Agricultural Transformation within the Modern Industrial Zone of Nam Phong District, Khon Kaen Province, Thailand[1]

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Abstract

Research on the agricultural transformation of the developing world seems to polarize in two directions. In one, peasantry persists in the midst of capitalism; in the other, the focus is on agricultural modernization. This article examines agricultural transformation in the context of industrial relocation into rural areas. It focuses on how established industries implicate and restructure the agrarian relations of agricultural communities adjacent to industrial estates. Empirical data were drawn from qualitative community studies. In-depth interviews were conducted with two local authorities, nine small farming operators, four formal community leaders, and eight informal leaders. In addition, focus group discussions were conducted with 17 participants. We argue that agricultural transformation has intensified the use of modern inputs along with the adoption of cash crops and the production of agricultural commodities oriented toward markets. The relocation of industries into rural areas lowers urban migration; however, the agricultural labor shortage is increasing. Agrarian relations are largely structured around agribusiness credit institutions and credit packages, while land concentration remains minimal. Finally, rural communities have become urbanized.

Keywords: agricultural transformation, agrarian relations, rural urbanization, Northeast Thailand

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Introduction

Agricultural transformation in developing countries can be considered a part of structural transformation, in which a country moves from a traditional agricultural production base toward modern industries (Lewis, 1954). It is assumed that rural agriculture possesses surplus laborers who are either unemployed or underemployed. This gives rise to opportunities to relocate laborers from agriculture to modern industries, as agricultural labor margins are relatively low. The process of structural transformation, therefore, involves the migration of laborers from the agricultural sector into modern urban industries. Consequently, the structure of the economy gradually shifts from being based on agriculture to modern industry.

The debate over agrarian transformation seems to have polarized and concretized around two subjects. On the one hand, the debates focus on the 'peasant mode of production'—the extent to which peasant types of production have been affected by the development and establishment of capitalism. This debate was initially fueled by Chayanov (1966) in his treatment of the organization of household production that resists integration into the capitalist market. Chayanov sees that the twin purposes of production (i.e., for the maintenance of household consumption and for market exchange) are core to the persistence of peasantry. In bad years, peasant households can reduce their consumption, yet in good years, they cannot maximize their production because what they produce will be mainly 'exploited' through market exchange. Later, the debates expanded to include the moral economy of the peasantry (Popkin, 1980; Scott, 1985). Surprisingly, King Rama IX's formulation of the 'sufficiency economy' (in Thai, sethakit phophiang), which has been widely constituted in Thai public policies, is, to a certain extent, consonant with peasant moral economy formulation. Dayley (2011), however, suggests that this type of policy is exemplary of the 'agrarian myth, as farmers who could be classified as 'peasants' are rare or may not exist. Above all, this line of study has generated endless and unresolved debates as to whether the 'modes of production' exhibited in developing countries are peasant or capitalist modes of production (Bernstein, 2001).

Lately, studies in this field have examined the different types of rural households' capital assets that allow them to diversify their livelihood strategies (Chambers and Conway, 1991; Bouahom, Doungsavanh, and Rigg, 2004; Thongyou, 2014). These studies are less concerned with the persistent peasant mode of production. There is a range of ways or 'strategies' that rural farming households adopt to earn their living, and the actions of rural farms can result in the 'mixed' mode of production and the survival of rural household production. These actions may be broadly similar but are the result of individual household decisions rather than class-related actions.

Other studies of agricultural transformation are more concerned with the 'modernization' of agricultural farms. In situations where food demands were either stable or growing (partly to fund economic growth and keep the price of the food low), there were efforts to improve agricultural productivity. This was widely known as the green revolution (Gollin et al., 2021). However, there are growing concerns about the destructive effects of modern agricultural inputs in green revolution programs, such as their degradation of the natural environments underpinning agricultural production, the health risks they pose, etc. Recently the concept of agrarian transformation embraces a range of issues such as food regimes (Bernstein, 2015), climate change (VCCI, 2022), etc. However, the focus of analysis remains on modern economic actors, particularly the agribusinesses that can maintain their dominance and control through modern input markets, modern retail food markets (Promphakping and Wongon, 2020; Phongsiri, Nakham and Meekaew, 2020), credit markets, and new types of production arrangements, such as the contract farming system.

Within the modern Thai economy, the agricultural sector persists. 'Agricultural households' and farming practices have changed greatly from the past, although the extent to which present agricultural households can be classed as 'peasant' is debatable (Dayley, 2011; Sattayanurak, 2016). Informed by both facets of the debate mentioned

above, we examine the agricultural transformation taking place in rural areas where industries are firmly established. The questions we seek to answer are whether and how the established industries affect the agricultural transformation of the nearby agriculture communities, thereby reshaping agrarian relations. Before we present our methods and findings, we first offer a brief literature review.

Literature Review

Although studies on agrarian relations in Thailand abound, one deserving particular attention presents research aligned with the 'Chatthip School' (Nartsupha, 1984). Nartsupha rejects Ingram's thesis that after the signing of the Bowring Treaty, the Thai economy became an 'export economy' (Ingram, 1955). He insists that the economies of Thailand consist of the national economy, which is characterized by modern capitalism and is well integrated into the global economy, and community economies, which are essentially the household organizations of laborers and capital in production. The validity of Nartsupha's thesis is demonstrated by the work of Thongyou (2003), in which farmers in the Nam Phong watershed were distinguished into three types: small entrepreneurs, farmers in irrigated zones, and farmers outside the irrigated zones. The third type was unable to meet their families' needs through agricultural production. Thongyou argues that the factors contributing to the delay of incorporation of farmers into capitalism include the following: 1) the household or the family farm is a unit for managing labor and resources; 2) off-farm employment is increasing, particularly through migration; 3) rice production is retained alongside the adoption of new crops and economic diversification; and 4) although the land is becoming fragmented, some farming households were able to maintain land through cash income gained from economic diversification.

Another group of studies focuses on the 'political' nature of peasantry. They rest upon the premise that the political forms of action by farmers in Thailand, and perhaps throughout the developing world, are curbed by 'patron-client relationships' (Scott, 1972). The Thai state

has succeeded at incorporating local social ties—the families or the 'local powers' (Phongpaichit and Baker, 1996)—into the patronage of the state. However, the work of Turton (1987) breaks from this tradition to focus on 'revolutionary' aspects, class consciousness, and the political actions of Thai farmers. Recently, however, there have been debates on poor farmers in rural areas being drawn into the networks of political canvassers or the local powers and accepting money in exchange for casting votes. This analysis was recently challenged based on the 'Red Shirt' political movement that was supported by great numbers of rural people (De Jong et al., 2012) who cast their votes in support of policies presented by the political parties (Phatharathananunth, 2016) that offered them 'value' or 'benefits.' The conventional concepts of patron-client relationships or even 'peasantry' or 'farmers' hardly reflected the transformation occurring at the local level (Dayley, 2011; Sattayanurak, 2016).

Several studies of agrarian transformation in Thailand emphasize the processes of change, and a number of these shed light on migration and socio-cultural change in rural communities, based on the structural transformation model (Fuller et al., 1983). Recent studies highlight the complexity of migration. For instance, Podhisita (2017) notes that the continuing migration of rural people to urban centers occurs because rural families continue to expect migrant members who go away to return in the future. Keyes (1976) notes that rural villages have become cosmopolitan villages because of their connection with overseas migrants. Rigg et al. (2012) offered an analysis of return migrants during the stagnation of Thailand's economy, depicting this process as 'personalizing' the middle-income trap of return migrants. Rungmanee (2021) shared the same view as Rigg et al., that the continuing process of migration passed from one generation to the next creates some traps, such as a trap for rural development. Charoensri (2020) reviewed the different aspects of migration, focusing on migration as a response to economic conditions or as a result of the inequality of the global economy. These views of migration are not concerned with the process of individual decisions, for example, highly-skilled migrants were

ignored as a *'subject'* of study, etc. Charoensri, therefore, proposed suitable frameworks for studying migration *'from migration studies to the mobility paradigm.'*

The last set of research on agricultural transformation in Thailand to be mentioned here examines the institutional aspects of the peasantry. This research occurs in the fields of sociology and economics and assumes that peasant society lacks modern institutions, with the result that agricultural transformation must involve the 'transplantation' of modern institutions into peasant society. The key institution to be established is that of property rights to land. However, although mainstream theories predicted that rural farmers would desert their land to take on more lucrative urban employment, as mentioned above, the prediction has been subject to criticism. Walker (2012) argued that the state policies concerning land property rights favor small farmers, and therefore large parcels of agricultural land remain in the possession of small farmers.

Another institution affecting agricultural transformation is credit access. Thailand provided credit to small farmers by establishing the Bank for Agriculture and Agricultural Cooperatives (BAAC) in 1966 (BAAC, 2023). Famers can access it using their own land, the group (peers) as collateral for the loans, or they can gain access through agricultural cooperatives of which they are members. While the BAAC unquestionably enhances small farmers' access to credit, it also generates both the growth of debts and endless debt circles (Lunlalad and Apinunmahakul, 2022).

More recently, an innovative institutional arrangement has been introduced under the 'contract farming' system. The contract farming model was originally widespread as an extension of the supply chains for large agribusinesses such as pork and chicken farming, but it is increasingly common among small sub-contractors, such as spring onion providers (Suwannasri and Promphakping, 2022). The sub-contracting model is primarily a package of institutional arrangements to overcome barriers to the provision of agricultural inputs, technology transfers, and access to the market channels of agricultural

commodities. The contract farming model has been hailed by farmers and policymakers as well as by academics. However, several studies note the negative aspects of the model, particularly its environmental impacts and the unfair division of benefits between the parties involved (Delforge, 2007).

Methods and Materials

The present research was reviewed and approved by the Center for Ethics in Human Research, Khon Kaen University, as Project Code No. HE 623131, on 18 December 2020. In order to demonstrate agrarian transformation, we selected the Sa-at sub-district as our study site. We used qualitative research to gather the information required for our analysis, acquainting us with the study site, its people, and its communities. Along with the field research, secondary data were collected from different sources, such as government statistics (both local and national) and relevant research reports done on the target site. In order to investigate the circumstances of rural villages surrounded by industrial factories, we interviewed the heads of local government agencies, including the director and officers of the Khon Kaen Provincial Industrial Office; the director of the Nong Wai Water Transmission and Maintenance Project, Irrigation Office Zone 6; and the mayor of the Sa-at sub-district municipality. In addition, 23 key informants were interviewed using a semi-structured guide. The data obtained were triangulated with focus group meetings to which 17 leaders were invited.

Findings

The findings are presented in terms of five major topics: 1) the unsettled rural landscape, 2) diversification, 3) labor forces, 4) natural ecosystems and agricultural indebtedness, and 5) rural urbanization.

The Unsettled Rural Landscape

Sa-at sub-district is a group of 14 villages. Sub-district municipalities are the smallest type of local administration. Sa-at sub-district is

currently home to a population of 9,770 people, 4,891 of whom are male and 4,879 of whom are female. The group of village communities is located around a natural swamp called Huay Suea Ten, which is the large wetland system connected to the Nam Phong river. In 1964, the government constructed the large Ubol Ratana Dam. It was not until about two decades after the completion of the dam, which started operating in 1966 (EGAT, 2023), that the villages were electrified and received irrigation water from the government's irrigation schemes.

The settlements in Sa-at sub-district significantly pre-date these infrastructure projects. The interviews revealed that the ancestors of the current inhabitants founded the settlement in the 1910s, more than a century ago. Agriculture provided the main type of livelihood from the beginning, with paddy as the main crop. At that time, the land was abundant. Land ownership was determined by the availability of manpower to control and till the land. Those who had more land than could be worked by family laborers sometimes sold it to newcomers for a low price; portions of paddy fields for families changed hands in exchange for one or a few bundles of tobacco. Agriculture at that time was for family subsistence and rice was grown along with chili, eggplant, cabbage, yard-long beans, and lettuce. Most importantly, the natural environment supporting the livelihoods of local families was extremely fertile. A farmer noted in an interview:

> In the past, nature was very rich. It was said that just by stepping onto the field, you would touch a frog— as natural food—the authors) because there were so many in the wet season. Food from nature was collected for consumption by the family, not for selling in the market. We had no idea where to sell (i.e., in the absence of a market—the authors). We enjoyed sharing food with our neighbors (Thong [Pseudonym], 2020).

Sa-at sub-district is close to Mittraphap Road, the highway linking Bangkok with Nong Khai, the gateway to Vientiane and Southwest China. The road was initially intended to facilitate military logistics during the Vietnam War. There has been considerable

expansion of feeder roads: the road linking Mittraphap Road with the Sa-at sub-district was paved more than three decades ago. The improvement of road links has provided a greater impetus for change than the government's large development projects, as the roads reduce transportation costs, facilitating migration and lowering the costs of supplying consumable commodities from outside the region.

Diversification

The diversification of agriculture is characterized by the presence of cash crops that were introduced into the local communities in the early 1960s. The first crop introduced was jute. Jute disappeared from the villages in the late 1970s, but diversification continued with cassava and sugarcane, which remain the major cash crops today. One farmer said:

> I have two plots of land, totaling 35 *rai*.[2] The first plot has 20 *rai*. It is a bumpy, uneven area, so previously I used this land to grow jute, later cassava, and at present sugarcane. The second plot is a lowland area of 15 *rai* mainly used for rice growing. But in the future, the rice fields may be converted to sugarcane cultivation because rice prices are low. Growing sugarcane is better and farmers get a lot of cash (Wath [Pseudonym], 2020).

The adoption of cash crops is relatively even; households integrate cash crops in a similar manner to one another. The households extended the arable land, which is mostly higher ground adjacent to their paddy fields that were previously forested. The diversification of agriculture in this way did not result in specialization, but rather in the extension of arable land to grow new crops. In other words, local households embraced the modern mode of production or 'capitalism,' while maintaining numerous aspects of traditional production, particularly the emphasis on growing rice, the main staple food. Rice cultivation is also partially commercialized—anything surplus to household consumption requirements will be sold for cash income.

[2] One *rai* equals 0.40 acre

The ability to diversify crops rests partly on land possession. At present there is growing pressure arising from diverse sources being placed on agricultural households' land ownership. The first source is from inheritance practices that resulted in land fragmentation. The size of land plots is getting smaller. Arable lands have been occupied and put into use, meaning that land extension is no longer feasible. Second is the rise of land prices. Some landowners sold their land and migrated away from the village or earned their living outside of agriculture. Others sold some of their land and continued to live in the village.

At present, sugarcane is popular in Sa-at sub-district because a sugar mill is located nearby. The sugar industry is a sub-contracting farming system operating under a specific law stipulating the management and distribution of sugar products, primarily to stabilize the price of sugar, which is not only a foodstuff for direct consumption but is also a raw material for food processing industries. The law also determines the supply of sugarcane in the form of quotas: the quota owners (managed and allocated by the sugarcane farmers' associations) sign a contract with the sugar mills to provide set amounts of sugarcane at a predetermined price. The sugar mills also provide a credit package to the quota owners, usually in the form of inputs and extension services, which stands as a debt that will be paid when the sugarcane is delivered to the mills. Not all small sugarcane farmers are quota owners: large numbers of small farmers are sub-contractors of the large quota owners. The government currently considers the sugar industry to have great potential to become a 'bio-industry' in which the final products of sugarcane can be diversified into high-value commodities, such as biomedical, cosmetic commodities, etc., using high technology. The Thai government has authorized the operation of many new sugar mills in the past few years: currently, 51 mills operate, with a total output capacity of 105.96 million tons of sugarcane per year (Office of the Cane and Sugar Board, 2016). We see sugarcane as the main cash crop in the Sa-at sub-district, being grown by more households than other crops.

It is interesting to note that there are a few other cash crops grown in Sa-at sub-district for contract farming purposes: these are

chili and marigold flowers. These types of contracts may differ in detail, but are broadly the same: the price of agricultural commodities is agreed in advance and necessary inputs are provided as credit. The details of the 'standards'—the quality of the agricultural commodities—differ considerably. Our fieldwork reveals that the number of farmers who undertake contract farming of crops other than sugarcane is still small. However, contract farming may expand in the future because this type of arrangement better meets the needs of farmers, particularly their need for markets for their produce and access to modern inputs and technologies.

Labor Forces

The presence of local industries provides employment opportunities, and this is perhaps the largest positive impact of industries on local agriculture. Being employed locally enables young laborers to remain in the village, without migrating to seek jobs far from their communities. A number of farmers we interviewed pointed to the positive side of working locally in the nearby factories, which allows these laborers to serve their households when they are not at work, such as early in the morning, in the late afternoon (after working hours), or on the weekend. Sharing the labor force between the factories and the households (agriculture) in this way seems to accommodate the needs of both agriculture and industries because while industries can access local labor forces (which are, presumably, abundant) and raw materials, the households can generate off-farm cash incomes while retaining laborers for their needs.

However, the complementarity of sharing laborers between modern industries and agriculture proves elusive. Farmers we interviewed frequently mentioned the lack of agricultural laborers. Agricultural wages during the peak season soar. In the last harvest season, for instance, the daily wage for rice harvest increased to 450-500 baht per day, while the official minimum daily wage was set at 320 baht. This rate did not include lunch or entertainment/drinks at the end of the day. The actual wage cost is, therefore, higher than that paid to workers

in cash. Farmers we interviewed complained that the younger generations avoided agricultural work. The contributions to agriculture made by the younger generation in general, and by factory laborers still living with their families in the village in particular, are minimal.

Natural Ecosystems and Agricultural Indebtedness

One of the most striking comments made by the farmers we interviewed related to the degradation of the natural environment. One farmer said:

> Today we cannot collect natural foods from our rice fields. I'm even afraid and worried about working on my own plot because of heavy chemical use. The water sources are polluted and we don't dare to go down because our skin, our feet could be seriously harmed, irritated, or blistered (Mai [Pseudonym], 2021).

The sources of pollution are apparently both the households and the factories. Within the households, most agriculture requires new inputs which are essentially chemical substances. Initially, cassava required no fertilizers to grow, but after it was grown repeatedly on the same land, fertilizers became necessary. Farmers told us that without using fertilizers, the cassava crop will fail (producing tiny roots or no roots at all). The requirement for chemical use in sugarcane production is even higher than in cassava. Apart from fertilizer, chemicals are used for weeds, pests, and plant disease control. For rice growing, there has been a change from transplanting to broadcasting methods, as transplanting is labor intensive, while broadcasting requires smaller numbers of laborers to spread the seeds. The transplanted rice crop and broadcast rice crop require the same amount of chemical fertilizers, while the broadcast crops require heavy chemical use for weed control. Residual chemicals from both cash cropping and rice growing wash into the rivers, jeopardizing the water quality.

The second source of water pollution comes from the factories, whose polluted water is discharged into small natural waterways and then accumulates in the main channel of the Nam Phong river. Villagers who earn their living from aquaculture in this river complained that

sometimes the fish in their cages die, due—they believe—to poisoned water released from the factories. The factories always insist that they strictly observe government pollution policy, and there is an Office of Natural Resources and Environmental Policy and Planning water quality monitoring station located downstream. It usually reports 'normal' water quality downstream of the factory location, confirming the factory's claims. Interestingly, fish deaths in the Nam Phong river happen frequently after heavy rain. This could either be because the rain washes chemical residue off agricultural land, or releases factory-polluted water that had accumulated in small natural tributaries into the river's main channel. It is difficult to determine the extent to which chemicals from either source (the factories or agriculture) cause the death of fish in the river.

Apart from concerns about polluted water, farmers frequently mentioned indebtedness as the critical problem of their households. The debts result primarily from investments in modern inputs, and from fluctuations in market prices. The sources of borrowing include the BAAC, the Nam Phong agriculture cooperatives, the cattle-raising group cooperatives, and credit packages from agribusinesses (i.e., sugarcane growers).

Our interviews revealed that the average size of debt (from all sources) stands at 453,326 baht per household. The largest proportion of debts comes from the BAAC. We found that the sugarcane-growing households annually borrow, on average, 247,709 baht per household. Borrowing from private companies is rare; we found only one family that borrowed 300,000 baht. Interestingly, the sources of debts have diversified to commercial banks. In our study, we found that the size of the debts of those who borrowed from commercial banks is 280,000 baht per household per year.

The growing indebtedness of farmers drives them to seek alternatives, and off-farm work and trade are among their choices. Many households in rural communities are now becoming small-scale entrepreneurs. They work in a variety of businesses, including agriculture product trading, commerce, Internet cafés, barbershops, beauty salons, and freight transportation, among others. A farmer we interviewed said:

> I started investing in an orange tractor by making a down payment of 90,000 baht from the full price of 900,000 baht, in order to save the cost of renting a tractor from others. It also saves you from using your own labor to operate a walk-behind tractor. However, to be a farmer at present requires more investments such as fertilizers, hired laborers, etc. My incomes from agriculture are usually lower than my investments. Every year I have to borrow to invest in agriculture, and the borrowing seems to be endless (Chart [Pseudonym], 2020).

The debts above are described as recycling. The returns, for those who borrow to invest in agricultural activities other than growing sugarcane, are insufficient to pay off the debts. The borrowers usually rely on income from other sources, essentially off-farm income, to pay off their debts. Then, for the next crop, they return to BAAC to borrow for the new round of investment. The sugarcane farmers, although their outputs are enough to repay the loan, also need investment for the new crop, and this makes them return to credit providers. We are convinced that the credit arrangement has become a mechanism that bonds farmers to agriculture, serving to shift the 'surplus' from agriculture to be consumed and accumulated outside the communities (both in the form of modern agricultural inputs and agricultural commodities). This mechanism also keeps farmers in agriculture up to the point that the returns (to the capital) of this type have diminished and are lower than the other types. We are also convinced that changes to the natural environment or ecosystems play a part—villagers have been relying on natural inputs to sustain their agriculture. The degradation of ecosystems could intensify indebtedness, and this could force small farmers to abandon farming and give way to large agribusinesses.

Rural Urbanization

The presence of industries near agricultural communities obviously results in an increase in urbanization. However, the urbanization process taking place in Sa-at sub-district does not only take the form of a physical landscape but also permeates social and cultural aspects. We describe this process as 'rural urbanization' and present it below.

The relocation of industries into the local area did not initially draw a great number of migrants to reside nearby. This might be because there were already rural villagers within a commuting radius of the factories. Gradually, the local roads were greatly improved, and motorbikes become omnipresent. The motorbike is an effective means of transport, particularly for young people, between the factories and the villages. In addition, a bridge crossing the Nam Phong river and linking Sa-at sub-district with Muang Wan sub-district (where industries are located) was built, facilitating commuting between the Sa-at sub-district communities and the factories. Recently, most factories have started arranging transportation for their own staff, but this is only on the main routes, between the city of Khon Kaen and the factories, and between Ubolratana district town and the factories. The youths living off the routes (including Sa-at sub-district) rely on motorbikes.

One important reason for not developing residential areas near the factory zone is because of the smell. Crushed wood fermenting in paper mill production processes creates an unpleasant smell that grows worse the nearer one is to its source. Local people complained of the smell, and it seems to have improved after several years. In addition, the rotten wood draws moths, which disturbs residents. Moths spoil the un-husked rice that households usually keep for daily cooking. Later, after the power plant was built, the smell became even worse, because the power plant uses natural gas to produce electricity. We observed that the factories did not result in urbanization or the development of residential areas within a radius of one to three kilometers. This result is rather different from other types of factories: the fishing net factories and shoe factories near Khon Kaen city, for example, drove the development of nearby residential areas (Phongsiri, Nakham and Meekaew, 2020).

Although the inner zone surrounding the factory zone did not clearly urbanize, the old communities, about 3-5 kilometers or more away from the factories, are dynamic. These villages expanded

physically as new, modern-style houses were built. As mentioned earlier, the roads inside these villages were paved or made with concrete. Resident population density within the village compound (the residential zone, excluding agricultural land) is similar to that of urban environments. New problems such as waste and flash flooding within the village compound have become important challenges for the communities. Over the past few years, the government tried to upgrade the area into an 'eco-industrial town.' However, this target is proving elusive, partly because the local communities remain out of the scope of the 'urbanization' defined in government urban planning.

Discussion

The relocation of industries to rural areas of Khon Kaen province resulted in altering household human resources. The shift of labor forces from agriculture is a key feature of agricultural transformation (Bryceson, 1996; Rigg et al., 2012; Rigg and Nattapoolwat, 2001; Sattayanurak, 2016). In Thailand, agricultural transformation is attributed to broader development, which was primarily focused on the growth of the modern economic sector. Our finding contradicts the conventional Marxist view predicting that the traditional mode of production or 'peasants' will eventually fade away following the presence of the capitalist mode of production. However, the relentlessness of agricultural production or the present smallholders cannot be simply equated with traditional peasants. While smallholders persist, agribusinesses can insert their control over agricultural production through modern agricultural inputs rather than direct control over land and labor. Even though industries were relocated into proximate locations, the peasant mode of production was not completely dissolved, but the 'family farms' have been transformed into smallholders, broadening their means of living, particularly by becoming more engaged in modern types of production and encroaching more on natural environments.

The indebtedness of farmers in agricultural transformation found by this study reiterates and reinforces the findings of previous studies on Thailand (Thailand Development Research Institute Foundation, 2015). However, our finding broadens the analysis of institutional aspects in agrarian transformation. On the one hand, the systematic credit arrangements ensure farmers continue farming. On the other hand, credit arrangements play a significant role in structuring agrarian relations so that capitalism derives the greatest possible surplus from agriculture. Indebtedness, while it acts as a means to shift farmers' surplus value into modern industries, also 'delays' their departure from agriculture.

Our argument that rural is increasingly urbanized echoes the previous of Rigg et al. (2012), and Rigg and Ritchie (2002). Urbanization not only changes the physical landscape of rural, but also results in the increasing prevalence of household appliances, luxury houses, and cars in rural areas. In other words, urbanization is largely manifested on the consumption side, while the production side is less obvious. From this finding, we propose that the analysis of the integration of peasantry into modern capitalism must go beyond the 'mode of production' that focuses on the control of means of production, and consumption aspects of rural households.

Conclusions and Recommendations

Our study raises three practical issues. First, we argue that agrarian relations within agricultural transformation are mainly structured around the control of modern agricultural inputs, such as types of credit provisions, contract farming systems, etc. Second, the use of chemical inputs and the industrial use of local environmental resources give rise to questions of agricultural governance. Third, rural urbanization creates tensions between the existing forms of local government.

Based on our findings, we make a number of recommendations. First, the system controlling input supplies to small farmers must be reformed. This essentially involves changing the role of BAAC and the

agricultural cooperatives, which are overseen by the Cooperative Promotion Department. The BAAC must extend its role to cover the circulation of agricultural commodities. Second, regulations and policies concerned with chemical use control in agriculture need to be instituted. Where the policies are already in place, the capacity building of stakeholders involved to promote impactful policies is needed. Third, local administration obviously lags behind the rural urbanization process. The present centralized forms of government will be unable to deal with the issues and needs of local people. It is recommended that the local governments be reformed; in particular, decentralization is urgently needed.

Conflict of Interest Statement

The researchers have no conflicts of interest with any subject of this article.

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