



ETUDES ET DOCUMENTS DU GRAESE

**DYNAMICS OF AGRARIAN SYSTEMS AND
THE EMERGING AGRICULTURAL LAND ISSUES
DURING ECONOMIC TRANSITION PERIOD
IN NORTH VIETNAM**

Evidence from the case of Hai Duong province

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TABLE OF CONTENTS

TABLE OF CONTENTS	1
ABSTRACT	5
INTRODUCTION	7
1 STUDY SITES AND METHODOLOGY	9
2 THE CHANGES IN LAND POLICY AND THE RAPID EVOLUTION OF AGRARIAN SYSTEMS DURING THE ECONOMIC TRANSITION PERIOD	15
2.1 The expansion of collective agrarian systems before renovation (1954-1988)	17
2.1.1 <i>The change in land policy</i>	17
2.1.2 <i>Characteristics of agrarian systems</i>	19
2.2 Traditional rice – based agrarian systems during the semi-collective period (1980s)	20
2.2.1 <i>The changes in institutional environments and socio-economic conditions</i>	20
2.2.2 <i>Characteristics of the traditional rice – based agrarian systems</i>	22
2.3 The diversification and specialization of agrarian systems during 1990s and 2000s	24
2.3.1 <i>Spatial dynamics of the agrarian landscape: Chronological diagrams of local transects</i>	24
2.3.2 <i>Dynamics of the animal-aquaculture based agrarian system in the upper zone in 1990s and 2000s</i>	26
2.3.3 <i>Dynamics of the vegetable-based agrarian system in the middle zone in 1990s and 2000s</i>	31
2.3.4 <i>Dynamics of the fruit-based agrarian system in the lower zone in 1990s and 2000s</i>	35
3 THE SUSTAINABILITY OF AGRARIAN SYSTEMS IN THE CONTEXT OF INDUSTRIALIZATION, URBANIZATION, AND THE WORKFORCE MOBILITY	43
3.1 The evolution and sustainability of agrarian systems for the prospect of accelerating industrialization	44
3.2 Development and sustainability of agrarian systems in the context of urbanization	46
3.3 The mobility of the labour force and the sustainability of agrarian systems	49
4 THE EMERGING LAND ISSUES AND THE NEED FOR A NEW POLICY ON THE AGRICULTURAL LAND	55
4.1 Current issues of the agricultural land use system	55
4.1.1 <i>Fragmentation of the agricultural land</i>	55
4.1.2 <i>Different demands for the use of agricultural land among households and the growing abandonment of land</i>	56
4.1.3 <i>The imperfection of land market and the increase of land price</i>	57
4.1.4 <i>The complication of agricultural land tenure system in the industrialization and urbanization period</i>	58
4.2 Policy implications of consolidation of agricultural land	59
4.2.1 <i>Principal requirements of agricultural land consolidation program</i>	59
4.2.2 <i>Propositions of practical methods of land consolidation program</i>	59
4.2.3 <i>Propositions of auxiliary policies for the land consolidation program</i>	61

5 CONCLUSIONS..... 63
6 REFERENCES..... 65

ABSTRACT

In Vietnam, the agrarian systems have evolved considerably during the socio-economic transformation period initiated in the late 1980s with the political reform (Doi Moi). In a region around the capital, where the process of industrialization, urbanization, and international integration has been accelerating, a number of questions about the sustainability of agrarian systems are raising. By diagnosing and analysing the dynamics of agrarian systems from 1980 to 2010, this study aims to provide decision-makers with some sectorial and territorial policy options authorizing the sustainable development of agriculture and rural society in the new socio-economic context. Combining the historical, adaptive, and systematic approaches, this study shows that farmers in Hai Duong province adapted effectively to the socio-economic and institutional changes, notably by transforming part of the rice land areas into other agricultural land use purposes such as fish ponds, animal buildings, vegetable fields and fruit orchards. These rapid changes, however, do not go in the direction of improving the sustainability of agrarian systems. Farm holders are now facing with many technical and economic contradictions whereas land issues are not only related to the agricultural purposes. Competition functions in land use, fragmentation of plots, the imperfection of the land market and rising property values are all emerging. The prospects for sustainability of agrarian systems are analysed under different scenarios which highlight the complexity of policy options. A recommendation of agricultural land policy is made accordingly, emphasizing on the land consolidation though the institutionalization of land renting agreement among farm households.

INTRODUCTION

Vietnam has undergone a rapid economic transition over the last some decades, especially since the end of the 1980's. A number of economic and institutional reforms have been implemented at the national level and lead to the structural changes in the socio-economic conditions of the country. During 1980's, the reform policy was focussed on the reorganization of the agricultural production through de-collectivisation, re-establishment and development of the family smallholding, and market liberalisation. These reforms resulted in a great success with a strong growth of agricultural production, a significant alleviation of hunger and poverty. Over few last decades, the agrarian systems in the Red river delta have been evolved significantly from a subsistence farming to a market-oriented production system under the economic reform or Doi Moi since the year 1980s as reported by several authors (Anh, 2003; Ton, 2003; Anh et al., 2005). These evolution differ among the geographical locations such as the plain delta, hilly, and mountainous regions, and between different groups of farmers

However, these above studies only referred to the changes of agrarian systems from the Doi Moi (1980s) to the early 2000s. In fact, during the period between 2000 and 2010, the socio-economic and institutional environments in Vietnam have changed rapidly due to the acceleration of industrialization and urbanization process and the highly international integration. These changes have both positive and negative effects on the evolution trend of the agrarian systems. The proportion of the agricultural-forestry and fishery households in the Red river delta reduced significantly from 77.26% in 2001 to 60.48% in 2006 and to 42.63% in 2011. The number of agricultural labours in the delta region in 2011 declined by 1.16 million workers or 27.3% compared with that in 2006. The agricultural land area of the delta in 2011 was approximately 780 thousand ha, decreased by nearly 36 thousand ha (or 4.3% of reduction) in comparison with that in 2006 (General Statistics Office, 2012). The rural wage labours move to the industrial zones, while the households around the urban areas become landless farmers. Under these changing conditions, farmers will have different strategies of agricultural production to adapt better to the new environmental conditions.

Therefore, the diagnosis of agrarian system dynamics during the economic transition and industrialization period (from the Doi Moi up to present) is of great importance for policy planners to design the appropriate agricultural and rural policies, schemes and projects for sustainable development in the future.

This report aims to identify the dynamics of agrarian systems and the current constraints facing farm households in accordance with the changes in land policy during the socio-economic transition period and the industrialization and urbanization process in Hai Duong province. The consequences of the rice land conversion into other agricultural types of land use and the emerging land issues will be examined as the evident lessons for the strategic land use planning of the region in the coming years. The prospect for evolution and sustainability of agrarian system will be discussed by taking three scenarios of industrialization, urbanization and the work force mobility.

1 STUDY SITES AND METHODOLOGY

Introduction of the study sites

The study was conducted in Hai Duong province, a central region in the Red river delta, North Vietnam. Total natural area of the province is 1651.85 km², equals to 7.8% of the total area of the Red river delta and 0.5% of the whole nation (GSO, 2009). The province is slightly sloped from the northwest to the southeast with the difference in altitude. The plain delta (from 0.9 to 5m in altitude) shares 1389.00 km², equal to 84.09% of total natural areas, and is shaped and deposited by alluvium soil layers of Thai Binh river system that is advantageous for diversified agricultural production.

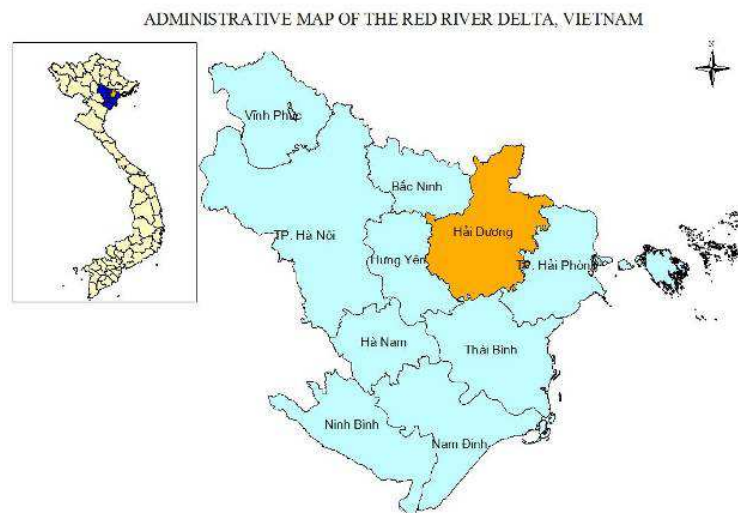




Figure 1. Administrative map of Hai Duong province in The Red river delta, Northern Vietnam

(Hai Duong Natural Resources and Environment Department, 2010)

Hai Duong is in progress of acceleration of industrialization and urbanization which influence strongly on the agricultural land areas and rural labour structure. The industrial land area increases from 647.75ha (6 large industrial zones) in 2001-2005 to 2,090ha (10 concentrated industrial centres) in 2010 (Hai Duong People's Committee, 2008), (Hue, 2011). According to the development plan of the province towards 2015 and 2020, total industrial land areas will be increased up to 3,800ha in 18 industrial parks (Thuy, 2011).

During the industrialization, there has been a gradual reduction in the agriculture-forestry-fishery land area and an increase in the non-agricultural land area. The proportion of these two items of land in 2002 was 69.2% and 30.1%, respectively. In 2009, agriculture-forestry-fishery land just made up 64.4%, whereas the non-agricultural land accounted for

35.1%. There was a significant decline in the rice land (8.8 thousand ha or 11.3%), from 2002 to 2007, mostly because of land conversion into industrial zones and urban areas. Furthermore, the conversion from low rice land into fish ponds and perennial crops resulted in the increase of these land areas (23.8% and 43.8% respectively) (Hai Duong People's Committee, 2008)).

Furthermore, due to the rapid development of industrialization and urbanization process, the structure of population has been changed over the period of 1997-2008 with the slight decrease in rural residents (from 88.8% in 1997 to 81.8% in 2008) and the corresponding increase in urban inhabitants (from 11.2% in 1997 to 18.2% in 2008). Large areas of fertile land were withdrawn from farm households for the installation of industrial companies and buildings, causing some groups of farmers to become landless and jobless people. In estimation, every 1ha of agricultural land was converted into the industrial zone, about 10 agricultural labours lost their jobs (Thin, 2008). A survey conducted at 819 households in Ai Quoc commune (Nam Sach district) in 2008 showed that the agriculture-based families declined from 59.9% before 2003 to 40.1% in 2007. The number of free labours who did not have a stable job has increased from 13.1% before 2003 to 23.1% in 2007 (Thin, 2008).

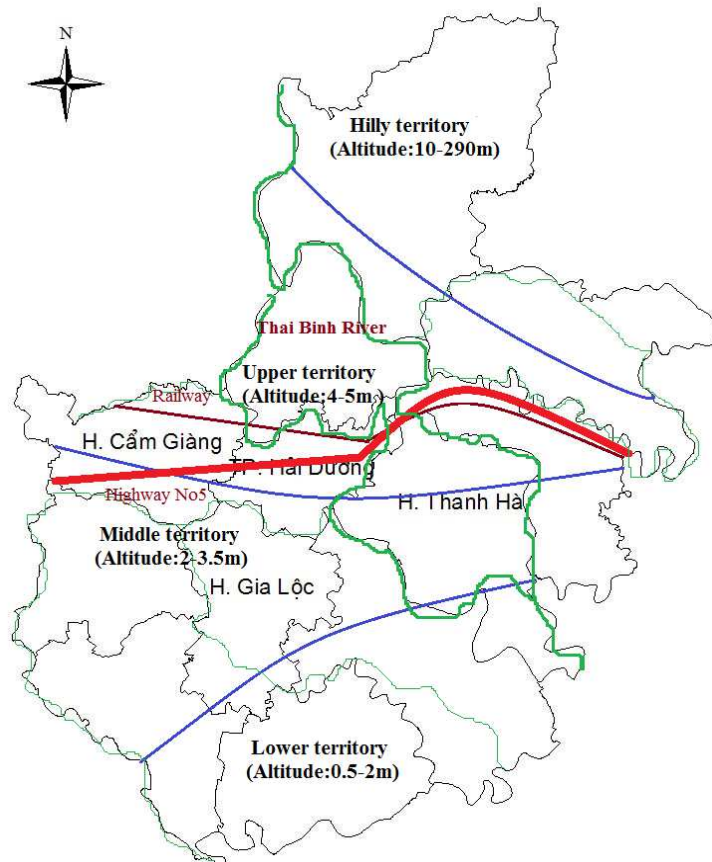
The economic structure has changed remarkably towards a higher contribution from industry, construction and service sectors (from 36.6% and 28% in 1997 to 43.8% and 30.5% in 2008, respectively) and a lower proportion from agriculture (from 35.4% in 1997 to 25.7% in 2008). The changes have occurred significantly since the year 2000, when the process of industrialization and urbanization were expanded. A wide variety of industrial factories was built and enlarged in large zones attracted a number of agricultural labours as well as agricultural land areas. The service activities, therefore, were encouraged to develop more rapidly due to the development of industrial zones and urban areas.

Methodology

Hai Duong province was divided into three agro-ecological and socio-economic zones by the stratification method (map-based analysis, transect walks) They include the upper zone (4-5m altitude, animal-aquaculture production), middle zone (2-3.5m altitude, vegetable cultivation), and lower zone (0.5 – 2m altitude, perennial fruit cultivation)

(figure 2). In each zone, two representative communes belong to one district were chosen for the household survey. At the regional level, secondary data analysis and exploratory discussions with local witness (chief of the commune, head of agricultural cooperative, veterinarian staff, etc.) were used to identify the evolution of agrarian systems over some last decades. The farm households classification and production system typology were also implemented during these participatory works by qualitative method rather than statistical method. Farm households in each region were classified into different categories by their agricultural production activities (or production systems). Then, households belong to different production systems were randomly selected for the surveys. In total, 96 households in 6 communes (3 districts) were interviewed to identify the evolution of agrarian systems from 1980s to 2000s by the retrospective method. At the farm level, the evolution of production systems were examined at three specific date relating to the significant changes of the socio-economic and institutional environments that is easily memorized by respondents. The year 1993 is considered as the starting point when the agricultural land was redistributed to farm households for long-term exploitation due to the Land Law. Then, in 2003, their production systems underwent a significant change due to the acceleration of industrial zones in this region. Thus, information about the evolution of production systems was identified for three specific years (1993, 2003 and 2010). The emerging land issues and prospect for sustainability of agrarian systems is analyzed through the participation works with key local informants and experiences from other regions in Vietnam and in the world.

ADMINISTRATIVE MAP OF HAI DUONG PROVINCE



Note

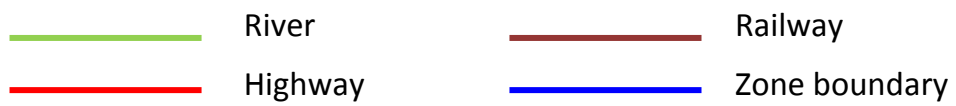


Figure 2. Stratification of Hai Duong province

2 THE CHANGES IN LAND POLICY AND THE RAPID EVOLUTION OF AGRARIAN SYSTEMS DURING THE ECONOMIC TRANSITION PERIOD

The general evolution of agrarian systems in Hai Duong province during the economic transformation period from 1980 to 2010 is summarized in figure 3. In the first decade (1980-1990) when the transition shifted from a centrally planned economy to a market-oriented economy, the agrarian systems have evolved from the collective farming model to the family farming exploitation. Rice cultivation was of great importance for households' food security. The rice productivity thus increased significantly due to the resolution policy in 1988. Other agricultural production activities such as vegetable, livestock production, etc. grew slowly during this period. The second decade (1990-2000) was known as the period of diversification of agrarian systems. The rice-based production system has been diversified by the development of a wide variety of production, including winter crops, animal husbandry and fish production due to the sufficiency of food security since 1993. Large areas of rice fields, especially the low land areas, have been converted into different crops such as litchi, vegetable, and fish ponds. The integrated crop cultivation - animal husbandry and fish production system was widely applied in the province. Farmers diversified income sources, and per capita food production increased remarkably across the years. The last decade (2000-2009) represented the continuous changes of agrarian systems from a diversified model to a specialized system due to the industrialization and urbanization process and the deep integration into the global economy.

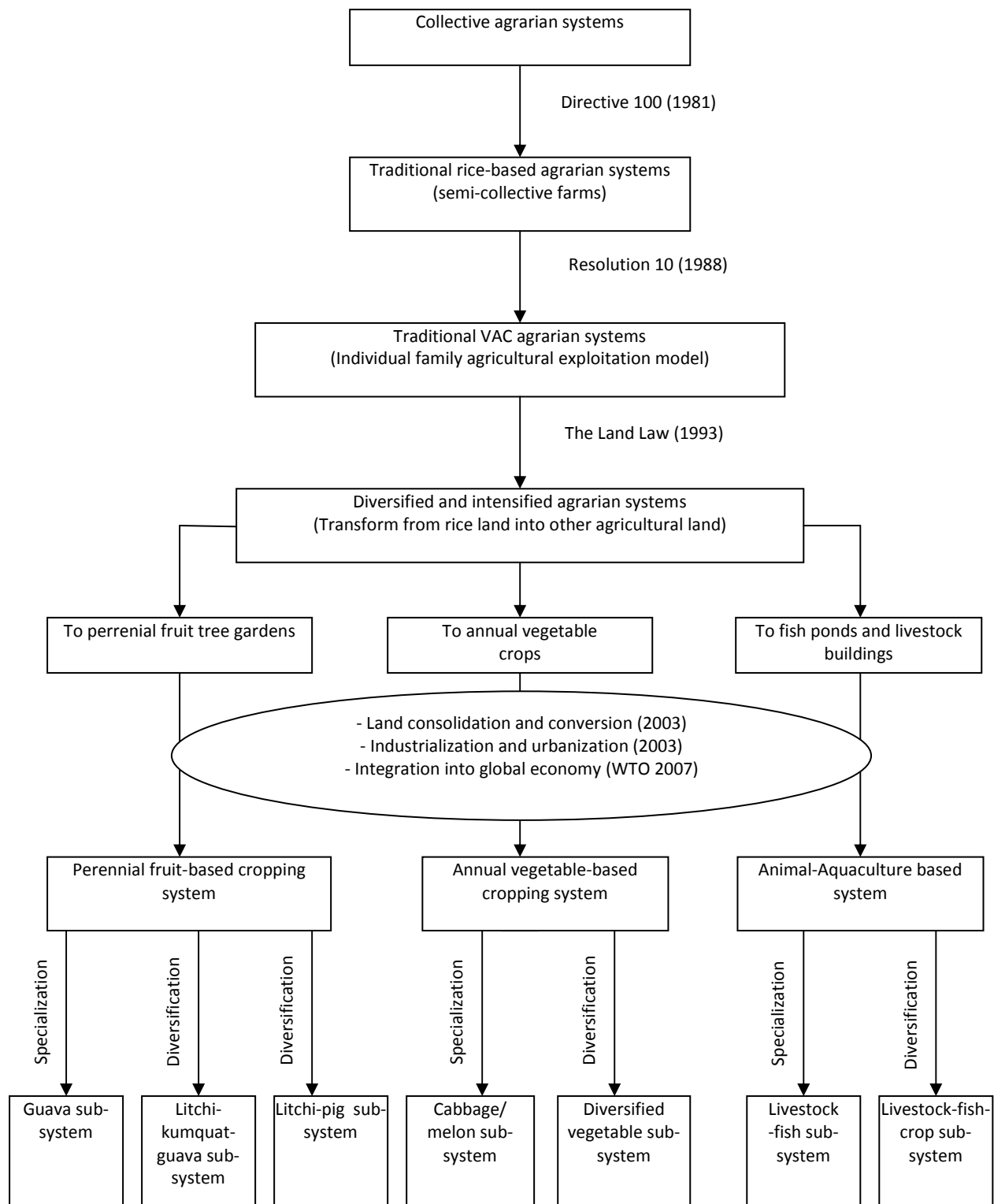


Figure 3. Flow diagram of the agrarian system evolution in Hai Duong during the economic transformation period (1980-2010)

2.1 The expansion of collective agrarian systems before renovation (1954-1988)

2.1.1 The change in land policy

The land reform in 1954 – 1957

The land reform in this age was characterized by the withdrawal of the land from the landlords and redistribution to the peasants. Before the August revolution in 1945, most of the land areas were owned by the landlords. In Hai Duong, this land owner made up only 4.11% of total households, and 16.42% of total land areas. The rest (77.24% of total land areas) was owned by peasants who occupied 94.46% of total families. Some land areas belonged to other social classes (Hai Duong People's Committee, 2008). Farmers worked on their farms and gave the products to the landlords.

After the war, the government launched the land reform end the landlord system and re-allocate land to the peasantry. The program was implemented from February to June 1956 in Hai Duong. The land areas owned by farmers increased from 69,907.4ha (equals to 77.2% of the total) before the reform to 87,104.3ha (or 96.3% of the total) after the reform. The landlords just shared about 3,366.9ha or 3.72% of total land areas. It was much less than that in the past (about 14,858ha or 16.42% of the total) (Hai Duong People's Committee, 2008). The important changes were seen in rural areas. Farmers had rights over their land. They had their own land and worked for themselves to survive their families after a long time under the feudal system.

The agricultural collectivization process (1957-1988)

The agricultural collectivization was early implemented in Hai Duong in 1957, one year right after the land reform policy. This process was divided into two main successive stages, including the small-scale and big-scale collectivization. In the first period of 1957-1975, the small-scale agricultural cooperatives were established and developed at the village or group of village level. Then, the big-scale agricultural collectivization was enhanced at the commune level from 1976 to 1980.

In the first period of 1957-1959, the mutual aid teams were developed among small groups of five or ten farmers, normally the close neighbours, to encourage farmers to assist each other during the period of the peak labour demand by jointly working in one another's land plot. This model of cooperation was strongly encouraged to develop in different regions of the province. In 1958, the number of aid team was the highest, about 11,077 groups, with the participation of 71.18% of total households in the whole province (Hai Duong People's Committee, 2008).

This kind of collaboration was highly efficient at the first period, but poor functions at the last stage. Primarily, the exchange of the labour force and production means helped to solve the difficulties facing most of the household right after the war. It was very important for the smallholders or the poor to develop their production activities and overcome the famine. However, most of these groups could not sustain over a long time because of the poor management and unequal distribution of products. The medium and the rich farm were often regrouped together and separated from the poor one. The social conflicts were emerging among different classes. In 1959, nearly all small agricultural cooperatives were dissolved (Hai Duong People's Committee, 2008).

Since 1957, the government launched a campaign to create the agricultural production cooperatives. In Hai Duong, the first agricultural cooperative was established in October, 1957 in An Bai village, An Lac commune, Chi Linh district. Since then, the collectivization process has been accelerated in nearly all villages of the province. Under this policy, farming households was obligated to give the land and the production means (plough, harrow, etc.) to the cooperatives and perform collective labour. A point of work was awarded to farmers based on the type of jobs and their working time. These points were then converted into a portion of the annual cooperative's net harvest. A small land area (5% of their land area according to the number of family members) was still kept by farm holdings to produce vegetable and raise animals. Thus, the households were forced to sell their animals to the cooperative as their annual obligation.

However, the agricultural cooperatives soon failed due to the poor management and bad returns. The quality of work and the record of work point were uncontrollable. The farmer saw no incentive to work harder than others and shirked the collective labour. Farmers were paid after the

deduction of production cost and state quotas. As a result, a number of farmers were bored with the cooperatives. Many of them would like to get out of the cooperatives.

To overcome the emerging difficulties of most agricultural cooperatives, the provincial government launched a new resolution to renovate the management quality and the production efficiency of the agricultural cooperatives. During the period of 1963-1966, three main campaigns of the agricultural cooperative renovation were implemented in Hai Duong. Thus, the labour productivity and the production efficiency were slightly improved. In 1967, the resolution number 04-NQ/TU to consolidate the small-scale agricultural cooperatives at the village level in the big-scale ones at the commune level was approved by the province.

2.1.2 Characteristics of agrarian systems

Rice as the basic crop for food security

The agrarian systems in the collective period were characterized by rice-based cropping system. In the first stage (1954-1960), only once rice crop was cultivated per year due to the poor development of the rural infrastructure system, especially the irrigation system, and the backward technologies. In the second stage (1960-1980), the cropping systems were improved significantly from once rice crop per year to two rice crops and once winter crops. The improvement of the irrigation system (the Bac Hung Hai system, for instance) and the introduction of new rice varieties were the most important reasons for this evolution of agrarian systems. The collective labour management played a key role in building and upgrading the irrigation systems in rural areas. The Bac Hung Hai irrigation system, which irrigated large rice fields of three provinces (Bac Ninh, Hung Yen and Hai Duong), was constructed in 1958. Then, the crop cultivation was less vulnerable to the drought or flood. Moreover, in some last years of 1960s (mostly in 1968 and 1969), a number of new rice varieties (e.g. IR-5 and IR-8 varieties), which had a shorter production cycle than the old ones, was introduced and applied in many regions. The number of harvest and the productivity were then increased remarkably.

The collective livestock production

In Hai Duong province, during the decade of 1960 - 1970, the provincial government developed a strategy to increase the number of pig raised in

the agricultural cooperatives. Then, the pig production in the agricultural cooperative was developed rapidly and there were 336 agricultural cooperatives (equals to 80%) raising pig in the whole province in 1978. At that time, population of pig managed by cooperatives made up about 10 to 15% of total population. The left was fed by individual members of the cooperative with the small farm size, about 2 or 3 heads of pig per family on average. Most families who were the member of the cooperative (about 85%) raised pig by themselves and provided pork to the cooperative as their duty. It means that each family had a duty to raise pig and sell a given weight of pork to the agricultural cooperative for a given price set up by government (Hai Duong People's Committee, 2008).

In 1960, when agricultural cooperatives were rapidly developed in the North Vietnam, all cattle and buffaloes were collected and managed by cooperatives. However, feeding and handling of cattle and buffaloes were continuously done by each farm household.

2.2 TRADITIONAL RICE – BASED AGRARIAN SYSTEMS DURING THE SEMI-COLLECTIVE PERIOD (1980s)

2.2.1 The changes in institutional environments and socio-economic conditions

The introduction of Directive 100 (Contract 100) in 1981

In early 1980s, Vietnam faced big challenges after the war. The country was felt into an extreme socio-economic crisis because of the extension of the central planning economy. At that time, the economy was characterized by the role of the state-owned enterprises and cooperatives in the production and the trading systems of goods following plans made by the government. The prices were set by the state pricing committee. However, the inefficiency of these enterprises and cooperatives caused a huge budget deficit, and the inflation reached a level of 100-200%, with hyperinflation of about 300% annually. In 1986, the inflation rate even went up to 700% (Tri Hung Nguyen, 1999, cited in (Hoa Nguyen and Ulrike Grote, 2004).

Under the general context of the country, Hai Duong's economy remained vast difficulties regarding to all economic sectors, especially in the agricultural production. As the major economic activity, agriculture played

a key role in ensuring food security and improving household income. However, the socio-economic crisis made it more difficult to develop the agricultural production. In one part, the terrible consequences of the war directly affected the agricultural production due to serious damage of the rural infrastructure system such as road, irrigation, electricity, etc. by bombing during the war. In another part, the management and administration of the local authority systems became less and less efficient according to the strategy of developing bigger collectives at the commune level. Beginning in 1957 with the establishment of the first cooperative, it then had been developed rapidly at all locations over the province. The hasty extension of the cooperative at a larger size (from the village to the commune level with a higher number of households) made it more difficult to manage both the labour force and the financial resource. Although there were several improvements of the collective organisation and management, these efforts did not gain expected results. The agricultural production of all cooperatives fell into a bad situation with a low productivity and inefficiency. The food security of most farmers was not ensured (average food production per capita was under 340kg). The socio-economic crisis was more and more drastic. This type of labour management did not encourage farmers to develop the production activities. Numerous farm households demanded to split from the cooperative to be an independent production unit.

Based on the request of most farmers, on January 13th 1981, a direction so-called “directive 100 CT/TW” was launched by the Committee of Communist Party. The main objective of this directive is to sign a production contract with groups or individuals of agricultural workers. According to this contract, farmers had the right to control several major activities in the procedure of agricultural production, including planting, care-taking and harvesting the product. Other activities such as seed breeding, irrigation, pest control or crop protection, etc. are under the responsibility of the cooperatives (Committee of Hai Duong's Communist party, 2010).

However, after 5 to 6 years of application of the Contract 100 (in 1981), several inadequacies were emerged and started to inhibit the growth of the economy. Under this contract, the production procedure of the farmer continuously depended on the management of cooperatives in five activities (land preparation, seed breeding, fertilizer supply, irrigation

and crop protection). The difference about the production plans between each household and the cooperatives caused the difficulties for farmers in their activities. It was sometimes impossible for farm holders to be active and flexible in the production because of the lack of input materials. On the other hand, the quota of output was adjusted to being higher annually even low productivity of crops. Therefore, it broke down the dynamic of producers to increase the crop productivity and yield. Some households that gain surplus output refused to pay the quota and the other who lost their crop could not effort to pay back. The cooperatives had to implement some forced methods to take the quota back. It created a great social discontent in the rural society. A number of farm households gave the land back to the cooperative and stop cultivating rice.

The introduction of resolution 10 in 1988: A Renovation policy (Doi moi)

As discussed above about the serious situations of agriculture and rural society in early 1980s, on 5/4/1988, the politburo of the Communist Party introduced a new policy called Resolution 10 (or Contract 10) to improve the management of the agricultural production. According to this policy, farm households were considered as an independent economic unit. Agricultural land was transferred to the individual farm holder for a long period (about 10 to 15 years) with a stable quota (fixed for five years if there is no change in technical and socio-economic conditions) (Hai Duong People's Committee, 2008). The role of cooperatives was to make the production plans. In Hai Duong province, the strategy at that time focused on the food programmes to ensure food security, mostly rice cultivation.

However, the policy needs to be continuously reviewed to adjust and to complete it. Several issues were required to take into account, including the duration of land allocation, the farmers' rights over the land (land own right, land use right, etc.), the organisation and management of the new cooperatives, the supply chains of input materials, etc.

2.2.2 Characteristics of the traditional rice – based agrarian systems

In the decade 1980s, the socio-economic crisis had a great impact on the agricultural production and rural society. Food security was one of the biggest challenges faced numerous households and became the most important priorities of the government's strategies. Therefore, the rice production system was seen as the basic mode of the environmental

exploitation of farmers at that time. Rice was the main crop and cultivated by two crops per year, namely spring rice crop and summer rice crop. Besides that, other crops and livestock species were also integrated into the production system which was known as the VAC system (a combination of crop cultivation, livestock production and aquaculture production). The traditional rice-based agrarian system was characterized by the small-scale and low intensive level of production.

The major characteristics of traditional rice-based agrarian system were described by the domination of rice cultivation in combination with winter crops, animal production and fish ponds. Rice, which was cultivated in spring and summer season, was of great importance and developed significantly in terms of planted areas and yield to ensure the food security. Several winter crops, especially sweet potatoes, potatoes and maize, were expanded to satisfy food requirements of most farm households. Diversified animal herds were kept at a small scale in the relation to the crop production.

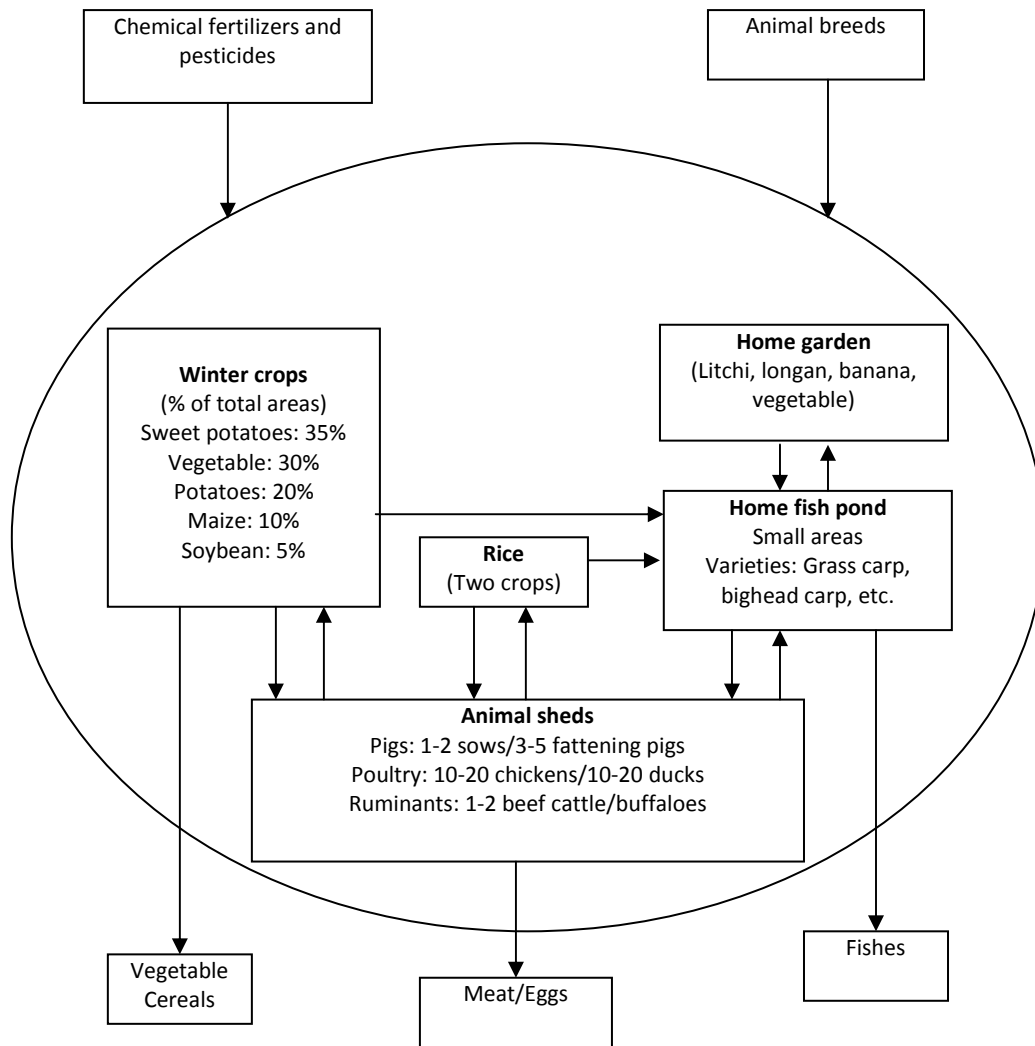


Figure 4. Flow diagram of the traditional rice-based agrarian system in Hai Duong in 1980s

(Source: Participatory discussions and secondary data)

2.3 THE DIVERSIFICATION AND SPECIALIZATION OF AGRARIAN SYSTEMS DURING 1990s AND 2000s

2.3.1 Spatial dynamics of the agrarian landscape: Chronological diagrams of local transects

As mentioned in the previous parts of the thesis, Hai Duong province was divided into three main agro-ecological and socio-economic zones according to their physical environments, socio-economic conditions and the agricultural features. They are the upper, the middle and the lower regions. The evolution of agrarian landscape during last three decades

was conducted by transect walks which based on the participatory discussions with local witnesses and personal observations (figure 5).

In general, the agrarian systems in different zones were gradually transformed from a traditional rice-based production system in 1980s into a more diversified model during 1990s and a specialized and diversified one during 2000s. However, under a given changing condition of environmental contexts of each region, this evolution had specific characteristics. It resulted in the differences of agrarian systems among geographical zones at the current time.

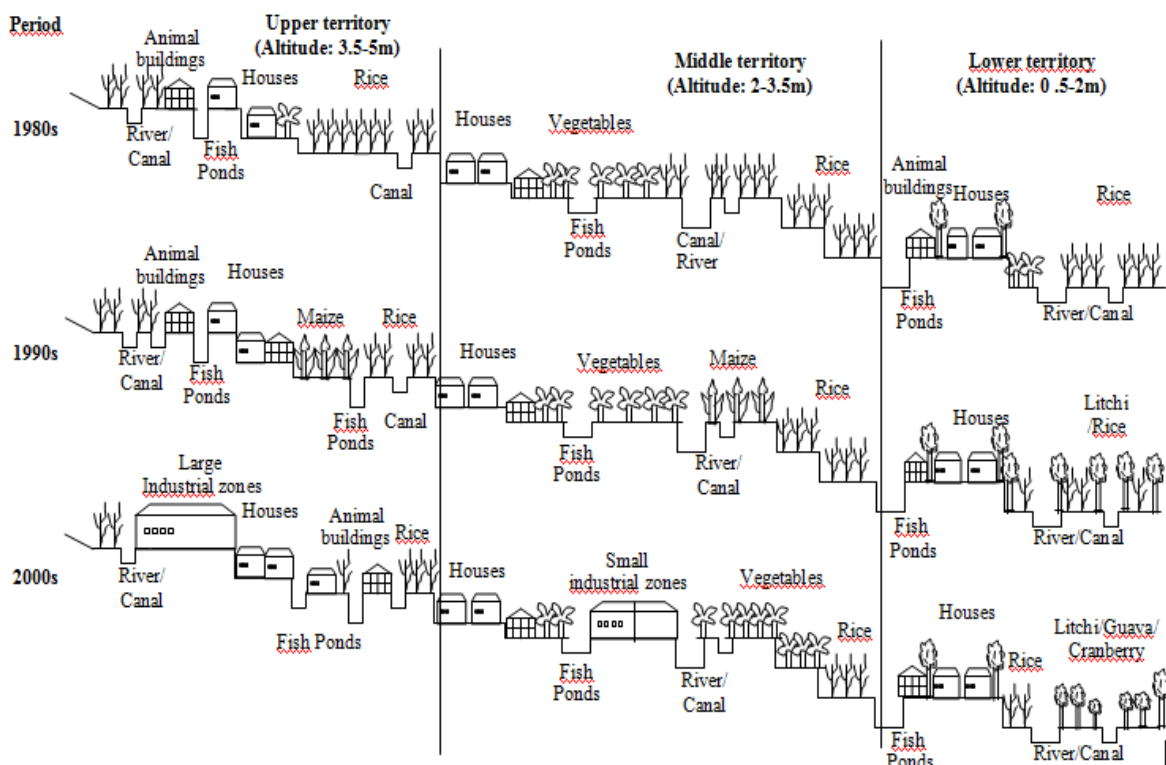


Figure 5. Chronological diagram of the local transect of Hai Duong province
(Source: Participatory discussions and personal observations, 2010)

Over the last three decades, the changes of agrarian landscape in the upper zone have been figured by the gradual replacement of rice field with fish ponds and animal buildings in the lowland rice in remote areas and the industrial parks in the town centre. It was observed that there has been a movement of fish ponds and animal buildings from the homestead land to the rice field in 1990s and 2000s due to the program of rice land

conversion. During 2000s, large areas of agricultural land, especially rice land, were switched to the industrial zones or urban towns.

Unlike the upper zone, the change of agrarian landscape in the middle zone was viewed as the enlargement of several vegetable crops since 1990s. The great advantages of large plain fields, fertile soil and favourable irrigation system strongly encouraged growers to expand their vegetable crops. However, during the year 2000s, a certain area of rice and vegetable land has been used for the installation of some industrial companies.

In the lower zone of Hai Duong, the significant change of agrarian landscape was caused by the conversion from rice fields into litchi gardens in 1990s and into the diversified fruit plantations in 2000s. In the past, litchi was grown mostly in the home gardens. In 1990s, rice was gradually replaced with litchi trees. Then, in 2000s, some certain litchi plantations in this zone were cut and switched to other fruit crops such as guava, kumquat, etc. The annual crop-based land area was basically switched to the perennial fruit-based gardens during these decades.

2.3.2 Dynamics of the animal-aquaculture based agrarian system in the upper zone in 1990s and 2000s

During the two last decades, the agrarian system in the upper zone of Hai Duong has evolved from a traditional rice-based system to a diversified animal-aquaculture-crop production system in 1990s and to a specialized animal-aquaculture based system in 2000s. This process was related mainly to the conversion from rice land into fish ponds and animal buildings. In 1990s, some lowland areas in the rice fields were, firstly, switched to fish ponds and animal buildings. The animal and fish production has developed rapidly since then. At that time, winter crops, especially maize and soybean, were widely planted to provide feed for animals and fishes. The integrated animal-fish-crop production system was the dominant model in this zone. In 2000s, the specialization of the production system was enhanced by the expansion of farm size and the intensification of input use. The farm holdings specialized in pig or poultry production with a large scale and applied the monoculture of fish raising. The following part introduces in more detail this dynamic of animal-aquaculture based agrarian system in the upper zone.

2.3.2.1 The process of rice land conversion into fish ponds

Identify the rice land area for the conversion

This step played an important role in the transformation program. According to the land use plan, farmers could not convert any rice field into fish ponds. A certain rice land area, which was favourable for two rice crops per year, was sustained for the food security of the region. Only the lowland area that cultivated by one rice crop per year with the unstable productivity (because of flood) can be dug and constructed fish ponds. These surfaces were often uneven and close to the water streams. Therefore, it is more convenient for fish culture than other high land zones.

Exchange or purchase rice plots among farmers

In order to transform from rice land into fish ponds, each farming household was required to have a large land parcel in the converted area. It was an obligation for market-oriented economy that prioritized by the province. However, due to the equal land distribution in 1993, the rice fields were highly fragmented. Each farming holding owned many land plots in different fields, which have diversified characteristics of soil fertility. Thus, they had to exchange their land parcels to form a bigger one in the converted region.

The land exchange was implemented among households by their discussions. For instance, in Cam Hoang commune (Cam Giang district), the minimum area of the land parcel for the transformation was 4 sao (equals to 1440m²). There were 35 leading households in the conversion program in 1994 (Cam Hoang's People Committee, 2005). They were mostly rich households that well accumulated the financial capital for fish pond construction. However, the exchange process was very limited during 1990s due to the unwillingness of several farm holders who were not interested in the transformation activity. Furthermore, the limitation of financial capital made it difficult for a huge number of farming households to implement the movement.

The land consolidation process was actually conducted in early 2000s when the province implemented the land regrouping program. In February 2002, the directive number 21/TV-TU about land consolidation was approved by the Provincial Standing Party Committee. Then, a

specific program about land consolidation was issued by the Provincial People Committee in April 2002. Cam Hoang was selected as one of the representative communes for this program. Thanks to this policy, the land plots of the commune reduced significantly, from 17,740 pieces to 7,145 ones. On average, each household had 3.7 land parcels with an area of 527m² per piece (Cam Hoang's People Committee, 2005). This was of great importance for the land conversion into fish ponds.

Besides that, many households expanded their land area by buying more surfaces from neighbours.

Construction of the fish ponds

The construction of fish ponds was a hard work for all farming households. This was the manual work which consumed huge human powers. The soil was dug deeply and removed to the surrounding areas to form the border of the pond and the garden. To do so, many small farmers relied on family labours or exchanging labours with their neighbours. The assistance from their relatives was also of great importance because they could not afford to hire waged labours or machines. Therefore, it took a long time to complete the fish pond systems.

However, one constructed large ponds had to pay an enormous cost for waged labours. Because of manual working method, this transformation was costly since the beginning to the end of the process. Because of the difficulty in loan accessing at the early period of conversion (1993-1995), most of the farming households adopt the gradual conversion strategy. It means that they switched partly their land into fish ponds across the years. The profit gained each year was directly reinvested in the continuous construction.

Box 1. My strategy is long-term investment in the fish pond conversion by annual profit

In 2000, I started to convert my rice land into fish ponds. At that time, due to the limitation of capital, my family members had to work hard to dig the soil. Sometimes, I had external assistance from my relatives or neighbours. Normally, I invited them to have meals with my family after work. A total of 5 sao (or 1800m²) were switched after three years.

Then, the annual profit from the VAC production system was invested in expanding more fish pond areas. I had to rent many labours for these activities. In 2006, total water surfaces for fish culture were 25 sao (equals to 9000 m²). It cost about 200 million dongs in estimation.

(Source: Interview with Mister Do Van Huynh, 48 years old, in Tan Truong commune in 2010)

The fish pond transformation was actually a costly investment. It might include the cost of land purchase, waged labours for digging the soil and building the border. To avoid the landslide, farmers had to pay much money for constructing the pond borders. According to Ton (2003), the wall and boundary of the fish pond were built from concrete or bricks. Thus, to complete a medium or large model of VAC, farmers had to spend millions VND.

Box 2. It is costly to switch from rice land to fish ponds and built up a VAC system

The conversion from lowland area in the rice fields into fish ponds, I had to spend approximately one billion VND for 10 sao (equals to 3600 m²) from 1997 to 2003. At that time, the total soil amounts which had to be removed from rice fields were about 2000m³ per 10 sao. The price of waged labours for digging soil was about 6000 to 8000 dong/m³. Other costs included the land renting fee, construction of pond borders and animal buildings, purchase of tools and equipments, etc. My family had to borrow a lot of money from banks to set up this model.

(Source: Interview with Mister Thu, 50 years old in Tan Truong commune in 2010)

2.3.2.2 Changes of agricultural land areas of surveyed households

Rice land areas of most farming households were expanded slightly over two last decades. Nearly all farm holdings still keep a certain area of rice land for food autonomy of their family. Some of them, who are too old or migrated to other regions, may sell or transfer the land to others. Thus, the area of rice land of households in two production systems in 2010 is about 1.2 times to 1.3 times higher than those in 1993 (table 1).

On the contrary, the changes of fish pond areas of most households are dramatic across the years (table 4.5). In 1993, the number of households who had fish ponds and their fish pond areas were very limited. Many of them then bought or rent more surrounding surfaces from neighbours or from common water borders of the commune for fish culture. They often rent the common pools of the commune for long-term use (e.g. about 20 years in Tan Truong commune) at a low price (e.g. 70 kg rice/sao/year for water surfaces and 30kg rice/sao/year for the area of pond borders in Tan Truong). Therefore, the difference of fish pond areas between 2010 and 1993 is very high, about 9.2 times in the livestock-fish system and 6.6 times in the livestock-fish-crop system.

Table 1. Changes of rice land and fish pond areas of surveyed households

Land items	Livestock-fish system (n=13)		Livestock-fish-crop system (n=25)	
	Areas (m ²)	% HHs	Areas (m ²)	% HHs
Rice land areas				
Rice land 1993	1,384.6	100	1,827.4	100
Rent land	27.7	38.5	79.2	12.5
Bought land	180.0	38.5	292.3	25.0
Inherited land	166.2	15.4	201.6	12.5
Sold land	0	0	273.6	24.0
Rice land 2010	1,758.5	100	2,126.9	100
Difference (2010/1993)	373.8	0	299.5	0
Fish pond areas				
Fish pond 1993	450.0	30.8	440.0	16.0
Rent area	2,232.0	53.8	1,502.0	36.0
Bought area	1,440.0	38.5	944.0	24.0
Fish pond 2010	4,122.0	76.9	2,886.0	72.0
Difference (2010/1993)	3,672.0	46.1	2,446.0	56.0

(Source: Surveyed data in 2010-2011)

2.3.2.3 The variation of livestock flock size at the surveyed households

In the first period (1993-2003), the diversified livestock production system was widely employed by most farms. This production system was characterized by the diversified combination of livestock species at the medium production scale.

The differentiation between the two production systems was more significant in the second stage (2003-2010) than that in the previous time. During these years, the households in the livestock-fish production system expanded their production scale by increasing the number of animals. Most farms specialized in pig or poultry production with a high density of animal population. Conversely, the smallholders in the livestock-fish-crop production system sustained the diversified production mode by keeping small animal flock size of different animal species.

Table 2. Variation of livestock flocks of surveyed households

Livestock flocks (Head/cycle)	Livestock-fish system (n=13)			Livestock-fish-crop system (n=25)		
	1993	2003	2010	1993	2003	2010
Sows	1.2	3.0	12.3	1.7	3.9	2.8
Growing pigs	9.8	23.8	88.3	7.2	32.1	20.7
Chickens	344.0	1,216.7	2,583.3	65.0	153.1	262.5
Ducks	350.0	335.0	1,000.0	20.0	345.0	190.6

(Source: Household surveys, 2010-2011)

In the first period (1993-2003), there was a little difference about the sow population between households in two livestock production systems. At that time, a high percentage of farms practised small scale of pig production (about 1-3 sows and 10-30 growing pigs). Then, in 2010, a number of farms in the livestock-fish production system increased the animal herd size (50% of them kept more than 9 sows and more than 90 growing pigs), while others still maintained a small or medium livestock flock size (76.9% households in the livestock-fish-crop production system had 1-3 sows and 91.7% of them raised 10-30 fattening pigs). Thus, the difference about the pig herd size among households in two livestock production systems was more significant than that in the previous time.

2.3.3 Dynamics of the vegetable-based agrarian system in the middle zone in 1990s and 2000s

Vegetable crops are widely cultivated in the middle region of Hai Duong province, which has many advantageous conditions for this kind of crop. The province is known as one of the largest vegetable supplying centres in the Red river delta. A highly diversified variety of vegetable crops is planted here such as cabbage, kohlrabi, cauliflower, bean, etc. A huge

amount of these kinds of vegetable are provided to both local and regional markets every year, not only in the North but also to the South of Vietnam. Over two last decades, the vegetable-based cropping system has evolved significantly as showed in figure 6.

2.3.3.1 The expansion of vegetable crop areas at the provincial level

As one of the main cash crops of the province, the cultivation of vegetable crops has been improved notably since recent years in Hai Duong. The cultivated area of vegetable varied dramatically among the geographical locations of this zone and across the years according to the changes in environmental contexts and market demands. In general, the planted areas of almost vegetable crops strongly increased during the two last decades (1990s and 2000s) (figure 6).

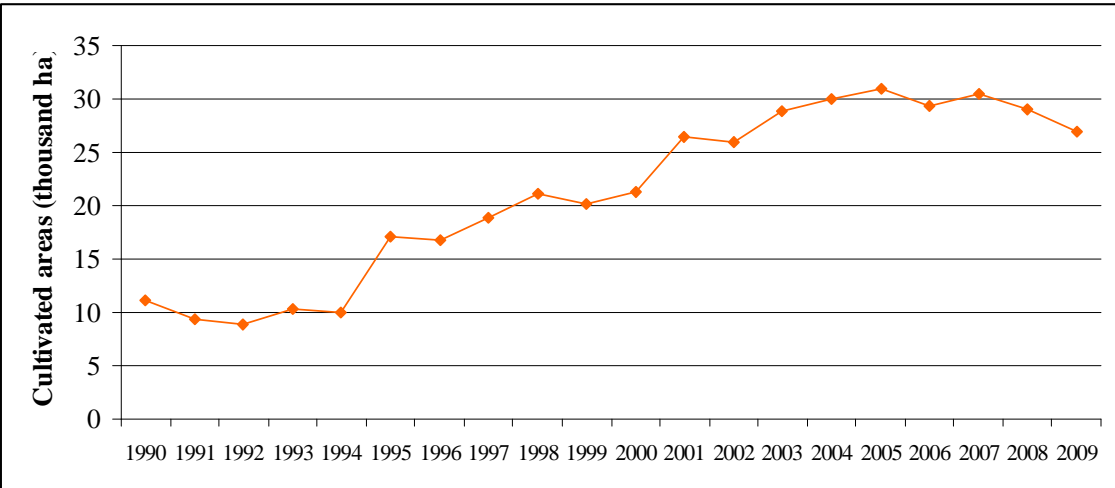


Figure 6. Evolution of vegetable cultivated areas in Hai Duong province
 (Source: (Hai Duong statistics Office, 1995,1998,2001,2006,2010))

The expansion of the vegetable crops started in 1993-1995 when the rice land was redistributed to households for a long-term use. At that time, vegetables were mostly grown during the winter season with limited areas. The soybean and maize crops were planted in most land areas as the major source of animal feed. Then, the cultivated surfaces of vegetables increased rapidly. During the period of 2000-2010, vegetable crops have been grown largely due to the increasing demand of consumers in urban areas. Total vegetable areas have been expanded

from 21.3 thousand ha in 2000 to 30.5 thousand ha in 2007 with diversified species such as cucumber, cabbage, cauliflower, etc. The extension to the markets in the central and southern regions of the country gave a great opportunity to enhance the vegetable crops. Thus, some large specialized vegetable fields were developed in some districts to provide vegetables to the surrounding regions and the southern markets with a huge and stable amount of vegetable.

2.3.3.2 The increase of the rotation cycle of vegetable crops

Over the last two decades, the crop rotation has been changed considerably from the rice-based cropping cultivation to a vegetable-based culture. In 1980s, like many other regions of the province, two rice crops were cultivated during the spring and summer seasons. In winter, a sub-crop was developed gradually in a very limited land area, which has some advantages for the vegetable cultivation such as fertile soil, water supply availability, etc. During the year 1990s, the crop rotation was changed from the summer rice to the soybean cultivation. This change came from the increasing demand for animal feed during this time. In winter crop, farmers started to grow the early vegetable crop since October to sell their products at a higher price than the normal price of the main crops. Then, in some last years of the decade 2000s, when the vegetable demand of the local market increased rapidly, most of the farming households grew only one rice crop per year. They invested more in the vegetable cultivation by developing different crop varieties in each harvest.

Period	Months											
	1	2	3	4	5	6	7	8	9	10	11	12
1980s	Spring rice					Summer rice					Winter crop	
1990s	Spring rice					Soybean				Vegetable/maize		
2000s	Spring rice					Melon		Early Cabbage			Main Cabbage	

Figure 7. Changes of the crop calendar in Gia Xuyen commune
 (Source: Participatory appraisals with chief of Agricultural Cooperative of Gia Xuyen commune, 2010)

2.3.3.3 Changes of farm size at the farm level

It is observed that the vegetable growers in both two cropping systems have expanded dramatically the cultivated land area since 1993 up to now. In 2010, the total vegetable land area of the households was nearly double as compared with that in 1993. This increase was not caused by the growth of the family size because the land area per capita increased significantly (table 3).

Table 3. Changes of vegetable cultivated land areas of surveyed households

Periods	Vegetable cultivated areas	Cabbage-melon system (n=13)		Diversified vegetable system (n=17)	
		Mean	SD	Mean	SD
1993-1995	Total areas (m ² /household)	1,035.5	592.0	1,163.1	512.4
	Areas per capita (m ² /person)	384	-	360	-
Transforming period	Expanded areas (m ² /household)	931.8	726.3	960.9	375.7
2010	Total areas (m ² /household)	1,967.3	878.4	2,124.0	475.8
	Areas per capita (m ² /person)	565.2	303.1	490.6	98.9

(Source: Household surveys, 2010-2011)

These increased areas mostly came from renting land. As the agricultural land was an important property of the farmers, most of them kept their land and rent it out if they could not continue farming. This informal renting contract varied strongly among farming households. Normally, they discuss and draw informally a short-term verbal agreement of renting land for 3 or 5 years. They may also rent land annually just for vegetable cultivation in the winter crop. They have to give the land plots back to the owners for the next rice crop. The renting price thus varied from not only the lease period but also the location of the land parcels. For instance, the average land renting price in 2010 in Gia Xuyen commune was 100kg rice per sao (360m²) per year. This return may be received directly in terms of rice or indirectly by converting into cash at the present market price of rice.

These kinds of renting contract are very flexible and useful for both land owners and the tenants. The land owners, who were engaged in other production activities or were unable to work on farm, can keep their land while getting a stable return. On the other side, the land tenants who have limited agricultural land can access to land and increase their production scale.

Box 3. We have limited land areas and rent more land to develop the vegetable crops

My family has 4 members. However, my two children were not allocated land because they were born after 1993. We have only 2 sao of rice land. Unfortunately, a half of our land area (1 sao) was withdrawn for the industrial installation in 2004. Thus, we had to rent more land from the surroundings to develop the vegetable cultivation. Since 2005, we rent 5 sao of land from my neighbours and paid 150kg rice per sao annually. Now, we do not want to lease more land because my husband and I find off-farm jobs in the district town which provide us a higher and more stable income than that from agriculture.

(Source: Interview with Mrs. Nguyen Lam Hoa, 37 years old in Gia Xuyen commune in 2010)

2.3.4 Dynamics of the fruit-based agrarian system in the lower zone in 1990s and 2000s

2.3.4.1 Process of rice land conversion into litchi plantations

Entire conversion: The whole rice fields were completely transformed into litchi orchards

The whole conversion from rice fields into litchi orchards was a significant change of the agrarian landscape during 1990s. The soil layers were removed to form the land ridge and the indented area. Litchi trees were planted in these ridges while the indented holes played as the water borders. Thus, the relatively plain rice fields became the uneven territory due to this activity.

The movement of the agrarian landscape was conducted by different steps during a long time. Firstly, to avoid the loss of fertile soil, the 20cm top layer was dug and loaded up at the corner of the field. Then, the subsoil layers were removed and filled the ridge up to 0.8 to 1m higher than the previous rice field level. The fertile soil was then spread evenly to the surfaces of these land ridges. According to Diepart (1999), to convert one sao (360m²) of rice land, an approximation of 200m³ of soil was removed. Because of manual works, it required a collective action of groups of labours. Therefore, it took a long time to complete these tasks. For example, Diepart (1999) reported that, it took 3 to 4 days (9 hours/day) for a group of 8 workers to switch one sao of rice fields to the litchi garden.

Moreover, the litchi orchard installation was also a big investment. The price of waged labours varied dramatically from one region to another and increased rapidly across the years. The average price of waged labours at that time was about 4,000 dong to 5,000 dong/m³ of removed soil. Thus, it cost nearly one million dong per sao to complete the converted model. Some other authors also calculated and reported the same cost of litchi garden installation. For instance, in Thanh Thuy commune (Thanh Ha district), labour expense of removing soil was one million dong per sao (Diepart, 1999; Loc, 1999). Another study at Thanh Thuy and Thanh Xa commune estimated that farmers had to invest 25.22 million dong to 27.3 million dong per hectare (or 0.9 million dong to one million dong per sao) to complete the transformation (Loc, 1999). Thus, most of the farms could not afford to invest in the conversion by themselves. They accessed to the loan capital to cope with this difficulty.

Partly conversion: Litchi trees were grown around paddy rice parcels

This type of transformation was widely applied by the poor households who lack credit capital in the lowland areas. Therefore, they applied the mixed litchi-rice cropping system to ensure the food sufficiency and to earn more income from litchi after three to four years of investment. Now, this cropping system is the dominate model in the southern part of the district.

The conversion was gradually conducted by developing different soil mounds inside the rice field. The young litchi trees were grown in these mounds. In the surrounding areas, rice was continuously cultivated two

crops per year. When the litchi was grown, the soil mound was regularly filled up with more soil to form a larger one. After several years (about three to five years), these soil mounds were connected to each other and shaped the ridge of litchi.

The cost of this kind of conversion was cheaper than that of the entire conversion. The soil mound was at a small size at primary stage when the litchi trees were very small. Thus, farmers did not invest much in waged labours. In estimation, Loc (1999) pointed out that the average cost of constructing this model was about 17.78 million dong per hectare (or 0.6 million dong per sao) (Loc, 1999).

2.3.4.2 The rapid increase of litchi cultivation area at the beginning stage of the conversion

At the beginning stage of the conversion process, the cultivation area of litchi increased considerably. Before 1993, the litchi area was very limited, mostly grown in the home gardens for household consumption. Then, due to the rice land transformation project, a number of farming households in almost communes of the district implemented the conversion. Therefore, the cultivation area of litchi was improved significantly. According to the Thanh Ha statistic office, the litchi area of the district was expanded from 241 ha before 1993 to 1,744ha in 1996. There were 17,559 households at 96% of the total number of communes in the district developing litchi orchards during 1993-1996, much higher than those before 1993 (3,433 households at 40% of total communes) (cited in *Anh et al., 2000*).

The cultivation surface of litchi was progressively expanded during the period of 1997-2004 but with a less growth rate than that in the previous time. At the whole province, the litchi area increased from 4,485ha in 1997 to 12.6 thousand ha in 2004 because of the rapid increase in not only Thanh Ha district but also others such as Chi Linh district. In Thanh Ha, the litchi area was enlarged from 2,570ha in 1997 to 5,470ha in 2004 (figure 8). Meanwhile, in Chi Linh, the litchi area grew from 3,080ha in 2002 to 6,011ha in 2004 (Dieu, 2006). The excessive development of litchi cultivation not only in Hai Duong province but also in other regions in Vietnam was considered as one of the most important reasons for the serious reduction of the litchi price afterwards.

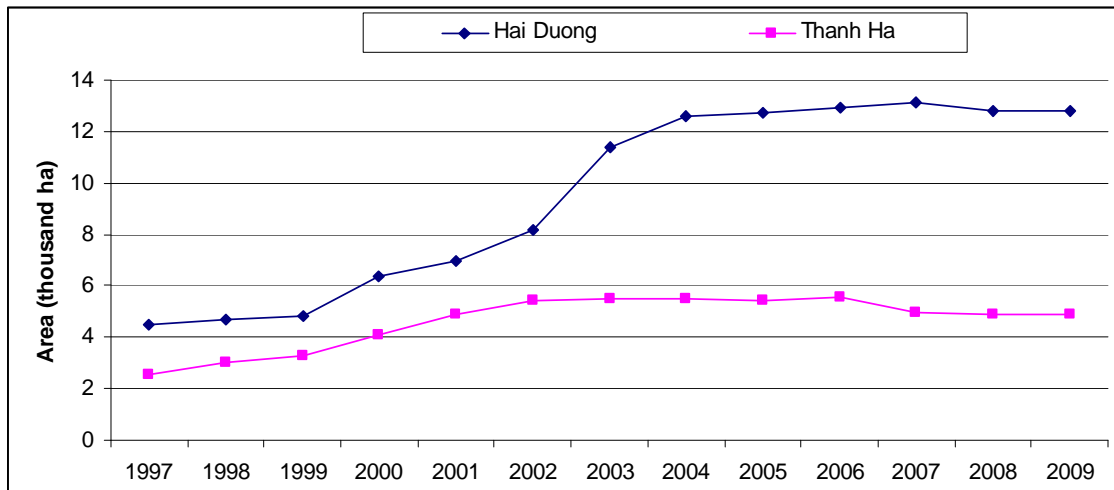


Figure 8. Evolution of litchi cultivation area in Hai Duong province and Thanh Ha district

(Source: Hai Duong Statistics Office, 2001 ,2006, 2010)

Consequently, the cultivation area of litchi has not increased since 2004 because of its low price. At both province and district levels, the planted areas of litchi were maintained at a stable level, about 12.8 thousand ha of the whole province and 5.5 thousand ha of Thanh Ha district. However, it seems to be difficult to keep this litchi area stably because of its degradation. The replacement by other fruit plantations is thus an inevitable process.

2.3.4.3 The gradual transformation from litchi to other fruit orchards at the last stage of the conversion

Although litchi was the main fruit crop of most households at the beginning period of the crop conversion program in Thanh Ha district, other fruit varieties such as guava, kumquat, etc. were also grown among litchi trees as the crop succession. Like the litchi, guava and kumquat were planted in the home gardens of the family long time ago for household consumption. In 1993, when the transformation program was conducted, these plants were also grown in the litchi orchards as the secondary fruit crop. Their contribution to the household income was very limited because of low productivity and low price at that time.

The movement from the litchi to guava and kumquat plantations was a gradual progress. This change was reinforced by a significant degradation of litchi price during a long period and an attractive force of increasing

price of guava and kumquat. During the period of 1996-2004, when the litchi price decreased rapidly (the lowest price of litchi at the middle of the harvest season in 2004 was 1.700 dong/kg (Ton et al., 2006), households in Lien Mac and some other communes cut down partly their litchi gardens and developed the guava or kumquat crop. The new guava variety was introduced by the Field Crop Research Institute (in Gia Loc, Hai Duong). This variety has a special taste that is very different from others, and it is therefore, preferable to most people. The cultivated area of guava increased progressively afterwards. It is estimated that in 2001-2002, about two third of litchi gardens were cut down and replaced by guava trees. Now, this process is still in progress when some households continue buying more litchi orchards and switching to guava plantations.

2.3.4.4 The change of rice and fruit cultivation at the farm level

The sudden decline of rice cultivation

The significant change occurred in 1993 when most households in Thanh Son commune implemented the entire land conversion from rice into litchi. At that time, 100% of rice land areas were switched to litchi orchards. Since then, all households in the litchi-livestock system and the litchi-kumquat-guava system in Thanh Son had no paddy rice supply. Thus, they had to buy rice every year for daily consumption. In Lien Mac commune, where was dominated by the guava cropping system, a certain area of rice crops was sustained for food self-sufficiency. However, this area was very limited. Therefore, each household just has a small plot of rice, about 459m² per household on average. Furthermore, not all farming households have the rice field at the current time (only 62.5% of total households in the guava system). Many of them have to rent more land from the surroundings to cultivate rice (37.5% of total household's rent land). Obviously, keeping a stable rice area is of great importance for the food security of farming households, especially in case of increasing price of rice in the market.

The development of perennial fruit plantations

Over the last few years, there has been a rapid expansion of fruit orchards in the study site. As soon as the Land Law, which provides farmers with all basic rights over their land, was issued in 1993, most farmers converted completely their rice fields into litchi plantations during the period of 1993-1995. Since then, the strategy of major producers was to access to more land surfaces to develop fruit cultivation. As a result, their farm size in 2010 was 1.5 to 2 times higher than that in 1993 (table 4).

Table 4. Evolution of rice and fruit land areas of surveyed households

Period	Cultivated areas (m ²)	Guava system (n=8)	Litchi-livestock system (n=8)	Litchi-Kumquat-Guava system (n=10)
1993	Rice	2,227.5	1,980	1,836
2010	Rice	495	0	0
	Litchi	225	3,750	1,314
	Guava	2,691	210	630
	Kumquat	0	0	1,746
	Total	3,411	3,960	3,690
Difference	Total difference	1,183.5	1,980	1,854
	Bought	823.5	1,950	1,800
	Inherit	90	30	54
	Rent	270	0	0

(Source: Household surveys, 2010-2011)

In the litchi-livestock production system, most of the households still kept their litchi gardens because they invested more in the livestock production. However, in two other cropping systems, litchi trees have been cut down partly and switched to guava and kumquat plantations.

The increase of fruit land mainly came from the buying land process of the households. The high profitability of litchi in 1990s made it more affordable for litchi growers to buy land plots from other households not only in Thanh Ha district but also in other districts of Hai Duong province and other regions far away from their houses in the mountainous regions such as Quang Ninh, Bac Giang, Thai Nguyen, etc. Because of long-term investment in perennial fruit orchards, farmers preferred buying land to renting it. The percentage of households bought land was about 66.7% to 80%, much higher than that of renting land (figure 9). The excessive

development of litchi production was the main reason for the price decline afterwards.

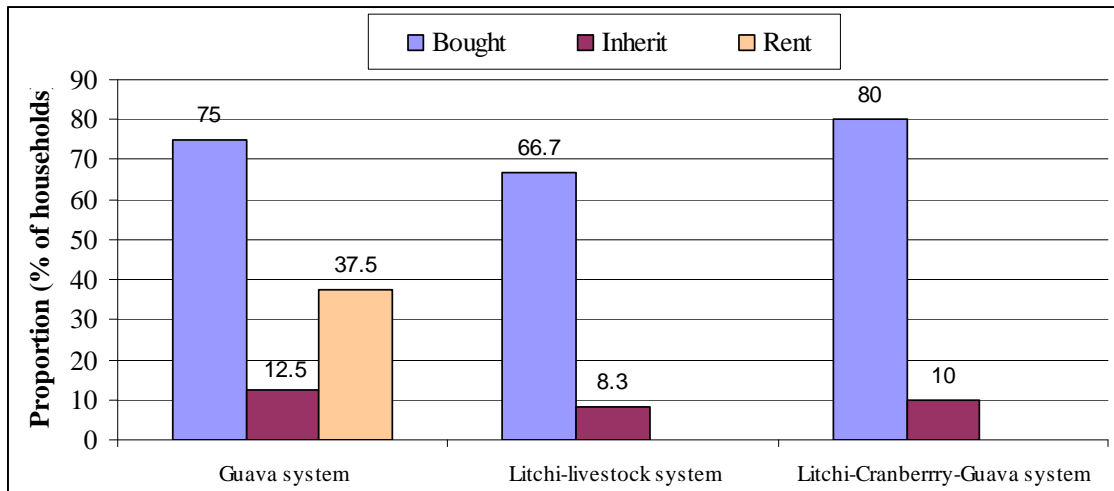


Figure 9. Distribution of frequency of households by their land acquisition
(Source: Household surveys, 2010-2011)

2.3.4.5 The consequences of the excessive expansion of litchi plantations

The rapid and unplanned development of litchi gardens caused the significant reduction of its price and the change of this cropping pattern. The average fresh litchi price in Thanh Ha market has decreased from 15,000 VND/kg in 1995 to 3,500 VND/kg in 2003 and 2,500 VND/kg in 2004 (Dinh et al., 2005). Moreover, its productivity varied strongly across the years (figure 10). Thus, litchi growers failed a lot even though the productivity and yield achieved a high level. To adapt to this downward trend, diversification of perennial fruit trees has been implemented by many producers. Guava, kumquat, banana, etc., were grown to substitute for litchi in some gardens of Thanh Ha district. In some rice fields, where litchi was planted by heaping soil, farmers reconverted into the rice cultivation. However, the diversification or conversion from litchi into other crops faced various obstacles and stayed at a slow movement. An enormous number of farm households stopped growing litchi and searched for non-farm jobs outside the villages. There has been a downward trend in the litchi cultivation recently in Thanh Ha district.



Figure 10. Evolution of the yield and price of litchi in Hai Duong province

Source: (Hai Duong statistics Office, 1995,1998,2001)

3 THE SUSTAINABILITY OF AGRARIAN SYSTEMS IN THE CONTEXT OF INDUSTRIALIZATION, URBANIZATION, AND THE WORKFORCE MOBILITY

In the last decade, the provincial and national government has given priority to the acceleration of development of industry sector. Thus the industry sector has been taking over the importance of agriculture in the national gross domestic product. Although this policy helps to increase the income and living standard of the majority of the population, it also poses some challenges of agricultural land reduction, shortage of active labour, and environmental pollution, etc. to the sustainability of agriculture and rural society. Several questions about the prospect and sustainability of agrarian systems and rural labours in the context of highly accelerated industrialization and urbanization in the coming years are increasingly concerned by the policymakers to formulate an appropriate regional development strategy. For example, what are the potential impacts of accelerating industrialization on the development and sustainability of agriculture? How will the farmers adapt to the increasing urbanization? What is the geographic and sectoral mobility of the workforce between rural regions and urban areas, and between agricultural production and industry sector during the industrialization and urbanization period? Can the agricultural sector re-absorb the surplus workers from the industrial factories if there is a crisis in the industry sector?

Hereby, we will discuss about the possible prospect and sustainability of agrarian systems and the rural society by taking into account three scenarios of industrialization, urbanization and the employment crisis in the industry sector. The analysis is mainly based on the long-term evolution of agrarian systems in the previous periods. Besides that, the literature on experience of other regions of Vietnam and industrialized and urbanized countries in the world will help to better understand about the situation of the study site. The concepts of industrialization, urbanization, and workforce mobility will be presented before taking into account their possible influence on agriculture and rural labours. Then, the analysis will come up with several implications for the sustainable development of agriculture and rural society in the context of acceleration of industrialization and urbanization in the future.

3.1 The evolution and sustainability of agrarian systems for the prospect of accelerating industrialization

Based on observations during the field surveys in the industrial sites in Hai Duong province, we have found that there is a strong relation between the industrialization level and the intensification and specialization of agrarian systems. The agrarian systems in the industrialized regions have evolved gradually into a specialized intensive system during the industrialization period. The development of industry greatly encourages the intensification of agrarian systems.

In the context of accelerated industrialization in the future, it is believed that agrarian systems will continuously evolve into a highly intensive and modern system. This evolution includes the farm size expansion and the modernization of farms. The shift of labours from agriculture to industries of many farming households, especially small and medium ones, induces the land accumulation of rich farms. Moreover, big farms often invest more in the fixed assets such as animal buildings, modern equipment, and other infrastructure facilities in order to improve the labour productivity and yield of agricultural production, taking the advantages of economics of scale. These farm holdings will also intensify their agricultural production systems by intensively using of inputs and applying advanced genotypes of animals or plants. The shortage of active agricultural labours and the increasing cost of waged labours will encourage the mechanization and modernization of the farms.

Besides that, the improvement of the rural infrastructure system, especially the transportation and communication system, during the industrialization period will facilitate the intensification and specialization of many farm holders. To avoid the negative impact on the rural landscape, especially the agricultural land areas, the construction of the rural infrastructure system should take into account of the consolidation of agricultural land and the development of irrigation and drainage systems. The long-term development strategy of the region has to identify the adequate schedule of land use for the installation of transportation system that is consistent with the presence of irrigation facilities and the consolidation of agricultural land.

Although the number of farm households applied small-scale diversified agrarian systems will reduce during the industrialization, it does not mean

that they will be eliminated under the highly industrialized context. The small and medium farms will be persistent for a long time by combining the agricultural production with off-farm jobs offered from industrial firms or some kinds of private business. Because they work part-time on their farms, they often do not invest much on fixed assets or expanding the farm size. Therefore, these farms should take the most advantages of a diversified production system by integrating livestock production and crop cultivation into their farming system. The integrated production system helps them to reduce the production cost through highly recycling the waste and agricultural-residual materials, and to avoid risks of market price instability through adjusting the production scale to the market fluctuation. The small or medium scale of production enables them to flexibly switch from one type of animal species to another species, for example from pigs to poultry, according to the variation of output prices in the market. Therefore, they can seize the best market opportunities and to adapt well to the environmental changes. They also take into account of producing some safe and high-value agricultural products such as organic vegetable, special local chickens, etc. to better fulfil the increasing requirements of high-income consumers in the industrialized regions.

The sustainable development of agrarian systems during the industrialization period will be achieved if several potential problems of industry are basically managed and solved. The reduction of agricultural land is a foreseeable process due to the transformation into industrial parks. It will threaten the food security of the nation if there is no land use master plan at the regional level. The provincial government needs to formulate a long-term land use planning in which specific agricultural land areas, especially the rice land, should be kept stable during the industrialization era. However, it will be difficult for policymakers to implement a master plan of land use if there is a highly fragmented level of agricultural land. Hence, it is in need of land consolidation as the basics for setting up an appropriate long-term land use plan. The land consolidation not only enables policymakers to ensure a given land area for agricultural production, but also to make use of the unfertile or unfavourable land areas for the improvement of the irrigation and drainage system as well as the installation of industrial zones. Besides that, the environmental health is also in great need of protection by good

waste management and treatment of the manufacturing companies. The waste management and treatment activities of all industrial factories need to be well controlled and regularly inspected in accordance with the strict environmental regulations approved by the government.

A balanced industrial development among regions is also of great importance to encourage the improvement and sustainability of agriculture and rural society. This is characterized by the equilateral diffusion of industrial zones among regions. It is believed that the development of some small or medium industrial parks in remote locations is an engine of economic growth thanks to the off-farm job opportunities and the rural infrastructure improvement. The development of some light industries such as agro-food processing parks, handicraft industry, etc. can absorb a huge number of jobless people in rural areas and foster the growth of agriculture. These agro-food processing plants can collect a huge and stable amount of agricultural products from farms in surrounding regions. The strong relationship between farm households and agro-food companies in supplying agricultural commodities will be a great incentive for farmers to develop their farming systems.

3.2 Development and sustainability of agrarian systems in the context of urbanization

Vietnam has undergone a remarkable urbanization after the reform (Doi Moi), especially since 2000s when the country integrated strongly into international economy. The share of urban population has increased steadily over the last few decades, from 19.0% in 1980 to 29.6% in 2009. In accordance with the urbanization process, the socio-economic environment of the province in particular and the country in general has changed substantially during the last years. In the coming years, the urbanization process will be accelerated more strongly due to the government planning for the period of 2015 - 2020. It is estimated that the urban population will make up 38% in 2015 and 45% in 2020 in the total nation population (General Statistics Office, 2011).

Hai Duong is also an urbanizing province in which the proportion of urban population has developed from 5.0% in 1989 to 13.8% in 1999 and to 19.9% in 2009 (General Statistics Office, 2011). The province is also

located near some big cities such as Hanoi, Hai Phong, Ha Long, etc. Therefore, the urbanization process will be accelerated strongly in some coming years. It poses a question about the sustainability of agrarian systems under the urbanization scenario in the next few years in terms of socio-economic, technical, and environmental dimensions.

Under the prospect of highly urbanized province, the agrarian systems in Hai Duong will evolve into an urban and peri-urban agricultural system like the case of Hanoi and other cities in Vietnam and in the world. The characteristics of urban and peri-urban agrarian systems will be different between agro-ecological zones of the province. In general, the concentration areas of agricultural production will be formulated around towns and cities, whereas the family small-scale farms will be developed in the available spaces in the cities.

Over the last decade, as illustrated in the previous parts of this paper, several agricultural concentration areas have been developed rapidly in different zones of Hai Duong, including the livestock-fish production area in the upper zone (in Cam Giang district), the vegetable cultivation area in the middle zone (in Gia Loc district) and the fruit plantation in the lower zone (in Thanh Ha district). In each zone, the concentration area of rice cultivation has also been identified to ensure the food security. These agricultural concentration areas have provided an important proportion of food and agricultural products to local markets and other regions of Vietnam. We have seen that these specialized agricultural areas are often developed in the central locations, close to the towns or cities. Therefore, under the scenario of a high level of urbanization, the specialized agrarian systems will be improved in the surrounding regions of urban centres.

Although the number of farming households will reduce in accordance with the rapid urbanization, there will be a persistence of family agriculture in an urbanized province in the future. The family agriculture in an urban area is characterized by the small-scale farming in the free spaces of the cities such as backyard gardens, among the intricate networks of roads, railways, buildings, and so on. The plant cultivation (including vegetable and fruit crops) in urban areas is possible and significant for urban citizens. Actually, based on personal observations of vegetable grown in urban areas of Hanoi, the urban dwellers can utilize effectively the available land areas around their houses or free surfaces between streets and buildings to grow different types of vegetable crops

for family consumption. Some modern agriculture methods that do not need land such as the hydroponic system (or water culture) and the aeroponic system (or growing plants in an air environment) will be the new selection for the urban agriculture. This is an important source of fresh and safe products for urban consumers due to the low-chemical input use.

In fact, as explained by many scientists, the urban agriculture will be faced with some constraints and challenges related to the urban planning. The rapid increase of population density in Vietnamese cities due to the high population growth rate and the extreme migration from rural regions to urban areas will be much more difficult for urban dwellers to do the farming. The price of land is also increasing significantly when the agricultural land areas are switched to the urban land use. The populous and dense cities will have many strict regulations of limiting negative impacts and threats from the agricultural production such as potentially environmental pollution from animal waste and chemicals, animal disease transmission to human, etc.

In order to develop a sustainable agricultural production under the urbanization situation, it is important for both policymakers to implement an appropriate regional planning and supportive policies for the agricultural sector. The urban land use planning should identify definitely the specific agricultural concentration areas in connection with the urban regions. Keeping stable a given area of agricultural land is significant for the food security and economic growth of the province and the nation as well. It is better to develop a wide range of small and medium towns or cities in different locations of the province rather than the megacity or metropolitan areas. This, on the one hand, enables to avoid the regional migration that leading to the urban poverty, and, on the other hand, foster the development of agriculture in remote regions. Besides that, maintaining the productive farmland needs to be supported by the government through diversified manners. Reducing some kinds of taxes, especially land tax, is one of the most important supports for producers within the context of high pressure of land in urban areas. Improving some agricultural public services such as irrigation system, agricultural extension, pest and disease management, etc. is also in need of support for the urban agriculture development.

For the agricultural producers in urban areas, the sustainable agriculture development can be achieved if they practise properly. They should

improve their knowledge and consciousness of a safe and environmental-friendly agricultural production when implementing the urban agriculture. The farming practices and management need to ensure a healthy ecosystem and environment through low consumption of chemical inputs and highly waste and by-product recycling. The application of biotechnology and information in agriculture is also of great importance for producers to increase the productivity and yield. To increase the family income, producers should take the most advantages of a developed marketing system in the urban areas by accessing to the niche market of the high income consumers such as home delivery of safe products or supplying them to the big restaurants, etc. Furthermore, they should diversify their income sources by developing some non-farm works or engaging in some urban services such as fruit orchard tourism, farm relaxing fishing, etc.

3.3 The mobility of the labour force and the sustainability of agrarian systems

The geographic and sectorial mobility of the workforce

The transformation from an agriculture-based economy into an industrial-based one during the period of industrialization and urbanization often relates to the sectoral and geographic shift of the workforce from agriculture to industry and from rural areas to urban regions. The development of industrial parks often generates more non-agricultural works and thus absorbs an enormous amount of agricultural labours. Over the last decade, there has been a substantial movement of workforce from agriculture to industries and service activities in Hai Duong province and other regions of the Red river delta. The labour absorption of industry and service sector is essential to develop an industrial-based economy according to the government strategy towards 2020.

However, a problem that has been emerging over the last industrialization period in Hai Duong and other provinces of the Red river delta is the spontaneous rural-urban migration of the rural residents. The concentration of industrial zones in some central regions which have many favourable socio-economic conditions for industrial development is considered as the major reason for the geographic migration. Furthermore, the slow urbanization in the remote locations causes an

increasing gap of income and standard of living between the rural residents and the urban dwellers, leading to the migration wave into cities and towns of rural people, especially the young.

The mobility of the workforce often impacts significantly on the development and sustainability of agrarian systems. On the one hand, a fundamental shift of labour force from agriculture to industries and service sector will foster the mechanization and modernization of agriculture and thus increase the agricultural labour productivity and salary. On the other hand, an excessive movement of agricultural workers to non-agricultural labours may result in the shortage of active farm labours (aging farmers) and the potential decline of agricultural productivity and yield. This problem will become more serious if the rural-urban migration is substantial. During the last decade, as demonstrated in the previous parts of this report, the intersectoral and geographic shift of the agricultural workforce in Hai Duong province has affected badly the sustainability of agrarian systems. The shortage of active farm labours caused the extreme degradation of winter crop cultivation, especially maize, sweet potatoes, soybean, etc., leading to the increasing dependence on purchased animal feed in the market. The situation becomes more serious when the abandoned agricultural land areas are increasing in many regions of the province, even rice land. Large areas of litchi orchards are abandoned not only because of its low price in the market but also because of an extreme migration wave of litchi growers from Thanh Ha district, where there is no industrial parks, into other surrounding districts and towns. The income and living standard of these migratory farmers have improved slowly because of unstable non-farm jobs in cities or industrial companies as well as high rural-urban transportation expenses.

A sustainable development strategy of both agriculture and industry sectors should be formulated by providing a diffused pattern of industrial parks and urban areas and a low geographic polarization of the population. To do so, the government policy should give priority to the installation of the small and medium industrial clusters in rural areas that can offer agricultural labours non-farm works without leaving for central locations. The sustainable development of these rural industries can be achieved if they have a good capacity to call for external investment, especially the foreign direct investment, through improving the rural

infrastructure. Besides that, the government should support for the development of the traditional handicraft villages by implementing a favourable tax policy and developing the marketing system. These industrial jobs will supplement an important source of income to households, reducing the income gap between rural people and urban dwellers.

Another important condition that helps avoid the rural-urban migration is the development of small and medium urban towns in rural areas. This development schedule should take account of improvement of rural infrastructure system such as transportation and communication system to facilitate the economic activities and the rural life. In Vietnam, a “national targeted program on building a new countryside during 2010-2020”, which was approved by the Decision No. 800/QD-TTg in June 4, 2010, is believed to improve the socio-economic conditions and infrastructure systems in rural areas by 2020. It is in great need of both support from the government and the participation of rural residents in implementing this rural development program.

In accordance with rural industrialization and urbanization, the mechanization and modernization of agriculture is also of great importance to release rural residents from manual agricultural works and increase the labour productivity and income. If the agricultural income is not so much lower than the non-agricultural income, farmers will not leave for non-farm jobs in cities. Therefore, the agricultural mechanization and modernization needs to go along with the rural industrialization and urbanization on the way towards the sustainable development of agriculture and rural society.

The employment crisis in the industry sector and the role of agriculture

The scenario discussed here is the employment crisis occurred in the industry sector, leading to the unemployment of enormous non-agricultural labours. The question is that if the agriculture can re-absorb these jobless people from industrial companies or not? What are the solutions for this problem?

In general, the agricultural sector cannot absorb all the jobless non-agricultural labours if the industry sector will be in crisis. It depends on both the development of agricultural production and the ability of the labours. On the one hand, if the agricultural production is highly

mechanized and modernized, it does not require much human power and thus takes few numbers of labours. On the other hand, the non-agricultural labours are often the young, who lack of both production means (land, farm equipment, and capital) and agricultural knowledge and skills. Hence, it will be difficult for them to set up a new production system if they lose their jobs in the industry sector. As observed in several industrial zones in Hai Duong province, we have found that, in the 2007-2008 economic crisis, the workers who lost their jobs in the manufacturing factories did not turn back to the agricultural production. Many of them tried to find seasonal non-agricultural works in the “free market” such as housing construction, small private business, housework services, etc. These kinds of works help them to survive during the crisis period.

For the part-time labours, who work part-time in the industrial sector while keeping animal production or crop cultivation, agriculture is really a buffer for them to overcome the economic crisis. Because they have all the necessary production means (land, farm equipment, and capital) and agricultural knowledge, they can turn back easily to their farming works. This is similar to the case of Taiwanese farmers when the oil crises hit in 1974 and 1982. Agriculture helped the unemployed non-agricultural labours to deal with crises and stabilize the society (YU-KANG MAO and SCHIVE, 1995). This is also a livelihood strategy of many farm households in Hai Duong and other regions of the Red river delta to avoid the risks of losing off-farm jobs.

A sustainable strategy of employment creation should be concentrated on the improvement of education program for the young in rural areas, especially the vocational training programmes. The vocational training courses are of great importance for rural people in providing them with education and skills that are necessary for them to prepare for a non-agricultural job in the industrialization era. These programmes should be diversified to meet different needs of the young in rural areas. In order to encourage the participation of the rural people, who often have a low level of income, it is in need of support from the government through charging for a favourable tuition and subsidizing the accommodation cost, for instance. Moreover, the government also needs to help the skilled people to find a stable job or to set up a new private enterprise or manufacture after training. One of the best ways to create more jobs for

rural residents is to develop the small or medium industrial clusters in diffused rural locations. By this way, farmers can combine agriculture and non-agricultural works to diversify their income sources and be more resilient to the economic crisis.

4 THE EMERGING LAND ISSUES AND THE NEED FOR A NEW POLICY ON THE AGRICULTURAL LAND

4.1 Current issues of the agricultural land use system

In Hai Duong and other provinces in North Vietnam, the agricultural land use system is now in crisis that confronts the sustainable development of agriculture and rural society. The following emerging issues illustrate a high demand for setting up a new policy on the agricultural land in the forthcoming period.

4.1.1 Fragmentation of the agricultural land

The first and foremost problem is the small and fragmented land plots due to the egalitarian distribution of land in 1993. The situation of fragmentation of agricultural land differs from one region to another. At the whole country level, there were about 75 million plots of land and each household owned about 7-8 parcels on average (Lan 2001; Marsh & MacAulay 2002, cited in Hung et al. (2006). In the Red river delta and in Hai Duong province, the average land parcels per farm holdings in 1998 was 7 and 10.3, respectively (Cat, 1998; Hung et al., 2006). Although the government has launched the land regroup program in many communes (about 700 communes in 20 provinces in the whole nation), this process is still at a low speed (Hung et al., 2006). In some regions like Hai Duong province, the project succeeded in some representative communes, which were selected and assisted by the province as the example, but failed in many others. The agricultural land in most regions are strongly fragmented and scattered. This is asserted by many authors that it is facing the development of agricultural production in Vietnam (Lan 2001; Ministry of Agriculture and Rural Development 2002; Research Institute of Agricultural Planning 2004, cited in (Hung et al., 2006). Although the small-fragmented land plot may be a significant factor for crop diversity, it clearly has a negative impact on crop productivity, family labour use and other financial expenses (Hung et al., 2006). Therefore, many farmers are in need of consolidation of agricultural land for a better use of natural resources. For example, in Hai Duong province, 2,300 households of total 2,500 samples demanded to reduce the number of small land parcels

according to survey results in 1998 in 10 communes of 8 districts (Cat, 1998).

In this study, although the data about the number plots and their size were not collected, personal observations of the author and discussions with some local people revealed that the fragmentation of agricultural land was really a serious problem for the development of a commercial agricultural production in some study sites. The land regroup program was implemented in some communes such as in Cam Hoang commune, Cam Giang district in 2003, but not succeeded in others, especially in the regions where vegetable and fruit cultivation are highly intensive and market-oriented like Gia Loc and Thanh Ha district. Besides that, the land regroup program is only a palliative solution to reduce the number of land plots and their size of each land holding. This solution does not enable producers to expand their total agricultural land areas. Many of vegetable and fruit growers acquire more land areas through short-term renting or buying the land use rights from other households. This is a big investment and risky to the fluctuation of the price of agricultural products, especially if they decrease in future like litchi. The scattering of rented land plots hinders producers in their efforts to consolidate land parcels. Thus, dissemination of unofficial land transaction activity impedes the development of a commercial agricultural production.

4.1.2 Different demands for the use of agricultural land among households and the growing abandonment of land

At present, the land use system seems to be adapted with the new situations of the industrialization and urbanization period. The demand and capacity of agricultural production is significantly different among groups of households. One group, mostly the young, is interested in engaging in non-farm works which potentially generate a higher income than that from farming jobs. The rest, especially the middle-age or the old people, continues working in agriculture. The direct agricultural labours have many difficulties in expanding their farm size because the non-farm group refuses to give their land plots to others. They still keep cultivating extensively on their land areas at low productivity or renting it out for a short-term period. The short-term renting contract does not allow land renters to invest in their production systems and does not care about the soil fertility improvement. Moreover, the highly scattered situation of

land field due to the limit of land plot exchange among households leading to the increasing areas of land abandonment. It is likely that most of labours, especially the young, are now much less interested in investing in farming activities, whereas many active farmers are in great need of more agricultural land surfaces to mechanize and modernize their production systems. This contradiction causes the waste of natural resources and limits the development of agriculture.

Direct observations and discussions with local administrators and farmers reveal that the abandonment of agricultural land, especially rice land, is increasingly common in Hai Duong province and many others. A number of rice land plots are increasingly abandoned in Cam Giang district. In Thanh Ha district, the litchi orchards are non-harvested crops over large areas because of abundant rural migration to industrial zones and cities. It seriously threatens the national food security and the survival of farming holdings in the forthcoming years.

Besides that, after 20 years of land allocation under the 1993 land law, many emerging issues, especially the land ownership, are becoming inconsistent with the current reality of rural areas. A high proportion of old and dead people are still identified as the owner over their land areas allocated in 1993, meanwhile the young who were born after 1993 has not allocated land yet. Furthermore, the people who were born before 1993 and allocated agricultural land are still certificated as the land owner even though they are now engaging constantly in non-farm jobs in the governmental offices or organizations such as soldiers, polices, teachers, etc. These may lead to the conflicts among rural households over land regime. Thus, revision of the agricultural land policy is in high demand. Now, in 2013, a new land law is reviewing by the national parliament.

4.1.3 The imperfection of land market and the increase of land price

According to the Land Law in 1993 and the revised version in 2003, the land owners had basic rights over their land. The Article 106 of this law expresses that *“land users may exercise the right to exchange, assign, lease, sub-lease, bequeath and donate land use rights; to mortgage, guarantee and contribute capital using land use rights”*(Vietnamese National Assembly, 2004). These main rights have enhanced the transaction activity in many regions over the last few years. The

inheritance and transfer rights may ensure the security and help improve productivity, but also add more tensions around land acquisition under the poorly codified land market (French Embassy in Socialist Republic of Vietnam, 2003). In the active land market in some regions, especially in the Red river delta, the better-off households are the ones who acquired more land areas than that of others, leading to the increase of poverty and equity concerns when the off-farm job opportunities remain low (Marsh et al., 2006). In fact, the land price in Hai Duong and many other provinces has increased rapidly in recent years because of the speculation of some land users, especially in the context of rapidly accelerated industrialization and urbanization around Hanoi and other big cities. In the vegetable and fruit land areas, the price of land is much higher than that in other regions and increasing rapidly. The actual price of land in the market is much higher than the price level assessed by the state. This kind of land transaction market cannot encourage the farm holdings, especially the young who lack financial capital, to expand their farm size and mechanize the agricultural production.

4.1.4 The complication of agricultural land tenure system in the industrialization and urbanization period

At the moment, when the process of industrialization and urbanization is enhanced, the revision of the land law seems to be much more difficult because of the competition function in land use and the rising property value of land. A high demand of land for installation of industrial parks and urban buildings in recent years has resulted in a significant reduction of agricultural land areas, especially in suburb of Hanoi and other metropolitan cities. The increase of land property value in this region induces the land speculation of some owners and makes it difficult to consolidate and redistribute the agricultural land. In many cases, the logic of keeping agricultural land areas is not for producing a high yield of crops. Land is becoming a kind of capital of many farm households due to the rising price of land in the industrialization and urbanization period. Therefore, it is very difficult for policy makers to set up an appropriate policy on agricultural land towards sustainable development of agricultural production.

4.2 Policy implications of consolidation of agricultural land

4.2.1 Principal requirements of agricultural land consolidation program

Based on the literature on the experiences of land consolidation program at some communes in Hai Duong (Cat, 1998; Cam Hoang's People Committee, 2005), and the discussions with the local informants, the following principles and requirements should be fulfilled when implementing the program of land consolidation.

- Land needs to be offered to the right agents who actually have sufficient assets and capacity for the agricultural production. This means that the land will be given to workers who are currently working full-time or part-time on farms. The farmers who are temporarily engaging in unstable off-farm activities should be involved in this consolidation program.
- The land consolidation program needs to ensure the social equity of the rural society. It is of great importance for the project to avoid the social conflicts and disorders. For such objectives, the legitimate aspirations and demands of the most farming families should be taken into account in designing and implementing the land consolidation.
- When carrying out the consolidation of agricultural land, it is important to place great emphasis on the participation of rural communities in all steps from designing, conducting and inspecting stages. The program should be highly opened-up and encourage the participation of all villagers.
- Another requirement is that the land consolidation program has to be consistent with the long-term land use planning of the region. Without considering the future land use planning, the project will be soon out of date.

4.2.2 Propositions of practical methods of land consolidation program

The rationale of institutionalization of land renting agreement among farm households

As illustrated in the previous part of this report, land renting is becoming more popular in Hai Duong and other regions of the Red river delta during the process of accelerated industrialization and urbanization around

Hanoi and other metropolitan cities. The land renting is often conducted between farm households and their neighbours or relatives for an instable period, normally a short-term agreement. However, this kind of land transaction is often unofficial because they do not sign any types of contract. It is a simple verbal agreement between the land owners and the land renters about the duration and the payment of renting. The land renter often pays the land owner with the paddy rice or in conversion into cash at the market price after harvesting the crop.

However, the unofficial land renting has many disadvantages that hinder producers to invest in their agricultural production system. Firstly, the fragmented and scattered of land plots hinder land renters to consolidate and expand their farm land areas. Thus, they cannot mechanize and modernize their agricultural production. Secondly, the renting duration is often instable, depending strongly on the demand for land use of the owners. In many regions, for example in the vegetable cultivation zone, when the price of agricultural commodities is in increasing trend, the land owners break the term of the contract and get their land plots back. Thirdly, the renting fee that the land renters have to pay increases rapidly, especially the land for growing vegetables and fruits. Many households have difficulties in renting more land areas from surrounding regions because of the high charge. Hence, it is important to institutionalize the agricultural land renting.

Institutionalization of the agricultural land renting contract for land consolidation

Institutionalization of the agricultural land renting contract is implemented by the legalization of the land renting agreement between the land renters and the land owners. It is clearly that the legalization of land renting contract will encourage farmers to consolidate the land plots for mechanization and modernization of agricultural production. The abandoned land areas will be utilized effectively for the agricultural production purpose. The crop productivity and yield will increase and the production cost will be reduced significantly. Thus, the agricultural production will generate more income for farmers. Meanwhile, the land owners still keep their land ownership and get profit from leasing.

This kind of legal renting contract has to indicate clearly the renting duration and the renting fee that are appropriate for both land owners

and land renters. The leasing duration should not too short or too long because of the rapid evolution of the agrarian systems in the urbanization and industrialization. It may be five or ten years, depending on the discussions between them. The renting charge should be appropriate for the fluctuation of the market and the change of inflation rate.

The institutionalization of the land renting agreement should be firstly implemented between close neighbours or relatives. It is because these households often have the nearby land plots in the same location. Moreover, because of the close relationship, it seems to be easily for them to sign the agreement and obey the term of the contract. Year after year, when the farmers identify the benefit of official land renting transaction, they can enter into the contract with others from surrounding regions.

The participation of the communal authority and other representative people (for example, head of farmer union, head of woman union, head of communist party unit, head of agricultural cooperative, etc.) is of great importance to legalize the renting contract and to protect the interests and to inspect the responsibility of both land owners and renters. It plays an important role in explaining the goals and necessities of land consolidation and getting support from all villagers. Historical experiences show that the change in land policy will only be successful if most of citizens give support to it. Their support will help not only to avoid the extreme argument, but also to motivate their new ideas that renovate the policy. Therefore, much attention needs to be paid to these exercises in the first step of the program to receive a high degree of unanimity of the local people.

4.2.3 Propositions of auxiliary policies for the land consolidation program

In order to have a better result of the land consolidation program, the following policies should be involved:

- The government should implement some supportive policies to compensate the households who gave back their land plots to others and to help them to find stable jobs in the industry and service sectors. The role of improvement of rural small industry factories and traditional handicraft villages in absorbing the rural employments is well demonstrated in many regions. In some coming years, there is a

growing need for supportive programs for the enhancement of these sectors.

- The rural infrastructure system, especially the road and irrigation system, needs to be improved by the public investment of the state. This intervention helps to reduce the heterogeneity of production conditions among land plots in different fields. If the facility of the land plots in the unfavourable locations is improved, farmers will readily agree with the land consolidation program.
- The land consolidation program should be accompanied by the policy of flexibility of land use. It means that the government should encourage and allow land users to transform their land plots from one type of land use to another similar agricultural production activity under the control of the local government.
- To avoid the abandonment of agricultural land and the illegal land conversion into non-agricultural purposes, the state may consider some specific regulations of land withdrawal in some cases.

5 CONCLUSIONS

Over the two last decades, farmers have adapted rapidly to the socio-economic and institutional changes by different adaptation and stabilization mechanisms. Firstly, the stabilization through keeping a certain land area for rice cultivation is often the most important strategies of the majority of households for the food autonomy. Secondly, diversification of the production systems by employing an integrated animal-crop production system or a diversified vegetable or fruit cropping system is an important resilience strategy of farmers to maximize the efficiency of household resource utilization and to reduce risks from physical and economic environments. The combination between agriculture and non-farm jobs also helps farm households to diversify their income sources and better survive under the context of economic crisis and the degradation of some kinds of agricultural production (litchi, for instance). Thirdly, taking the most advantages of the market development and the increasing food demand of the consumers through the intensification and specialization of the production systems is of great importance for farm households to increase the resource use efficiency (land, labour, capital) and to generate more income. To limit the negative impacts of the physical and economic environments, most farmers implement efficiently both the operational and strategic flexibility of production systems by adjusting the production scale of the animal production or plant varieties to be more appropriate with the changes in agro-ecological environments and the fluctuation of price in the market.

Now, a number of agricultural land issues, such as land fragmentation, land abandonment, competition function in land use, and imperfection of land market, are all emerging that makes it difficult for the government to set up an appropriate land use policy. In this context, a new institution of land use needs to be developed to enhance the efficiency of using land for agricultural production purpose. Institutionalization of land renting agreement among farm households is recommended as an appropriate solution for the consolidation of agricultural land, paving the way for the mechanization and modernization of the agricultural production in Vietnam in the forthcoming years. The involvement of local authority and other social organisations in rural areas is of great importance to protect the interests and to inspect the liability of both land owners and land renters under the contract. Furthermore, the participation of the

commune is also necessary to persuade and propagandize farmers to involve in and support for the consolidation program.

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GRAESE : Groupe de Recherches Asie de l'Est et du Sud Est



Le **GRAESE** (Groupe de Recherches sur l'Asie de l'Est et du Sud Est) regroupe des chercheurs concernés par les problèmes du développement en Asie Orientale et Sud Orientale. A son origine se trouvent des académiques et des chercheurs ayant participé à des projets de recherche, d'enseignement et de coopération dans cette région du monde depuis le milieu des années 1990. En Belgique, ces activités ont associé, dès le début, des chercheurs de l'UCL, des FUSAGx, et de l'ULg qui poursuivent une coopération régulière depuis une quinzaine d'années. En Asie ces activités ont concerné un grand nombre de chercheurs et d'académiques de diverses universités et institutions vietnamiennes, laotiennes, cambodgiennes, thaïlandaises et chinoises. L'Université Agronomique de Hanoi (UAH) est un partenaire privilégié depuis le début. Ces activités ont concerné particulièrement les projets de développement agricole, les composantes socio-économiques du développement rural, les rapports villes-campagnes et les politiques affectant ces différents domaines. En outre plusieurs thèses de doctorat ont été réalisées dans le cadre de ces activités, et sous diverses formes de partenariat entre les universités belges et asiatiques concernées. Le **GRAESE** vise à donner une meilleure visibilité à ces diverses activités, à faciliter la circulation de l'information entre les chercheurs et centres de recherches concernés, et à appuyer et soutenir l'intérêt en Belgique et en Europe pour les problèmes du développement asiatique dans un public plus large.

En pratique le **GRAESE** a pour objectif :

- 1) de stimuler la recherche interdisciplinaire concernant les problèmes et les enjeux du développement en Asie orientale et sud orientale ;
- 2) de publier sous forme de Working Papers (format papier ou online) des résultats de recherche liés aux projets en cours et aux questions concernant les diverses thématiques du développement appliquées à l'Asie orientale et sud-orientale, avec une attention particulière aux thèmes évoqués ci-dessus ;
- 3) de réaliser des publications scientifiques de divers types concernant ces problèmes et réalisées par des chercheurs des différents centres partenaires en Europe et en Asie ;
- 4) de fournir un lieu de rencontres entre chercheurs concernés par ces thèmes, particulièrement dans le cadre des doctorats en cours ;
- 5) d'organiser des activités d'enseignement et d'information sur les problèmes du développement de l'Asie de l'Est et du Sud Est, notamment à travers l'organisation de conférences et séminaires donnés par des académiques et chercheurs asiatiques de passage en Belgique.

En Belgique les activités du **GRAESE** sont coordonnées par Ph. Lebailly (UEDR-Gembloux-ULg) et J.Ph. Peemans (CED-UCL). Le secrétariat du **GRAESE** est assuré par l'UEDR.

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