun’s family could have been seen as an upper-middle income household. Mae Kwaun had two daughters who finished their bachelor degrees in food science and education. Mae Kwaun told me about the key commercial plants being famous among TK farmers, such as groundnut, tobacco, and chili, before the introduction of hybrid seed production under contract farming. She told me that:

> “At that time, chili was not a boom crop yet. Every household in TK Village grew tobacco and sold it to a tobacco factory (near TK Village). We don’t have many choices like today”.

In contrast to production of chili for local consumption, chili production had become one of the main sources of income at the time when TK Village was linked to chili sauce exportation for the world market (see Figure 3.21).

Figure 3.21 A farmer taking sacks of flesh chili to a collection point (left) and trucks of the middlemen prepare to transport their cargo to factories near Bangkok (right)

Both the public and private sectors promoted the cash crop production by TK farmers. Especially for chilies, seeing from the contemporary chili cultivation, farmers in Tha Wang Pha and other areas were introduced to hybrid chilies by a private company, Nan Food Product Company Limited Partnership. Once being a local middle man, it had become the key agent for promoting trade and exportation of the processing chili (see Figure 3.22). This company also collected fresh chilies and sent them to the processing chili factories in the Central Plain region of Thailand, such as Thai Agri-foods in Samut Prakan Province, Mae Ploy factory in Nakon Pathom Province, Suree Sriracha Chilli Suauce factory and Hi-Q factory in Bangkok.

Figure 3.22 The local middle private agent, Nan Food Product Limited Partnership (left), and processing chili products for exportation (right)

Furthermore, the Agricultural Extension Center of Tha Wang Pha district encouraged the farmers to utilize hybrid chili seeds from different seed companies. This indicates how state extension schemes are still important in the neoliberal era. At this office, I found Mr. Pirun, who had worked there for several years. Pirun actually used to be one of my students when I was a teacher in a technical college in Nan Province in 1999. Pirun had lived in a village to the South of TK Village. He told me about the hybrid chilies promoted by his office (see Table 3.2).

Table 3.2 Hybrid chili varieties promoted by Tha Wang Pha Agricultural Extension Center in 2013

Variety names	**Company**
Mae Ping	Know-You Seed (Taiwan-based company)
Yok Siam, Yok Sawan	Chai Tai (Thailand-based company)
Nom Kiew 24, Nom Kiew 51	Syngenta (Switzerland-based company)
Wieng Sa 01	Thai Northern Seed (Thailand-based company)
Source: field survey by the researcher	

Based on the household survey by this research in 2013, it was found that the average paddy land occupied by the rich, the upper-middle income, the lower-middle income and the poor were 4.13 rai, 3,55 rai, 2.96 rai and none, respectively (see Table 3.3). This can show that although farmers in this case study can be seen as small-scale farmers, there were differentiated conditions among them. Also, farmers have to grow other crops for earning income and use their land more intensively grew while TK

farmers grew rice for only one cropping a year. Suppose that a rich farmer grew RD6 rice and sold the entire amount (15 baht per kilogram of grains and RD6 can yield around 666 kilogram per rai), this farmer would get 41,258.7 baht a year from a 4.13 rai paddy field. But it is not possible because rice is crucial for the annual consumption of the farmers' households.

Table 3.3 Household types classified by the averaged income and size of paddy filed

Type of Household	**No. of Household (N=56)**	**Percent of Household Type**	**Average Income (Baht/year)**	**Average Size of Paddy Field (rai)**
Rich (>200,000 baht/year)	9	16	298,556	4.13
Upper-Middle (100,001 - 200,000 bath/year)	38	67.8	140,099	3.55
Lower-Middle (50,001 - 100,000 baht/year)	7	12.5	72,257	2.96
Poor (< 50,000 baht/year)	2	3.5	39,750	0
Source: the household survey of the researcher in 2013, the data of income modified from the government survey				

Not only had the labour force declined in many households, the demand for working animals had also decreased after farmers turned to use agricultural machines. The most obviously decreasing domesticated animal for labour was elephant, which a few households used to raise to use for lumber. Animal husbandry, in particular for food and cash, was still practiced in many households, such as fowl for household consumption and livestock, like buffalo and cattle. The raising of cattle and buffaloes for labour like in past, such as plowing and transportation had declined. In the village, six households raised them for capital accumulation.

Far from the picture of farmers who live their life in the subsistence economy outside of the industrial agriculture, farmers in TK Village used many small machines in their production and labour processes, such as tractors, two wheel tractors, water pumps, chemical sprayers, and lawnmowers. But for rice threshing, many farmers had to rely on wealthy households or merchants because of the high price of threshing machines (see Figure 3.23). In TK Village, I found that there were just two families who owned rice threshing machines in 2011.

Figure 3.23 Two wheel tractor (left) and rice threshing machine (right)

While rain had always been a key source of water in rice production, water from the Yang River was very important for cash crop production in the dry season. Most households had their own water pumps, including a water pump with an electric motor for domestic use and a water pump with a petrol engine for their farms. The latter was necessary in order to make sure that they could obtain enough water for their cash crop production, such as chilies and hybrid vegetable seed, in the dry season (see Figure 3.24).

Figure 3.24 Petrol water pump (left) and a farmer watering processing chilies in the dry season (right)

In addition, some machines were obtained from the seed companies for supporting the specific processes of hybrid seed production, such as cucumber and watermelon seed threshing (see Figure 3.25). These machines had been sent by Monsanto Company and Chia Tai Company.

Figure 3.25 Mill machines for vegetable seed harvest provided by seed companies for cucumber (left) and for watermelon (right)

Although farmers in TK Village used many kinds of machines, they still needed human laborers for some activities, like rice transplanting and harvesting. For rice cultivation, they preferred exchanging their labour with other households rather than using wage labour because it can help to cut the cost of production. In the other words, this is an economic strategy that farmers used in response to increasing wages. In contrast, in the hybrid seed production, household labor was mainly exploited for

activities such as seedling growing, hand pollination, and harvesting (see Figure 3.26).

Figure 3.26 Different labor used between rice farming (left), which needs more labor force and hybrid seed farming (right)

In hybrid seed production, I found that although the family labour was exploited, both adult and child laborers were exploited (see Figure 3.27). Child laborers, as a local "surplus" of labour in the village, can show that the global seed industry, in fact, had absorbed them into the flexible production of the global seed industry while it moved to find cheap labour in the rural areas and create a way to cut the cost of production through externalization. Child labor, indeed, is a phenomenon that has occurred around the world under capitalism for centuries. This relation was similar to what Venkateshwarlu and Corta (2001) reported in their study of hybrid cotton seed production in Andhra Pradesh, India. Indeed, not just the child labor in villages located in the valley, the children of the hunter-gatherer Mlabri population in the upland areas in Nan Province were also utilized in corn production. I found this situation when I had conducted my MA research in 2003-2004 about the Mlabri population in the upland forest in the western part of Nan Province (Sakkarin Na Nan 2009).

In contrast to Venkateshwarlu and Corta, the child labour in TK Village was not exploited directly by the capitalist farmers who hired the children from the poor families in remote areas. This occured within the family through the parents and relatives in the village as I found some households employed their son and daughter, while others hired their grandchildren.

Figure 3.27 Household labour forces also including children for hybrid vegetable seed production

After 2001, contract farming for hybrid seed production was gradually accepted by TK farmers to earn income after rice harvest. Chia Tai was the first seed company to start its contractual production scheme in TK Village. It is noticed that there were a few households gaining entry into this business under Chia Tai Company. Then two newcomers, Monsanto Company and East-West Seed Company, reached out to TK Village after 2011. At the time of my research, there were 44 households getting entry into contract farming for vegetable seed production for global seed companies, while 46 households grew processing chilies for the chili sauce export industry (see Table 3.4).

Table 3.4 A survey of households in 2013

Crops	Total production HHs	HHs keep only one production	HHs keep both production at the same time	HHs getting entry of commercial crop production	HHs not getting entry of both commercial crops	Total HHs
Processing Chili	46 (35.65%)	22 (17%)	24 (18.6%)	66 (51.16%)	63 (48.83%)	129 (100 %)
Contract farming Seeds	44 (34.1%)	20 (15.5%)				

Source: field survey by the researcher

Under the entry of contract farming, several spaces of the farmers' house, not just their farmland, were also transformed to serve for activities in this business. An example was the storage of the produce. After farmers collected the produce in the farmland, they took it to their house for curing (see Figure 3.28). During this process, farmers left these vegetables for a few weeks in order to let the seeds extract the nutrients before being ready for threshing. This can point out that the economic activities under global seed market integration not only turned small-scale farmers into the semi-proletarian in the post-Fordist production but the houses of these farmers were being re-arranged to be part of this economic integration. Indeed, this business did not transform their family labour and things in their farmlands only, rather, it transformed their livelihood landscape.

Figure 3.28 Farmers' housing space divided into storage places for hybrid seeds

Nevertheless, we cannot equate a rural villager as a farmer or a rural as a farm. This can illustrate the condition of de-agrarianization in TK Village when new generations moved to other sectors, leaving their households containing their parents and children. In other words, we cannot totally equate rural with farms or the farmer population because there was more social differentiation in the rural population under globalization (see Table 3.5).

Table 3.5 Major occupations of households of TK Village in 2013

Major occupations of households	Number of households
Farming (rice cultivation, cash crops)	87
Wage labor (on-farm and off-farm jobs)	13
State officials	6
Merchants	6
Business (garage, construction)	3
HH with members working abroad (factory workers in Taiwan, Thai restaurant owner in Singapore)	4
Unemployment (handicaps)	6
Others (retired state official)	1

Source: field survey by the researcher

The 2013 survey data above is also reflective of the changing livelihood of TK villagers in relation to the migration for work domestically and abroad (see Table 3.6). Based on my own household survey (56 random selected households) in which I

divided household types into four groups (rich, upper-middle, lower-middle, and poor), it was found that a lot of TK villagers had left the village to work in many places domestically and abroad. When analyzing the domestic labour, they had worked in many provinces such as Bangkok, Chaing Mai, Sukhotai, Phuket, Phrae, Chonburi, Rayong, Songkla, and Samutphraklan. For working abroad, they had worked in Taiwan, South Korea, Singapore, India, USA, Tanzania, and Saudi Arabia. The domestic labour included construction, factories, soybean harvesting, sugar cane plantations, off-shore fisheries, supermarkets and custodial staff. The foreign labour included restaurants, construction sites, and factories. Notably, the poor households never went outside the village to earn income in contrast to other types of households. This can show the fewer opportunities of poor families in the global economy in both agricultural and non-agricultural sectors.

Table 3.6 Household type and migration for labour

Type of household	**No. of households**	**Work in other provinces**	**Work abroad**
Better-off (>200,000 baht/year)	9	3	3
Upper-Middle (100,001 - 200,000 bath/year)	38	13	6
Lower-Middle (50,001 - 100,000 baht/year)	7	3	4
Poor (< 50,000 baht/year)	2	0	0
Total	**56 (100%)**	**19 (33.92%)**	**13 (23.21%)**
Source: Data from the survey of researcher			

However, it does not mean that one who can find work abroad is always successful. This can be seen from the tragedy of male farmers in TK Village who had received jobs as workers in construction sites in Singapore. Once in the 1990s, when men in TK Village decided to find a job in Singapore, many of them followed their relatives to work in construction sites while Singapore rose as one of the global cities. “We travelled by bus, not by airplane, to Singapore,” said a 67-year-old man, Paw Chan, who had worked there for a few years.

Paw Chan's life as a wage labourer began when he was a child; he worked in ground nut farming and got 3 baht a day. Then, when he was 16 year olds, he followed a caravan of cattle from Tha Wang Pha District up to Phu Ka Mountain heading to Bo Kluea District for rock salt trade. He got 20 baht for a 6-day roundtrip. After getting married, he migrated to Sukhothai Province as a wage labourer in a sugarcane plantation. By selling his six cattle and remaining buffalo to help his family in rice cultivation, he spent some money for a passport and for a labour broker.

Then, when he was 44 years old, he started to work as a carpenter in construction sites in Singapore for two years. There, he stayed with Thai people from other provinces, such as Phayao and Ubon Ratchatani. "They find us a hotel to stay together. At 1 AM, the policemen came and checked whether or not we had a passport. Workers who didn't have one got arrested." In order to save money, he said, many workers turned to eat instant noodles because of the high cost of living in Singapore. This can show more than the food scarcity but also the livelihood struggles of migrant workers in Singapore. Paw Chan told me about his illness during that time that:

> "I nearly died one day that I went to work on the fifth floor of a building. At 3 pm, I felt my eyes turn yellow. I told my headman, and he took me to hospital. I got some medicine and went back to my dorm. That night, I felt cold; my body started trembling. My friends put a spoon in my mouth. I thought of my dad and mom. Many workers said a ghost of a widow might have been searching for me".

With fear of a widow ghost attack, they bought female cosmetics and combs in order to pretend that there were no men. Paw Chan luckily survived and could return to Thailand with some money earned during their time in Singapore. But one of his relatives did not. He died and returned to TK Village in a coffin. This story of Paw Chan, indeed, reflects the phenomenon of Thai migrant workers in Singapore in the 1990s. This can be concluded by Pattana Kitiarsa's (2014: 137) remark that "The lucky ones make successful homecoming trips alive and richer. The not-so-lucky ones

return home in debt. The most tragic and unlucky ones return home in coffins or as cremated ashes."

Living in TK Village, one may see from the changing livelihood landscape that the high-value commodities like hybrid seeds also come with re-arrangement of socio-economical relations for the intensive on-farm work. To say more, the intensification of production seemed to have been compatible with the emerging social value of working hard made visible in many concrete forms found in the public space of TK Village. As I noticed, in front of the market place of the village, an advertisement for synthetic fertilizer was shown at an agricultural product shop (see Figure 3.29). This advertisement told its audience that every small entity contained in the synthetic fertilizer could work hard and that it was the best fertilizer.

Figure 3.29 The agricultural equipment shop in TK Village and the fertilizer advertisement, "Industrious fertilizer, every granule works hard"

Indeed, "working hard" as a moral value was made visible literally, not just in the shop but also in a message on the fence of the farmer broker in TK Village. While the messages in other houses' fences and the motto of the village mentioned other moral values and the development of the village, the message of the farmer broker seemed to emphasize that working hard belonged to a certain group of people within

the village (see Figure 3.30). This might be interpreted politico-economically that such morality was made to be seen as self-sacrifice, while it actually called for more self-exploitation of farmers in agricultural labour and hybrid seed production.

Figure 3.30 The message found on the fence of the farmer broker for hybrid seed production, saying "There is no poverty in the group of hard-working people; long sleep, less work; money makes a happy face; no money, no happy face"

The production of rice in TK Village was not just for the annual household consumption and household income but the surplus rice also contributed to the villager's capital accumulation (see Figure 3.31). As I noticed the villagers turned to organize the new rice merit ritual in response to the money demand to support the primary school in their own village. By this, rice grains as a commodity was turned into the economic capital and social capital for supporting the children learning in the local school.

In 2012, the Thai government through the Ministry of Education launched a project in which each child would receive a tablet computer, especially Prathom 1 students. Students in the primary school in TK Village, after the project was subsidized, got their tablet computer. However, the school teachers couldn't tech their students how to operate this kind of computer. Thus, the director of the school consulted with the TK Village committees, contributing to an effort to raise a fund to hire a computer instructor to teach the students. They used a traditional ritual practice,

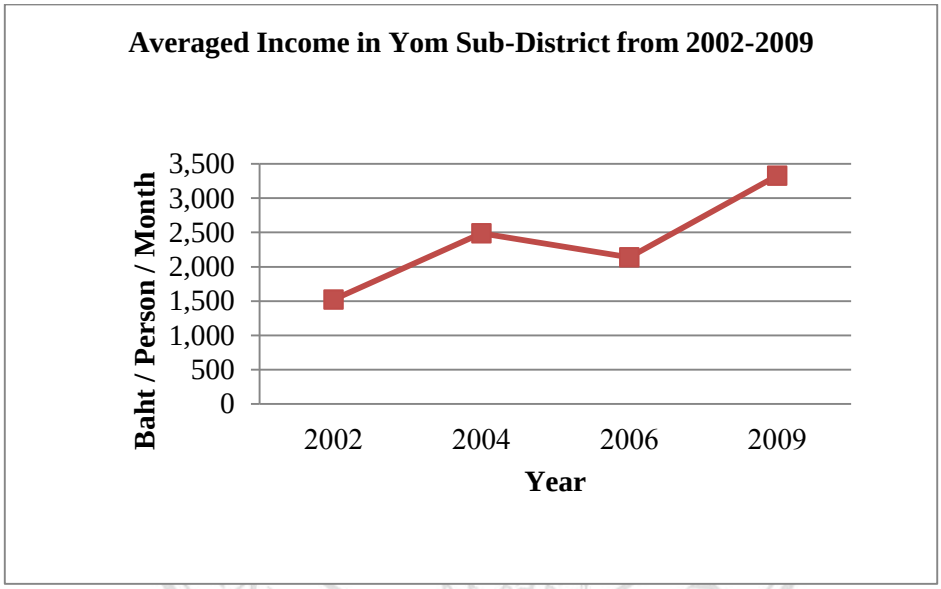
the new rice merit, for accumulating a rice grain surplus to raise the money. However, this event was separate from the normal practice of the villagers for the annual new rice merit held at the temple in TK Village. The grain price was differentiated by market preference towards the rice varieties: price of TRVs was lower than HYVs.

Furthermore, in the new rice merit festival held by Tha Wang Pha Agricultural Extension in 2013. TK villagers, like every village in the Tha Wang Pha District, was asked to "donate" one kilogram of their rice per household to join the district festival held at HRH Princess' Rice Mill. By this, the establishment of the new rice merit festival in the village and district levels indeed became a social space involving several actors in this area.

Figure 3.31 Rice grains collected from all households in TK Village in order to earn money for supporting the primary school in their village to hire the tablet computer instructor (left) and rice grain collection for sending to the annual District Rice Merit held at HRH Rice Mill (right)

So far, based on the national statistic data representing the average monthly income of the sub-district where TK Village is located, it has been found that the average income gradually increased from 2002 to 2009 (see Figure 3.32). This means that the economic condition might have been better than the past. However, the average income in 2009 could indicate that the economic status of people in this sub-district is just above the poverty line (around 2,500 baht per person per month). Indeed, the average income might not represent the differentiation in the rural areas, as I found in this study that there were still poor families in villages who could not

celebrate the coming of hybrid seed production. In other words, not all farmers or all households could engage with the new economic sector in producing the high-value commodities for the global market. To say more, now people living in rural areas were more differentiated in both de- and re-agrarainzation. Thus, we cannot employ the evolutionist model that points out the disappearing peasant in the agricultural modernization or agrarian transition.



Statistics of average income in Yom Sub-district from 2002 - 2009

Year	Averaged Income	Population of the poor
	Baht/Person/Month	Percentage
2002	1,523	44.67
2004	2,488	25.6
2006	2,137	34.75
2009	3,327	13.4

Figure 3.32 Averaged income in Yom Sub-district from 2002 - 2009

Sources: National Statistic Office of Thailand (NSO) (2014)

Interestingly, I found that a remark by a 57-year-old female farmer (personal communication 2009), who used to be a contracting farmer for Chia Tai Company,

can reflect the socio-economic transition of TK Village, especially when there were global seed companies in the village. The reason why she decided to join contract farming for hybrid seed production was that she wanted to earn money to support her two sons to study at the university level. This was crucial for her household since her husband, as a wage labourer, died at a construction site in Singapore in 1990. She started producing sugar pea seeds for Chia Tai Company in 2006. She told me that:

> "In the present, the seed companies threaten farmers. The paddy fields around here are utilized to produce seeds for them. Still, the well-being of TK farmers is better. We have more money to support children for higher education".

Her point of view is relevant to what Rosset et al (1999: 86) found in their research on the farmers who produced hybrid tomato seeds for the global seed companies in the Northeastern Thailand. Based on their survey, 85 percent of farmers felt that they were wealthier than in the past after getting entry into contract farming for hybrid seed production. This means that small-scale farmers had not perceived their socio-economic transitions in the extremist model of capital accumulation and total corporate power over their livelihood landscape, although inequality and social differentiation could be found. In the next part, the environmental condition will be described in order to understand the agrarian transition of TK Village.

3.3.3 Environmental condition and the relational environmentalism

In the rainy season of May, 2011, I drove my car and stopped at the TK FFS building in order to observe the rice varieties being grown in the FFS field trials. I saw an old man and woman watching another man with a two-*wheel tractor* plowing the paddy field. I took off my shoes and walked barefoot along the paddy ridge to see them. In my mind, it was such a good feeling as my feet could touch the green grass. My romantic mood was short-lived. I did not notice that there were the sensitive plants growing on the ridge that had thorns on its stems and branches so I had to avoid stepping on them, but it was hard to do because there were many of them on the ridge. This act of walking and hopping looked funny and foolish, as one female farmer told

me later about a story of me that she heard from that 65-year-old male farmer, Lung Sung, who saw me at his paddy field that day. She explained to me that TK farmers wore their riding boots, not walked barefoot, in order to protect their feet not only from thorns but also any chemical contamination that may be on the ground and in the water in the other farmers' fields (see Figure 3.33).

Figure 3.33 Farmer's clothing when working on their own farms and on others'

In order to change their livelihood to engage the intensified cultivation of farmland and to reduce their exploitation of forest land in that decade did not mean that TK farmers would not care for the environment. For this, it meant that TK farmers, in their own practical way, understood that the production of hybrid seeds with chemical application impacts their health and their agricultural environment. That's why they had to protect their body from chemical substances.

Another example that can show the farmers attempted to handle their farming environment can be seen in the protection of some bird species. This can be seen as a way that the farmers still cared for nature and simultaneously re-shaped their production landscape together with non-humans. The coming flocks of Asian openbill stork (*Anastomus oscitans*) in TK in 2011 were understood to be a positive impact for rice cultivation (see Figure 3.34). TK farmers saw that the birds helped in getting rid of the golden snails which were seen as a pest for rice cultivation. The villagers

protected them by establishing a community consensus that banned killing openbill storks.

Figure 3.34 Hundreds of Asian openbill stork migrating to a TK paddy fields in 2011

Protection of the common pool resources necessary for their everyday life was important for TK farmers. Not only the water; the fish sanctuary was also reflective of how villagers turned to protect their environment through the ideology of the commons. Interestingly, the village's fish sanctuary was actually established in 2012 in the Yang River near TK Village. The community rule was set up in order to enforce a ban on fishing in the fishery. For example, people who captured a fish in the community fish sanctuary would be fined 5,000 baht (see Figure 3.35). The absolute exclusion of access to the fishery resource was not found. I found that the annual exploitation of the fishery resource in the village's sanctuary was held in December, or after the rice harvest season. According to the ex-headman of TK Village, this village could earn around 50,000 baht each year by allowing villagers from other areas to catch fish in the one-day open fishing ground. The fishing gear which was

allowed to be used included cast nets and lift nets. Bombs, poison and electricity were not allowed.

In the production landscape of TK Village, I also saw that some of the farmers had turned to use compost in their production. One farmer told me that he used compost because he knew that fertilizers, if applied continually, would degrade the soil quality. In the village, there was a compost production building, supported by the Land Development Department, to support farmers who want to apply compost to their farming. Because of these efforts, it cannot be said that "Nature" in the industrialized landscape has been totally destroyed or disappeared.

Figure 3.35 Fish sanctuary in the Yang River established by using the community regulation (left) and the compost production building (right)

Furthermore, as TK Village had become the site of operation under development agencies, especially environmental NGOs, it is interesting that, in fact, TK villagers understood the socio-environmental changes that impacted their livelihood. One example can be seen in an effort by the Agriculture and Cooperatives Office of Nan Province together with Joko Learning Center in launching a project on food security in 2011 (see Figure 3.36). I was there to observe this event and help in making a list of the food sources and biodiversity found in TK. Based on the data I obtained from focus groups, there were 20 plant varieties found in use in home gardens, 12 cultivated plant varieties found in use in paddy fields, 13 uncultivated edible plants found in use in paddy fields, and 12 undomesticated edible animals found in use in paddy fields. By this, it can be seen that farmers utilized both domesticated and non-domesticated species found in their environments. To say TK

farmers relied on the domesticated species and MVs might mislead to the conclusion that those non-domesticated plant and animal species were still part of the functional biodiversity and the farmers' livelihood, although they were integrated into the global seed market.


Figure 3.36 Officials of the Provincial Agricultural and Cooperatives Office of Nan, Joko staff and TK villagers in the meeting held in TK temple under the Community Food Security Scheme in September, 2011

Importantly, the surrounding forest had become less utilized by TK villagers as they turned to use their farmland more intensively. In contrast to the past, the forest surrounding the village was utilized by many villages. Forest land was cleared by villagers for upland rice cultivation, but, after government aims to expand the national park, many villages, in particular one located at the foothills of Phu Ka Mountain, had to stop their upland rice cultivation. A 57-year-old farmer (personal communication 2009) told me that farmers at the present took many kinds of plants that once were cultivated in the forestland to the paddy fields, except the upland rice. Notably, there were two TK farmers who still cultivated the upland rice in 2009. She said that:

> "In the past, TK villagers did not grow corn in the paddy fields. Nowadays, corn fields have been moved from Phu Ka Mountain. Several kinds of plants, not just corn, which used to grow in the forestland, they come to paddy fields".

For TK Village, to the north and the south were forest lands that were later cleared for farmland under the context of land entitlement by the government. Still,

there were some areas left as the common forest land. This was the land which had started a conflict between TK villagers and another village nearby (see Figure 3.37). TK villagers had experienced conflicts over access to this land for decades.

However, the conflict over community forest was not as severe like other villages, where villagers were arrested by Royal Forestry officials and policemen. But, if not all TK villagers used the resources in the community forest, why was it important to the village? Actually, I argue that the crisis of identity had become part of the conflict because the state had emphasized the villagers to follow the King's and Queen's initiatives on forest conservation, and the government had set a condition that the village could get funded in order to use it to support their conservation. As the ex-headman told me (ex-headman personal communication in 2014), a few years before, the precise confrontation was when the new headman attempted to clearly claim on such forest land by taking a lot of TK villagers to re-forest for serving the King's birthday. After they left that forest, many villagers from the nearby village came to uproot the tree seedlings and destroy the billboards that stated the activity implemented by TK villagers for the TK community forest.

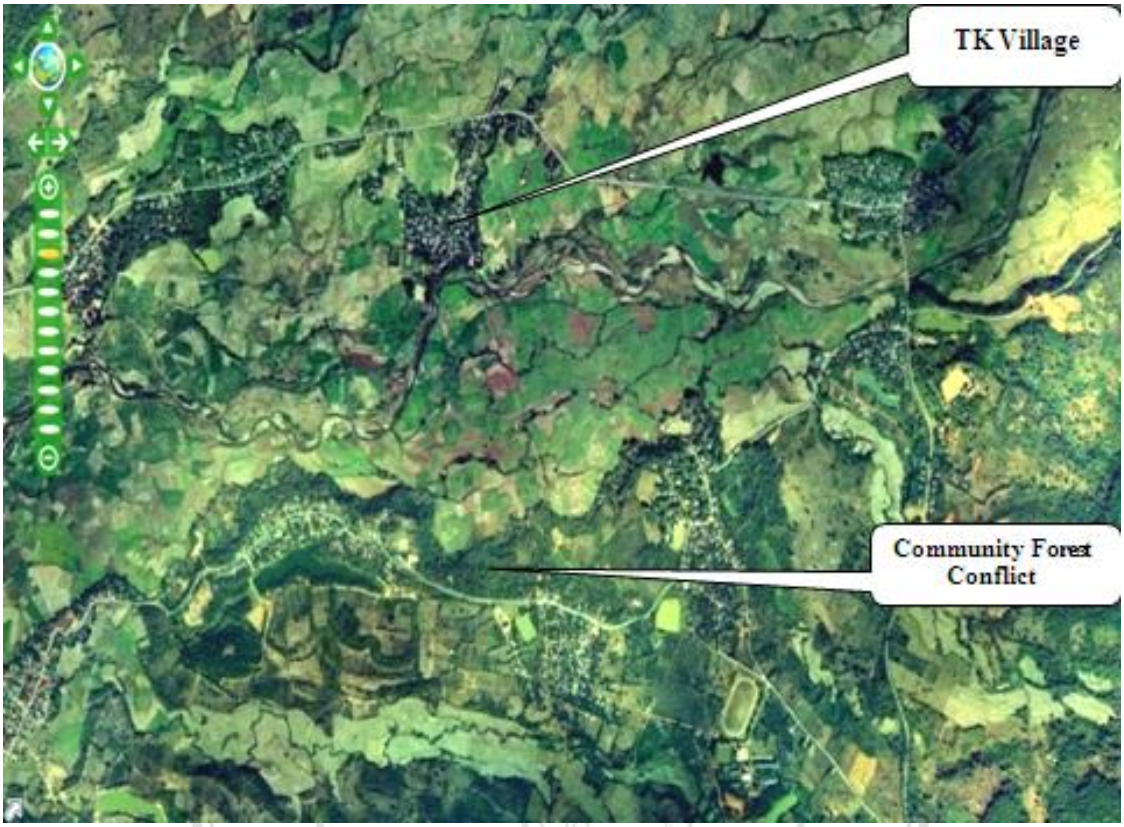


Figure 3.37 The land use and the conflicted community forest area

3.4 Chapter conclusion

This chapter has shown two important aspects. The first was the emerging cooptation of GOs and NGOs in the rice seed sector and of GOs and the private sector in Nan Province. The second was the transition of a village called TK shown to understand how this place had become a crossroad of commodification and conservation of seed. While Nan Province had become a contested terrain of hybrid governance of nature, we can see that TK farmers were attempting to adjust their livelihood in the new economy. The way they changed their production, contributing to the specific human and nature interactions, can be seen from the changing livelihood landscape involving the demographic, socio-economic and environmental conditions. This would be useful for understanding a broad enough context of the changing situation of small-scale farmers in the northern Thailand described in the following chapters.