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**FARMERS' COPING STRATEGIES FOR SUSTAINABLE LIVELIHOOD UNDER  
THE IMPACTS OF INDUSTRIALIZATION PROJECTS IN RURAL AREA  
- A Case Study of Van Duong Commune in Red River Delta of Vietnam -**

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## **EXECUTIVE SUMMARY**

This research aims to investigate farm households' coping strategies for their sustainable livelihoods after they lost their agricultural land due to the industrial zone establishment in Vietnam. It was conducted in Van Duong commune whose agricultural land was converted since 2001 for Que Vo industrial zone – the largest industrial zone in Bac Ninh province. Between 2001 and 2008, more than 60% of total agricultural land in Van Duong commune was already converted. Consequently, many farm households in the commune lost their agricultural land. Those households received the compensated amount between 31- 165 million VND for their land concession.

Although the compensation was considered as a start-up capital for the process of shifting to new livelihood activities, most of the households in Van Duong commune used a major part of the compensation for their house building and purchase of living assets. When the compensation ran out, the households faced difficulties in their lives as they were not self-sufficient in food anymore. In order to overcome the difficulties, the households firstly tried to diversify their income generation activities through building rooms for rents, seeking permanent jobs for companies inside the IZ, running small businesses, and enhancing the temporary work as much as they could. In addition, they tried to use all possible land for crop cultivation to reduce purchased food amounts. They also reduced the animal rearing scale due to the shortage of farmland. Furthermore, they made efforts to save the daily living cost by wisely using their available budget, and investing more budgets for trainings and education for their young family members with the hope that those members could find permanent jobs in the futures. It was also found that many households try to avoid the contribution for common fund after land loss.

For the sustainable livelihoods after the land loss, it is suggested that the households use a small share of compensation for house repair or purchase of living assets, and the large share for the long-term activities such as the training or education of young family members, investment for small business or for permanent income generation activities (such as building rooms for rents). By doing so, the farm households could diversify their income generation activities and create permanent jobs for their family members. In addition, the wise use of family budget is also very important. Besides, the farm households could set up more strategies for their sustainable livelihoods based on their own resource conditions.

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# 1. INTRODUCTION

## 1.1. Rationale for the Study

To date, many countries have implemented industrialization in order to gain economic growth. A common strategy selected for that process was to build the industrial zones (IZs) or other similar zones like industrial parks (IPs), export processing zones (EPZs), special economic zones (SEZs), free trade zone (FTZs), etc. In Taiwan, the government has established many industrial parks throughout the country since 1960s (Huang, 2001). In India, the first EPZs were formed in Kandla as early as 1965 (Aggarwal, 2004). Bangladesh joined the EPZ bandwagon in 1980s (Dowla, 1997). China started establishing SEZ in 1979 (Wu, 1989). Meanwhile, Vietnam created the first EPZ of Tan Thuan in 1991.

Together with forming IZs, a huge area of agricultural land has been converted for industrial purpose. Accordingly, a lot of small farmers have to cope with a sudden shock of loss of agricultural land. Since agricultural land is a key livelihood asset of small households, loss of agricultural land clearly forces households to seek new forms of livelihoods. Moreover, when small households lost agricultural land they lost not only a key livelihood asset in terms of natural capital, but also they no longer used traditional on-farm skills. How did farmers do to cope with such a circumstance and what did their livelihoods change are arising questions for many developing countries with industrial zone development strategy.

In Vietnam, following the industrial zone model launched by the establishment of Tan Thuan EPZ in 1991 in Ho Chi Minh City, the first regulations regarding to the establishment of industrial zones were issued in 1994. Six zones had been established nationwide by the end of 1995. Then, the comprehensive industrial zone and infrastructure master-plan was approved in August 1996, covering the establishment of 33 industrial zones by 2000 (ADB, 2006b). To 2006, IZs rose to 135 in whole country, accounting for 28,644 ha. Most of those 135 IZs had been in operation, 54 were on building process (Huy, 2006). To June 2007, there were 148 IZs with 32,120 ha including 21,224 ha available for lease.

Compared to 2006, nine added IZs had been in operation and four were under construction (Huy, 2007).

Together with forming IZs, a huge area of agricultural land has been converted to industrial purpose. To 2006, more than 157 thousands of ha had been converted from agriculture land, including 28,644 ha for building IZs (Huy, 2006). Many farm households surrounding IZs lost all their agricultural land while many others lost a part of the land due to IZs development. By 2005, land had been recovered from over 100,000 small households for the development of more than 190 industrial zones and clusters (Ba et al., 2006). Those farm households received a lump sum of money as a compensation for land revocation in accordance with Vietnamese government policy. However, how did those farm households do to recover from the shock of land loss by the compensation? How did the land loss or the change in natural capital of the households affect their physical, human, financial, social capitals and the use of those capitals in the households? How were farmers' coping strategies for their sustainable livelihoods after the shock of land loss? What were the most difficulties that those farmers faced with after land loss and what should be done for them to get the resilience? Under such a circumstance, this research was designed to shed a light on the changes in livelihood of farm households due to land loss and to provide the base for local authorities and policy makers to consider the solutions for ensure the sustainable livelihoods of those farm households in the coming time.

## **1.2. Research Objective**

The overall objective of this research was to investigate the farmers' coping strategies for the sustainable livelihoods after they lost their agricultural land due to industrial zone development. The specific objectives of the research were as follows:

- 1) To describe the land loss situation due to industrial zone development
- 2) To investigate the farmers' coping strategies for the livelihoods after they lost their agricultural land due to industrial zone development.

- 3) To draw implications for resolving the difficulties that farmers are encountering in order to secure their sustainable livelihoods after the land loss.

### **1.3. Research Questions**

- 1) How was the land loss situation due to industrial zone development in research site?
- 2) How did the farm households do to cope with the shock of loss of agricultural land for their sustainable livelihoods?
- 3) What should be done to resolve the remaining difficulties in order to secure the sustainable livelihoods for those farm households?



## 2. LITERATURE REVIEWS

### 2.1. Definitions and Concepts of Livelihoods

There are a variety of debates on livelihood so far. Modern livelihood studies found their intellectual inspiration in the general understanding of “*livelihood*” through the definition of Gordon Conway and Robert Chambers. In their interpretation, a livelihood refers to the means of gaining a living, including livelihood capacities, tangible assets, such as stores and resources, and intangible assets, such as claims and access (Chambers and Conway, 1992: cited in Ellis, 2000).

Long (1997) claimed that the term livelihood “best expresses the idea of individuals or groups striving to make a living, attempting to meet their various consumption and economic necessities, coping with uncertainties, responding to new opportunities, and choosing between different value positions” (cited in Haan and Zoomers, 2005). The idea of Long’s definition of livelihoods was emphasized in Ellis’s (2000). He agrees with Long that rural people make their living in the uncertain and risky conditions. Thus, a fundamental characteristic of rural livelihoods in contemporary developing countries is the ability to adapt in order to survive. For this reason, the construction of a livelihood has to be seen as an ongoing process, in which it cannot be assumed that the elements remain the same in different time and space, but they fluctuate by the time, space, and the variation of larger economic trends in the national economy and beyond (Ellis, 2000).

From Chambers and Conway to Long and Ellis, the understanding of livelihood seems to stress on the economic or material objectives of life. Other scholars developed the concepts of livelihood which go beyond the conventional material indication. Wallmann (1984) had already stressed that “livelihood is never just a matter of finding or making shelter, transacting money, getting food to put on the family table or to exchange on the market place. It is equally a matter of ownership and circulation of information, the management of skills and relationships and the affirmation of personal significance ... and group identity. The

tasks of meeting obligations, of security, identity and status, and organizing time are as crucial to livelihood as bread and shelter” (cited in Haan and Zommers, 2005). Like Wallmann, Bebbington (1999) clarifies that “a person’s assets, such as land, are not merely means with which he or she makes a living: they also give meaning to that person’s world. Assets are not simply resources that people use in building livelihoods: they are assets that give them the capability to be and to act. Assets should not be understood only as things that allow survival, adaptation and poverty alleviation: they are also the basis of agents’ power to act and to reproduce, challenge or change the rules that govern the control, use and transformation of resources” (cited in Haan and Zommers, 2005). This means that livelihood is both a matter of material and non-material aspects of well-being. Livelihood, thus, should be seen as a dynamic and holistic concept that can change in accordance with particular situation. It could be said that the former definitions of livelihood are suitable to the poor individuals or groups who are struggling for their basic needs while the later ones are for the communities which overcame poverty. Additionally, the later concepts paid attention to the different kinds of needs of the poor, and took into account of how poverty is perceived by the poor themselves.

All concepts of livelihood consist of two components in which the first part is the objective, whereas the second part is the necessary assets in order to obtain the livelihood outcomes. Assets in the guidance of the UK’s Department for International Development (DFID) and in the Chambers and Conway livelihood definition contain a number of components which are natural capital, physical capital, human capital, financial capital, and social capital (DFID, 1999; Ellis, 2000). Natural capital includes natural resources stock from which resources flow useful for livelihoods are derived. Social capital consists of social resources such as networks, membership of groups, and relationship of trust, access to wider institutions of society upon which people draw in pursuit of livelihood. Human capital is the skills, knowledge, ability to labor and good health. They are important to the ability to differentiate livelihoods strategies. Physical capital is the basic infrastructure (transport, market, school, hospital and communications) and the production equipment and means. Financial capital refers to financial resources,

which are available to people including savings, supplies of credits or regular remittance or pensions, which provide them with different livelihoods options.

Almost all scholars note that the important implications of the concepts of assets are (i) the problems of access to these capitals, and (ii) the flexible combinations of as well as interchangeability between different capitals (DFID, 1999; Ellis, 2000; Haan and Zoomers, 2005). The guidance sheets of DFID (1999) points out that the shape of the pentagon/hexagon can be used to show schematically the variation in people's access to assets. The centre point of the pentagon/hexagon represents zero access to assets while the outer perimeter represents maximum access to assets. On this basis different shaped pentagons/hexagons can be drawn for different communities or social groups within communities.

## **2.2. Vulnerability Context**

A vulnerability context is defined as the external environment in which households/individuals exist (DFID, 1999). It suggests that the vulnerability context has an impact on a household's livelihood asset status. A household's accessibility to livelihood assets might be affected by external threats (also risk factors) over which "they have limited or no control". These factors might include Seasonality (of price, production, and employment opportunities); Trends (e.g. national/international economic trends, technological trends); and Shocks (e.g. natural disaster, ill health, economic shocks, crop/livestock health shock) which may suddenly reduce households' resources base or their key livelihood assets (Ellis, 2002; DFID, 1999). Hence, the compulsory purchase of agricultural land as the context of Van Duong commune, in terms of any which, it suddenly reduces key asset of households accompanied with disturb in households' livelihoods. Then, the shocks force those who are confronting transfer prematurely into new forms of livelihood for survival. Which new forms of livelihoods can households/individuals choose? It is clear that their choices depend on resources base utilized by each household. Their process of responding with choices will progress in a new vulnerable context where they also have to manage uncertainty and constraints.

### 2.3. Coping Strategies

As analyzed above, responding and recovering from the shocks is a process characterized by attributes in terms of huge uncertainty, irreversible certainness, and unpredictable yields. Therefore, during this process, choices of a household for life based on its resources seem to be the risk coping strategies. Risk strategies consist of plans to spread risk through diversification in livelihood activities (reproduction strategy aimed at ensuring the long- term) while “coping” refers to the methods used by households to survive, that is typically a short-term response to shock and stress implemented to cope with the expected and unexpected hardships of everyday life (Ellis, 2000)

#### *Conceptual Framework for Analysis*

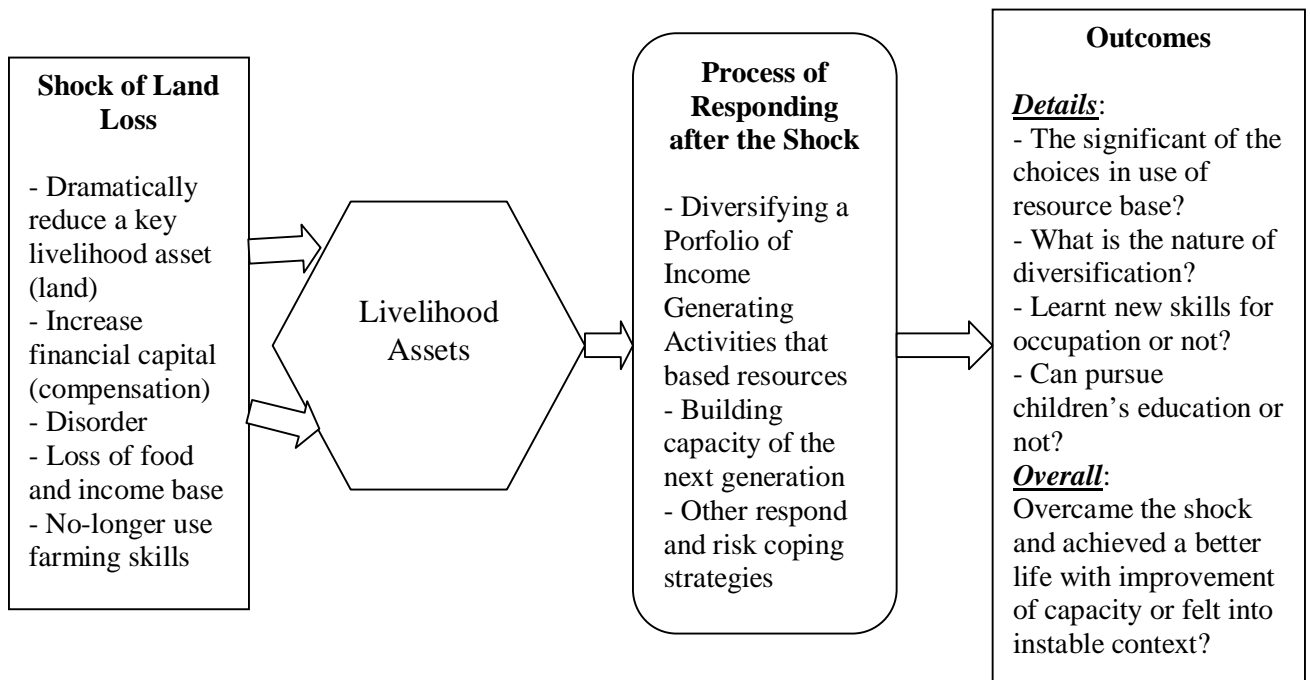


Figure 1. Conceptual Framework for Analysis (Adapted from DFID, 1999 and Nang, 2006)

Previous research has analyzed three dimensions of the risk coping strategies of the rural poor. These include: (1) operate ex ante to reduce the magnitude of the shock and hence exposure to risks (e.g. specializing, diversifying a portfolio of

income generating activities, self-sufficiency to incite households to produce their own food); (2) respond by accumulating assets as buffer stock (e.g. liquidating productive assets; labor bonding; reducing consumption; precautionary saving; and borrowing); (3) share risk with others (FAO, 1999). In reality, it is clear that each household will exhibit a variation in behavior related to their resource base.

Income diversification is considered as a risk coping strategy that implies a trade-off between a higher generated income activity with high risks with a lower generated income with low risks (Ellis, 2000). This seems to be a preferred choice by the poor because in a uncertainty, if the risks happened, they would be put in debt and their family would get more difficult. In rural areas, there are different reasons for households' income diversification. Some household groups, diversifies activities is due to a purpose of income increase, then to meet higher needs such as building house, buy furniture, or precautionary savings for resisting a risk. Some of them diversify their portfolio of income generating activities thanks to advantages such as they live near the centre or possessed many land; some of them are urged diversify income source due to redundant of family labor, especially during slack farming season. For these cases, diversification is to spread risks, because if livelihoods depend on a single source, household are at greater risk (UNDP, 1996). In contrast, to some households, their income diversification is to cope with a happened risk. It is clear that this is a compelled situation for survival as a response.

Analysis in the research of UNDP (1996) on "coping strategies" recognized some "household work strategies" as ways of response vulnerability. Namely, households may use children labor; cut food consumption, cut non-essential expenditures, reduce health and education expense, draw from savings and borrowing, work over time, etc. It is obvious that choices above can be made by different households and may be normal ways to respond a sudden shock for a short time, but it is a matter when these ways of response last for a long time. This can happen in a poor household or a community if household /community's capacity is not built. Particularly, children's education and labor reproduction (two important dimensions in strategies of improvement of human capital) are abused; it probably leads the household/community to be poorer and more vulnerable to cope with other risks in the future.

### 3. METHODOLOGY

#### 3.1. Research Site Selection

Van Duong commune in Bac Ninh province was selected as a research site due to several reasons as follows:

Firstly, Bac Ninh province was located in Red River delta where agriculture was the backbone of the economy and agricultural land played the key role in household economy development. However, in accordance with national IZ development policy, the IZs had been established in Bac Ninh province since 1997. The development of IZs in Bac Ninh was considered amongst the top ten provinces of Vietnam. Currently, Bac Ninh had 54 industrial clusters with an area of 1,700 ha, and eight industrial zones with the area of more than 3,000 ha. This province was also ranked among the provinces that had the highest percent of agricultural land revocation for building of IZs, 50.8 percent (Cuong, 2006).

Secondly, Van Duong was one of three communes whose agricultural land was converted for Que Vo industrial zone – one of largest IZs in Bac Ninh (in terms of area). Like other places where agricultural land was converted for industrial zone purpose, the household who lost the land due to Que Vo IZ received the lump sum of compensation. Since agricultural land was the key asset for farm households in Van Duong commune, many farm households in commune had to change their livelihoods due to their land loss for IZ development. How their livelihoods had been changed since land loss and what difficulties they had faced with after land loss, and what should be done to secure their sustainable livelihoods in the coming time were emerging questions to be concerned. The case study in Van Duong was therefore could be representative for Bac Ninh province as well as for other provinces in Vietnam where agricultural land was converted for IZs.

Thirdly, the land conversion in Van Duong started from 2001, or for quite long. The changes in livelihoods of farm households were thus quite clear to recognize. The difficulties emerged due to land loss were also clear to discover. The solutions for Van Duong farm households were therefore could be applied for other places where land conversion happened later (compared to Van Duong commune).

## **3.2. Data Collection**

### ***3.2.1. Secondary Data***

Data on changes in agricultural land area, the number of households losing agricultural land due to IZ development, the outcome of economic development in Van Duong commune and Que Vo district was collected from statistical data, from annual reports of Van Duong commune and Que Vo district. In addition, the data and information on agricultural land conversion for industrial zone development, the changes in farm households' activities after land loss, etc., were collected from related studies and published documents.

### ***3.2.2. Primary Data***

The primary data were gathered through the household survey and focus group discussions

#### **a. Household Survey**

The main purposes of household survey were to gather both qualitative and quantitative information on (1) the land loss situation of farm households and the compensation amount that households received for their land loss; (2) the changes in livelihood strategy of farm households after land loss; (3) the opinions of farm households about the difficulties they have encountered with after land loss and implications that could help them overcome the difficulties.

Forty farm households in Van Duong commune were selected for deep interviews. To secure the representative, the socioeconomic characteristics of the farm households such as income level, gender situation, farm member occupation were taken into account when selecting farm households for the survey.

The personal interviews with farm households using a standard questionnaire were implemented. At first, the draft questionnaire was developed. The questionnaire included 3 components. *The first* component gathered the general information of the households, including profile of households, household member and labor forces, agricultural land areas, capital and production assets of the households, etc., *The second* component gathered the data on livelihoods or the income sources of the farm households before and after land loss such as production pattern of the households, scope of farming activities and off-farm activities before and after land loss, the use of inputs for farming and off-farm activities, the

associated costs and the outcomes of farming and off-farm activities of farm households, the self-sufficient rate for food and foodstuff of the households before and after land loss, etc.,. *The third* components gathered the opinions or assessments of farm householders on positive and negative aspects of land loss, the difficulties they faced with after land loss and the suggested measures for overcoming the difficulties. The draft questionnaire were pre-tested through interviews of 5 households for its appropriateness. Then the final questionnaire were developed for the field survey.

#### b. Focus Group Discussion

FGD is one of the techniques use for collecting common understanding of people about the issues at the study sites and help to answer some of the research questions. Moreover, group discussions among key-informants also help to check the reliability of the answers obtained. In other words, FGD is used to make a crosschecking of the data/information collected from other methods. In this study, FGD is mainly used to get information about the changes in the livelihoods of farm households in Van Duong commune after land loss, the comprehensive opinions of participants about the land loss both positive and negative aspects and what should be done to helps the farm households, especially the vulnerable households to overcome the difficulties they have faced with after land loss. Facilitative discussions initiated by open-ended questions provide the group with the opportunity to explain more clearly about the issues. Three group discussions were organized, in which each group combined of from 5 to 7 people with different background in term of age, sex, social position, experiences, etc.,.

### ***3.3. Analysis Procedure***

The empirical analyses of this research relies on three main procedures of descriptive statistics method, comparative analysis, and SWOT analysis.

#### ***3.3.1. Descriptive Statistics Method***

Descriptive statistics method with the supports of the arithmetic mean, percentage, frequencies, tabulation, and ANOVA was used to overview the socioeconomic situation of Van Duong commune, Que vo district and Bac Ninh province (such as labor forces, economic growth, genral production activities of farm households, land loss situation). This method was also be used to present the



resources by group (production area, labor resource, capital and assets), activity performance by group (production patterns, input and outputs) and households' resources for consumptions; the farmers' opinions on the changes in their livelihoods after the land loss, etc.,.

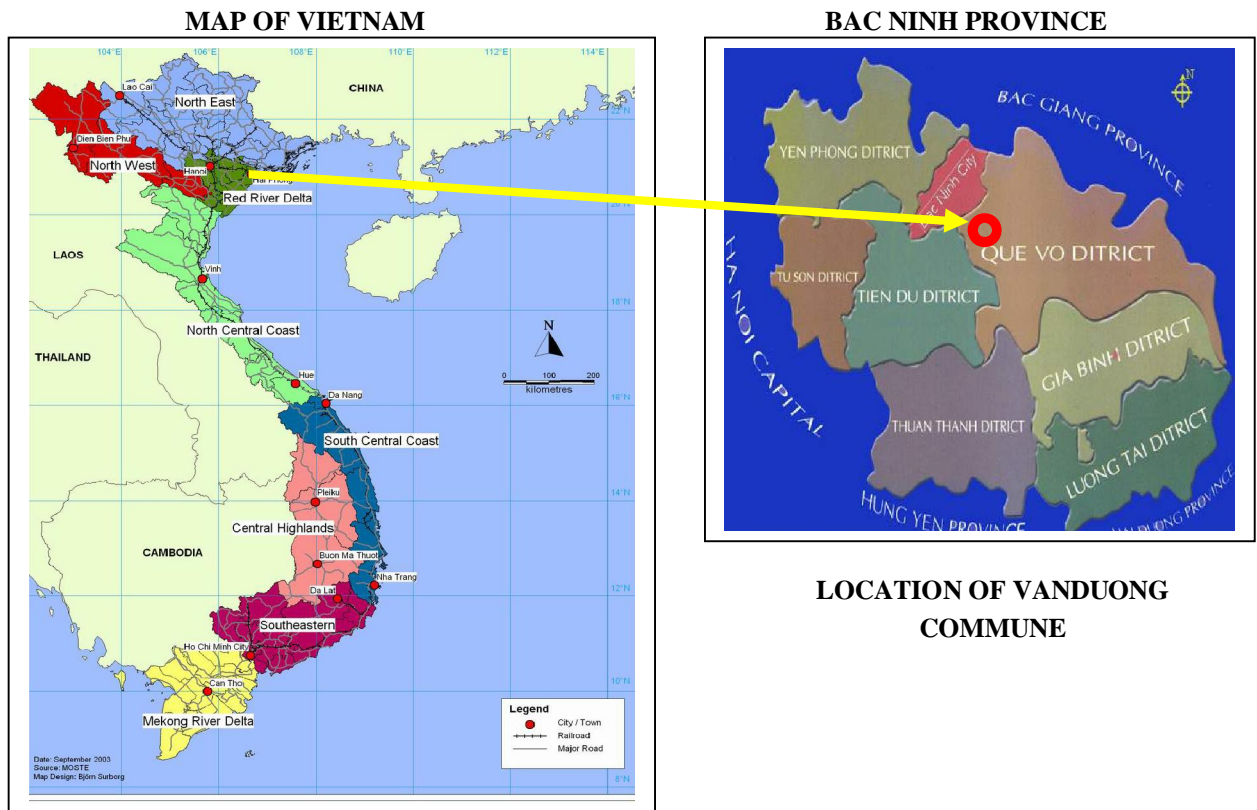
### ***3.3.2. Comparative Analysis***

Comparative analysis was used to identify the changes in livelihoods of farm households before and after the land loss. It was also used to identify difference in coping strategy between household groups (by land loss situaion - more land loss, less land loss and no land loss; by income situation - high income, medium income and low income households; by gender – male and female farmers, etc.,)

## 4. RESEARCH RESULT AND DISCUSSION

### 4.1. Overview of Van Duong commune

Van Duong commune is located in the Red River delta which is one of two largest rice plains in Vietnam. It has a total natural area of 658 ha. There are around 5,500 people living in 1,300 households in Van Duong commune (Statistical Section, 2008). There are five villages in Van Duong commune (including Lam Lang, Lam Trai, Chu Mau, Van Trai, and Hai Van villages).



Before 2008, Van Duong commune belonged to Que Vo district of Bac Ninh province. However, after 2008 Van Duong was absorbed by Bac Ninh City for the city enlargement. The commune is only five km far from downtown of the Bac Ninh City and around 30 km far from Hanoi city. It is also very near to Road No. 1 to go

to Hanoi City and Lang Son province, and Road No. 18 to connect to the Hai Phong port and Quang Ninh city.

## **4.2. The land concession process in Van Duong commune**

### ***4.2.1. Development of IZs in Bac Ninh province and Que Vo district***

In accordance with the national targets of industrialization course towards 2020, like many other provinces, Bac Ninh has performed a strategy to build industrial zones or clusters by converting agricultural land to industrial purpose since 1998. This strategy was addressed in resolutions 04/NQ/TU issued in 25 May 1998, 12-NQ/TU issued in 3 February 2000, and 02-NQ/TU issued in 4 May 2001. Then, during ten recent years, the IZs in Bac Ninh have increased in terms of both number and area. In 1998 four industrial clusters with 53.6 ha were formed, but no IZs at all. Up to 2006, four IZs with total area of 1,956 ha had been established. As the development plan, the number of IZs in Bac Ninh would increase to 8 with total area of about 3,000 ha in the period of 2010-2015.

**Table 1. The increase of industrial clusters and industrial zones in Bac Ninh province**

	Year 1998		Year 2006		Year 2010 - 2015	
	No.	Area (ha)	No.	Area (ha)	No.	Area (ha)
1. Industrial cluster	4	53.6	25	470	54	1700
2. Industrial zone	0	0	4	1956	8	2610-3000
of which: Que Vo IZ	0	0	1	336	2	973

(Source: Bac Ninh Statistical Office, 2007)

The first Que Vo IZ was established in 2001 with the total planning area of 336 ha. It is currently operated in all planning areas. The second Que Vo IZ has been established since 2008 with the total planning area of 637 ha. A part of it has completed and now being operated.

### ***4.2.2. Agricultural land concession and changing land area in Van Duong commune***

A part of first Que Vo IZ is located on agricultural land area of Van Duong commune. At the beginning, the small agricultural land areas in Van Duong commune were converted for establishing first companies in the Que Vo IZ in 2001.

Gradually, the Que Vo IZ area was expanding to reach the setting area. And up to 2008 when the IZ reached the setting area, agricultural land concession in Van Duong commune had been taken 8 times. Of course, in parallel with the process of the first Que Vo IZ establishment and expansion, agricultural land area of Van Duong commune had been decreasing so much (as shown in table 2). The total agricultural land area in commune decreased from 422.8 ha in 2001 to 383.1 ha in 2003, then to 189.3 ha in 2005 and to 177 ha in 2008. During 8 years (2001-2008), the total agricultural land areas therefore decreased by 245ha or by around 60%. All those converted land were annual crop area in the commune. Thus, the annual crop area in the commune decreased by 245 ha, from 355.3 ha to just 109.5 ha, or by around 70%.

**Table 2. Land area changes in Van Duong commune between 2001-2008**

	Year 2001	Year 2003	Year 2005	Year 2008
Total natural area	657.8	657.8	657.8	657.8
1. Agricultural land area	422.8	383.1	189.3	177
- Areas for annual crop	355.3	315.6	121.8	109.5
2. Forestry land	62.2	62.2	70.6	70.6
3. Residential land areas	18.74	49.1	63.3	67.8
4. Land for construction and IZ	9.45	47.5	239.8	252.6
5. Other	144.61	115.9	94.8	89.8

*(Source: Statistical Unit of Van Duong Commune, 2009)*

As stated in previous section, there are five villages in Van Duong commune. However, the land concession were taken in only 3 villages (Lam Lang, Lam Trai, Chu Mau villages) while two others stand still (just due to the location of the villages). Almost agricultural land area (90-95%) in Lam Lang, Lam Trai, Chu Mau villages was converted for IZ establishment. For example, the total agricultural land areas of Lam Lang village in 2001 were around 79 ha, but it remained only 7.5 ha in 2008, or an decrease by around 91%. This is really a sharp shock for the farmers in those villages since many farmers have become landless or almost landless.

### 4.2.3. Compensation for land concession

Warriner (1969) identified compensation as one of four components of land redistribution, a reallocation of ownership of land between people. The discussion paper No. 14, ADB 2005 shows that legal land users are compensated for the recovery of their land (Article 42, 2003 Land Law of Vietnam) either in the form of similar land with the same use purpose or in cash to the value of the land use rights at the time of recovery. In Van Duong commune (same as other commune in Que Vo district) the farm households which lose the farm land due to IZ establishment would receive the compensated amount. The compensated amount that those households received depend on converted land area, the land quality (referred as land grade) and also varied by the point of recovery time.

**Table 3. Compensation for land concession (thousand VND/ m<sup>2</sup>)**

<b>Land grade</b>	<b>Phase 1</b> (Before Jun 2004)	<b>Phase 2</b> (Jun 2004 - Dec 2004)	<b>Phase 3</b> (Jan 2005 - Dec 2006)	<b>Phase 4</b> (Jan 2007 - Dec 2008)
1	44.9	52.1	70.0	88.5
2	39.1	45.1	67.5	85.3
3	33.5	38.4	65.1	82.3
4	27.7	31.4	62.9	79.5
5	21.4	23.8	60.7	76.7
6	13.5	14.1	58.7	74.2

(Source: Decision No. 36/QD-UB; No. 69/QD-UB; No. 226/QD-UB)

In the phase 1 and phase 2 (before 2005), there were great differences in compensated amount between land grades. While compensation for land grade 1 (the most fertile land) was 44.9 - 52.1 thousand VND per m<sup>2</sup>, it was only 13.5 - 14.1 thousand VND per m<sup>2</sup> for land grade 6 (the most unfertile land) or the difference of 3.3-3.7 times. However, in phase 3 and phase 4 (or after 2004), that difference were narrowed downs (only 1.2 times). The compensated amount for the same land grade also increased by the sequence of time. The compensated amount in phase 4 was nearly two folds higher than that in phase 1. It is because the provincial government

of Bac Ninh adjusted the compensation due to the high inflation, and also due to more difficulty in land concession.

Typically, the farm land area of one household in Van Duong commune was taken by several times (3-5 times) during the IZ expansion. Therefore, each household usually received the compensated amount in also several times, not just only one time. This is one factor affecting the selection of livelihood strategy of farm households..

Moreover, in order to more easily persuade farm households to give up their farm land for the IZ establishment and expansion, the local governments also supported those farm households by allocating them a piece of residential land area in the setting zone within the commune. Theoretically, that piece of land was reserved for the increased population or households in the villages. However, it was allocated for every farm household in the land concession villages. The allocated area of residential land was dependent on farm household size. On average, each member received 45m<sup>2</sup>, but they had to pay the fee for legal procedures. After that, they could sell that land in the free market or they could keep it for their own uses. Since the residential land was quite expensive in the free land market, that piece of land was equivalent to a high value. Thank to that, the process of land concession is sped up.

### **4.3. Changes in results of production and service activities in Van Duong commune**

Production and business activities are an important component of the farm household's livelihoods in the commune. This section overviews the major changes in crop production, livestock raising and some service activities in the whole Van Duong commune.

#### ***4.3.1. Changes in crop production in Van Duong commune***

Due to the IZ development, the annual crop areas of Van Duong commune decreased by 70% or 245 ha. Those decreased areas belonged to three villages of Lam Lang, Lam Trai, and Chu Mau. Each of those villages remained just only 5-10% of agricultural land areas in compared with the area in 2001. However, the

remaining area was often stuck between IZ areas and residential areas of the villages. There was no irrigation and drainage system for the remaining areas. Moreover, this small remaining area still belonged to many farm households, and each farm household had very a tiny area (from 100 – 300m<sup>2</sup>). Therefore, some farm households gave up the crop cultivation on that land. Several other still kept the farming on that land, but their rice yield was very low since this land became rain-fed area.

Under such the situation, the crop production declined so much compared with that in 2001 or before land loss. The total rice growing area in Van Duong decreased from 674 ha in 2001 down to 262.6ha or by 60% while the rice yield has not increased (still stand at 5.3 tonnes per ha). Therefore, total rice produce in 2008 was equal to only 38% of that in 2001. There were also sharp declines in growing areas of cash crops including the potato, peanut, sweet potato and vegetables (Table 4). The growing area of potato and peanut in 2008 was only 4.5ha compared to 20.4 ha in 2001. Similar situation was seen in cases of sweet potato and vegetables.

**Table 4. Changes in crop production in Van Duong commune**

	Unit	Year 2001	Year 2003	Year 2005	Year 2007	Year 2008
1. Rice production						
1.1. Rice area	ha	674.0	616.2	292.2	273.2	262.6
- Spring rice	ha	324.4	303.6	165.6	154.6	148.2
- Autumn rice	ha	349.7	312.6	126.6	118.6	114.4
1.2. Rice produce	ton	3605.9	3336.7	1549.5	1456.2	1392.3
2. Cash crop (potato+ peanut)	ha	20.4	20.0	6.0	6.5	4.5
3. Sweet potato	ha	24.1	32.0	12.5	12.5	5.5
4. Vegetables	ha	31.5	35.0	20.3	21.7	10.6

*(Source: Statistical Section of Van Duong Commune, 2009)*

When the farm land declined sharply, the farm households tried to grow the crops on any area available and possible. The residential areas which were provided for households were also used for crop growing. Although many households sold out that land for money, many others still kept it. Of the households still keeping that land, many households grew rice and vegetables or peanut on the land as they

tried to get self-sufficiency as much as possible. However, that area was very small, only 45m<sup>2</sup> per person or around 180 m<sup>2</sup> for one household, and the irrigation system there was very poor. That land could therefore not help farm households much on the efforts to get their food self-sufficiency.

#### ***4.3.2. Changes in animal raising in Van Duong commune***

Land concession placed quite strong impacts on the animal raising activities in the farm households. Before land concession, many farm households kept buffalo and cattle for land preparation and organic fertilizers or manure for their fields. However, after the land concession, many farm households sold out their buffalo and cattle as they did not help farm households much any more. No land means no land preparation any more, and no need of manure any more. Only several households still raised cow for calves as they could sell calves for getting the income.

**Table 5. Change in animal raising in Van Duong commune (Unit: head)**

	Year 2003	Year 2005	Year 2006	Year 2007	Year 2008
1. Number of raising pigs	2824	2107	1833	1558	1450
2. Number of chicken	37194	32342	19367	11085	9300
3. Number of buffalo	52	28	17	12	11
4. Number of cattle	689	511	421	369	220

*(Source: Statistical Unit of Van Duong Commune, 2009)*

Land concession also resulted to the sharp decrease in pig production. Many farm households did not raise pig any more. It was because pig raising in farm households used to have three purposes of (1) providing the manure for crop fields, (2) salvaging or using the by-products and food residuals of the households; and (3) to make the income accumulation through using the rice (as feed) available in the households. However, when farm land was taken out, manure was not necessary any more, and many farm households did not have rice for feeding their pigs (they even have to buy rice for their daily food). They thus gave up pig raising or reduced the number of raised pigs. For the whole commune, the number of pig reduced from 2,824 heads in 2003 to only 1,450 heads in 2008 or a reduction by around 50%.



The sharp decline was also clearly seen on chicken rearing of the households. The total heads of chicken in 2003 was more than 37 thousands, but the figure in 2008 was only 9.3 thousands, or a decline by around 75%. The shortage of food, especially rice, was the main reason for that decline. Before land concession, rice was surplus in the farm households, and farm households could give rice for chicken as feeds. However, at present many farm households had buy rice for foods, and they did not have rice for chicken as feed any more. Moreover, the decline in garden area of the households due to building rooms for rent was also one of the reasons leading to the declines in chicken rearing.

#### ***4.3.3. Changes in off-farm activities in Van Duong commune***

Before land concession, Van Duong commune was considered as the pure agricultural commune as only 2.5% of the households (around 30 households) engaged in craft and services activities. However, when the farm land had been reduced, many farm households had to look for off-farm activities to get the income. The number of farm households engaging in off-farm activities increase stably from 30 in 2001 to 127 in 2003, then 278 in 2005, 285 in 2006, 365 in 2007 and 377 in 2008 (or 30%). Of those households in 2008, 72 households engaged in construction work, 21 in transport services, 284 in trading and other services.

In addition, the establishment of IZs in Que Vo attracts a lot of workers from other provinces. Those worker needed to rent rooms around the IZ since the companies in IZ could not provide them accommodation. The demand for room for rent was thus quite high. To response to that demand, many farm households in Van Duong commune built rooms for rent because Van Duong was nearby to Que Vo IZ. As reported by Van Duong commune staff, there was totally 1454 rooms for rents in Van Duong. Those rooms for rents were mainly built by the farm households in villages whose farm land was converted for IZ. At present, room for rent is considered as relatively stable income source of many farm households in Van Duong.

The establishment of IZs in Que Vo also created the employment opportunities for the people in Van Duong. However, most companies in Que Vo IZ have some requirement for their employee, including the age (not more than 35), the

skill, etc.,. Those requirements hindered the people in Van Duong commune to work in the IZ because in order to get work, the applicants must be young and be trained. Moreover, the wage for the workers is quite low, not create the strong motivation for working in the IZ. Therefore, up to now there was only around 200 workers originated from Van Duong commune who have worked in the IZ.

The development of Que Vo IZ also created the temporary work for the villagers. Those temporary works include the construction work (constructing the wall for company, or some simple and small houses and stores; cleaning; grass cutting). Many farmers in Van Duong who lost their land and needed the job did those temporary works for earnings.

#### **4.4. The coping strategy of households in Van Duong commune**

##### ***4.4.1. Basic information on survey households***

Forty households which lost their farm land due to IZ development were selected for the deep surveys to collect necessary data and information on the changes in their livelihoods. All those households had a similar feature that almost of all their agricultural land was converted for IZ development. In average, one survey household had totally 4.9 persons with 3.1 persons in labor-age. The residential area of one household was 600m<sup>2</sup> (range from 230-1700m<sup>2</sup>), quite large compared with other rural areas in Red River delta, especially with peri-urban areas.

The total agricultural land of the survey households before land concession was around 3100m<sup>2</sup> in average. However, after the land concession their agricultural land remains very little, only 380m<sup>2</sup> per household. It means that on average, one household lost more than 2700m<sup>2</sup> (or 87%) of their agricultural land for IZ development.

As discussed in previous sections, when agricultural land of one household was converted for IZ development, that household would receive the compensation. The compensated amount depended on the converted areas, land grade, and also point of recovery time. The farm land area of one household in Van Duong commune was taken by several times (3-5 times) during the IZ expansion. Each household usually therefore received the compensated amount in also several time,

not just only one time. The total compensated amount for one survey households in Van Duong commune was 95.4 million VND in average. The compensated amount also significantly differed among households. While the highest amount was 165 million VND, the lowest was just 31 million VND or more than 5 times different.

**Table 6. Basic information on survey households**

	Unit	Mean	Max	Min	STDEV
1. Number of people in the households	person	4.92	10.00	2.00	1.96
2. Number of labor-age people in hhs	person	3.08	6.00	1.00	1.59
3. Residential area	m <sup>2</sup>	599.72	1700.00	230.00	332.63
3. Agricultural land before land loss	m <sup>2</sup>	3103.84	4680.00	960.00	1009.27
4. Current agricultural land	m <sup>2</sup>	381.36	800.00	0.00	206.31
5. Agricultural land areas converted	m <sup>2</sup>	2722.48	3920.00	960.00	898.84
6. Compensation amount	mil. VND	95.40	165.00	31.00	33.78
7. Received expanded residential area	m <sup>2</sup>	173.48	360.00	90.00	76.65

(Source: Household survey, 2009)

Besides the compensated amount, the households in Van Duong commune also received a piece of residential land area in the setting zone within the commune. Theoretically, that piece of land is reserved for the increased population or households in the villages. However, it was allocated for every farm households in the land loss villages and the allocated area of those residential land depended on farm household size. The supplementary purpose of this land allocation is to more easily persuade farm households to give up their farm land for the IZ establishment. On average, each member of households received 45m<sup>2</sup>. The total residential land that one survey household received was 173m<sup>2</sup> (range between 90-360m<sup>2</sup>). Although households had to pay the fee for legal procedures to receive that land but the residential land was quite expensive in the free land market, and households could sell it after received it. It likes the trade-off or the additional compensation for agricultural land loss. Due to the high value of that piece of land, the process of land concession was accelerated.

#### **4.4.2. Use of compensation in the survey households**

Each household that lost their farmland received the compensated amount of 95.4 million VND in average. As the main income of most households that lost the

farmland was from agricultural activities and quite small before their land loss, the compensation was really significantly high amount of money for them compared to their annual income (only 5 million VND per capita in rural areas in 2005). That was also sudden monies that they had never thought they could have in the past. Therefore, it was really difficult for them to decide how to wisely use that amount. In fact, the compensation was considered as a start-up capital for the process of shifting to new livelihood activities. It would either be invested in new income generating activities or building and improving other physical assets or investment in human capital (e.g. learn new skill, children's education and health care) or other uses. Therefore, a very concerned question is that what did the household do with this significant amount of money?

**Table 7. Use of compensation by the survey households**

Use of compensation	% of households
1. House building and repair	76
2. Purchase of living assets	84
3. Payment for expanded residential land	64
4. Building room for rents	32
5. Bank deposit	24
6. Purchase of assets for production and business	20
7. Investment for education and training	20
8. Others (for wedding, payment for hospital fee, etc.,)	16

(Source: Household survey, 2009)

The investigation of the survey households reveals that most of the households used the significant part of compensation for their house building or repair, for purchase of living assets such as motorbikes, televisions, furniture, etc., and for payment of expanded residential land that the household was assigned. Only small proportion of the survey households used a part of that compensation for business investment such as purchase of production/business assets, building rooms for rent, investment for education and job training, or deposition in the bank.

It can be seen that most households used their compensation monies for satisfying their consumption demand or for their short-term needs (such as building, repairing households, purchasing TV, motorbikes), not for long-term needs such as the way to generate income after land loss. The households purely used

compensation, but did not deeply think that what they would do to earn income for their living under the situation that they did not have farmland or they had only a little of farmland. Many people in the villages worried that cash money was like a bowl of well-cooked rice easy to consume, thus money from these compensation was easy to deplete. The question followed “what would we do to earn a living while we have no other skills than farming, but no farmland?” was really one of serious concerns by these people.

#### ***4.4.3. The coping strategy of the households in Van Duong***

It can be noted that after spending the compensation for a while, “what would we do to earn a living while we remain only a little of farmland” is a serious question that farm households faced with. The households concerned much the next jobs where they would be able to generate income for basic needs of living for not only the present time, but also including the future of their children and grandchildren without land. Usually households lacked the needed skills to adapt to available non-farm jobs and they feared risk of other choices. Apprehensions and insecurities were evident in the households. For instance, the fear that once their health deteriorated and failed to do manual work, crisis may get in the way that might result in hunger due to lack of money to buy rice was topmost consideration. Another was the fear that they could not send their children to school or had no money to pay medical or hospitalization costs. All of these were serious considerations that filled their minds one time or another. It is certain that when farmers were separated from land, their lives greatly changed that they need to confront the harsh realities of life. What the households have done to cope with the shock of land loss? This section provides the insight of the coping strategies of the households with the land loss shock at a certain extent.

##### ***4.4.3.1. Diversification of income generation activities in households***

###### **a. The increase in the extension of income diversification**

Since the farmland of the households remained only around 10% after it had been recovered for IZ establishment, the household income from farming activities sharply reduced. Many peasants in the commune who used to do farming work had to look for additional jobs. At the beginning, it was really hard for them due to limited job opportunities in the regions. However, a significant ratio of them

gradually found the job or they engaged in the income generation activities - both permanent and temporary, after a while. The data in table 8 show the significant changes in job structures of the labor forces in the survey households.

**Table 8. Shares of labor forces by income generation activities (%)**

	Before land loss	After land loss
1. Labor engaging in only agricultural activities	61.5	29.3
2. Labor engaging in both agricultural and non-agricultural activities	28.2	20.7
3. Labor engaging in only non-agricultural activities	6.4	42.7
4. Others	3.8	7.3
Total	100	100

(Source: Household survey, 2009)

Before the land loss, the majority of labor forces (61.5%) in the survey households purely worked on agricultural activities (*agricultural activities here mean both crop farming and animal raising activities*). Less than 30% of labors in the survey households worked on both agricultural and non-agricultural activities and only 6% purely worked on non-agricultural activities. The main non-agricultural activities in the village at that time were clothes making, rice milling, carpenter, construction workers, etc.,. However, there were significant changes in the job structures of the labor forces in the survey households after land loss. The labor forces in the survey households engaged more on non-agricultural work or income generation activities were more diversified after land loss. The share of labor forces purely worked on agricultural activities sharply declined to 29.3% (from 61.5%), and the people worked purely on other activities than agriculture increased up to 42.7% (from just 6.4%) before. In addition to clothes making, rice milling, construction work as before, the non-agricultural activities after land loss also included the permanent work in companies inside the IZ and many service activities like small business in the village such as internet shops, haircut shops, groceries shops, soft drink shops.

**Table 9. Income activities in the households**

Activities	Engaged Households (%)	Income Proportion (%)
1. Before land loss		
- Rice production	100	38.4
- Vegetable and cash crop production	96	10.8
- Animal raising	96	34.7
- Craft	52	13.5
- Temporary work	20	2.1
2. After land loss		
- Rice production	76	4.0
- Vegetable and cash crop production	28	0.2
- Animal raising	56	7.1
- Craft	48	20.6
- Services	36	10.6
- Rooms for rent	44	17.1
- Permanent workers	56	31.8
- Temporary work or hired work	36	8.7

(Source: Household survey, 2009)

More diversification in income generation activities could be considered as one of coping strategies with the land loss shock. Before the land loss, all survey households engaged in rice farming (both spring rice and summer rice) with quite large area of more than 3000m<sup>2</sup> per crop. The rice farming made up 38.4% of total income of the households. However, after the land loss, only 76% of these households still cultivated rice. Some households did not cultivate rice anymore since the remaining areas for rice was too little or it was in the location unfavorable for rice farming due to IZ establishment (pollution and no irrigation or drainage). Moreover, the share of the income from rice declined so much in total household income (down to only 4%), mainly due to sharp decline in growing area of rice (around 90%). The similar situation also occurred for vegetable and cash crop production. The share of income from vegetable and cash crop production reduced so much – from 10.8% before land loss down to just 0.2% of total household income. And the main reason was that many households did not have land for vegetable anymore due to the land loss. Around 96% of survey households grew

vegetables in the past. However, this figure was currently only 28%, and the growing area was very small in spared land areas.

One more activity which also declined significantly in the survey households after the land shock was animal rearing (including cow, sow, fattening pigs, chicken and duck rearing). Before the land shock, 96% of the survey households raised these animals, and animal rearing played the important role in income generation as it contributed up to 34.7% of total household income. However, after land shock, only 56% of survey households maintained this activity, at the smaller scale than before. It was primarily because animal rearing was in the past considered the complementary activity for crop farming as it provided manures and helped land preparation. Moreover, the waste from human food and some vegetables could be used as the feed for animal in the past. Nowadays, when there was nearly no farmland anymore, both manures and land preparation was not necessary for the households; Also the waste from human food such as rice surplus and vegetable surplus were not much available because the households had to save food and foodstuff as they were not self-sufficient anymore (such as in the case of rice). The income from animal rearing also declined to only 7.1% in total households income.

Income from rice, vegetable and animal raisings contributed up to 84% of total household income before the land loss. However, all these three activities declined much and contributed only 11.4% of total household income after the land loss. What did the households had done to earn more income? The survey results show that many households had made efforts to promote the craft activities, to open service activities, to build the rooms for worker to hire, to send the member to work for companies in IZ as permanent workers, and also to promote the temporary works as construction workers, safeguard for some shops or companies, motor taxi drivers, agricultural helpers for other households in other nearby communes (rice transplantation and harvest).

In order to measure the diversification of income generation activities in the households, the Simpson Index of Diversity (SID) was use. SID is widely used in

biology to measures bio-diversity of an eco-system. It is defined as  $SID = 1 - \sum_{i=1}^n P_i^2$



where  $P_i$  is the proportion of organisms that are classified in species  $i$ . In this study,  $P_i$  is as the proportion of income coming from activity  $i$  in the households. The value of SID always falls between 0 and 1. If there is just one crop,  $P_1 = 1$ , so  $SID = 0$ . As the number of activities increases, the shares ( $P_i$ ) decline as does the sum of the squares shares, so that SID approaches 1 (Nicholas M., 2003).

The SID for the survey households at two points of time: before and after land loss was calculated. Before the land loss, the value of SID was 0.701 while it was 0.802 after the land loss. It confirms the more diversification in income generation activities of the survey households after the land loss shock. The additional activities that survey households engaged for earning more income after land loss include the room building for rent, wage permanent work for companies IZ, small business running, and temporary work promotion.

*b. The details of diversified activities*

*- Room building for rents*

Up to 2007, the total employment in Que Vo IZ was 9217 persons, of those only 3310 was local persons (Ngo Trung Thanh, 2008). It means that a majority of employment (5907 persons) in Que Vo IZ was the outside laborers that came to work for companies in Que Vo IZ. Only some companies had limited apartments for their workers. Almost all the outside laborers had to rent rooms nearby the IZ for their living. The demand for hired rooms was very thus high.

Under such a circumstance, many farm households in Van Duong commune that had available residential areas and located close to the IZ built the rooms for IZ workers to rent to get the income. The survey results show that 44% of the survey households had rooms for rent. All of the rooms were established after year 2004 with the cost of around 10 million VND per one room. The investment for those room buildings came from the compensation that household received, household savings, and some time from the money of the expanded residential areas that households received then sold out.

**Table 10. Rooms for rent in the survey households**

	Mean	Max	Min
1. Number of rooms for rent (rooms)	8.1	19	1
2. Monthly rental (thousand VND)	220	300	200
3. Cost for room building (mil. VND)	10.6	15	7.5

(Source: Household survey, 2009)

In the average, one household had 8 rooms and the average rental was 220 thousand VND per month (excluding the electricity and water bills). The earning for one household having the rooms for rents was thus around 1.2-1.5 million VND per month in average. This earning was quite stable and building rooms for rent was considered as one of sustainable income generation activity in the commune at present.

*- Permanent work for companies in Que Vo IZ*

There were around hundreds of companies inside the Que Vo IZ, and those companies usually made recruitment. The local people as well as outside people (usually under 35 years old) could apply for the work and be recruited if they met the criteria on health and work expertise. The monthly wage for casual workers of the companies inside Que Vo IZ ranged between 1 and 2 million VND (at the survey time). This wage level was not high, but not low compared to the income of peasants in the region. Moreover, for the local people, this wage level could be fine because they could stay in their own house with their family and daily go to work for the companies. They can save some cost such as they did not have to pay room rental and others like the outside people. Furthermore, their parent could still look after them as they still lived with the family. Thus, quite many households would like their young members (or their children) to work for companies inside the IZ.

In fact when IZ were set up, the management board of IZ promised to recruit the local people for work in the companies inside the IZ with stable wage level. This was also a way to persuade farm households to return their farm land for IZ establishment. However, when the companies recruited people, they certainly needed the expertise workers. The local people, used to be farmers without any other skills, did not meet their criteria on expertise or specialty. The companies still recruited some local people as promise, but they assigned them a temporary work

with low wage. In the most cases, these local people worked for the short time, then refused to work any more due to the low wage and tight work rules, etc.,. Realizing this problem, the households in Van Duong commune started to invest more for their children in education and training. They tried to send their children/ young members to go to vocational training schools to learn the working skills in order that after the training courses they could apply and work for companies inside the IZ as the permanent workers with sound wages. By this way, their children/ young members had been successfully recruited in some companies. Currently, more than 55% of the survey households had their young members to work as the permanent workers for the companies inside IZ. Each of these households had from 1-3 members to work there. Most of them were recruited after 2005 with the current wage of 1.5 million VND in average. The wage from permanent workers accounted for the large share (31.8%) of total income in the survey households. Being recruited as permanent workers in companies inside IZ could be seen as one of effective coping strategies for sustainable livelihoods of the households in the commune.

- *Small business running*

When almost all the farmland of households in Van Duong commune was recovered for IZ establishment, the farmers had to look for other jobs than farming. Many people, especially the people over 40 did not want to go far for work. Thus they had to look for jobs inside the commune. However, it was really difficult to seek a job inside the commune under the situation that underemployment was overwhelmed due to the land loss. They therefore have to create the job for them by themselves. Open of the small business was one of the good ways for that.

Since many workers of IZ currently lived in hired rooms in the commune, the demand for daily consumed goods and food and drink in the commune increased. The consumption demand of the own local people in commune had also increased because they had more budget when received the compensation. Realization of this demand, some households decided to invest for small business running such as groceries shops, food and drink stalls, internet shops, mobile phone shops, carriage services, etc.,. Around 36% of the survey households were found to run those small businesses, and most of them had been run since 2007, meaning that those

businesses were quite new for the households in the commune. The investment cost for opening those businesses greatly varied based on the business scale and fields. It was only 10 million VND for groceries, but it was up to 80 million VND for the internet shop. The compensation amount and receipt from selling out expanded residential area were main sources for that investment. However, some households also received loan from bank for setting up those new businesses.

The income from those business depended on the scale and fields, but in the range from 0.5 to 3 million VND per month. This income was not stable. However, in some cases the business helped households to better use their available human resource, especially the middle ones without any skill than farming. The business also played a important role as it made up 10.6% of total current household income.

- *Enhanced temporary work*

Many farmers over 40 did not find any permanent jobs after they lost the farmland since they were over age for recruitment to work in the companies inside IZ and they did not have capability to set up the business or craft. They then became underemployment and tried to do any temporary work available to get the income. Some people accompanied with the construction worker team and helped them to do simple work at anytime the team wanted to have them. Some people went to do the farming work (such as transplantation, pesticide spraying and harvest) at sometime for other farm households in other communes where the farmland was not converted for IZs. Some worked as the temporary safeguards for the companies inside the IZ and others sometimes worked as motor taxi drivers. It was found that 36% of the survey households had their members engaged in temporary works to get more income. Although the work was not stable, it helped generate the significant income for households (8.7% of total current household income).

*4.4.3.2. Mobilization of all possible land for crop cultivation*

Due to the IZ establishment, the farmland of the households sharply declined. The cultivated rice areas decreased from 3100m<sup>2</sup> to only 360m<sup>2</sup> while the area for vegetables and other crops declined from 800m<sup>2</sup> to just 62m<sup>2</sup> in the average. Due to this sharp decline, 92% of the survey households were not self-sufficient in rice

anymore although all of them had been surplus of rice before land loss. In average, each of those households currently had to buy additional amount of 478 kg of rice in year 2008 for their own consumption. In order to save the cost for rice purchase, and also be able not to give up farming activities that they were family with for very long, almost all households tried to mobilize all possible piece of land for rice cultivation. Some households (around 20% of the survey households) tried to rent some land for rice farming from the households of other nearby villages where farmland was not affected by IZ establishment. Some households borrowed farmland from their relatives who lived in other nearby villages. Some households even used the expanded residential area they just received to cultivated rice since that land used to be rice land in the past.

**Table 11. Changes in crop production after land loss**

	Unit	Before land loss	After land loss
1. Cultivated area for rice	m <sup>2</sup>	3103.8	360.7
2. Area for vegetables and other crops	m <sup>2</sup>	799.2	62.0
3. Ratio of households to be self-sufficient for rice	%	100.0	8.0
4. Ratio of households to be self-sufficient for vegetable	%	100.0	12.0
5. Purchased quantity of rice /year	kg	0.0	478.0

(Source: Household survey, 2009)

It was also similar for vegetable production. As vegetable was almost considered a compulsory part of meals in rural area of Red River delta, nearly every household need vegetable everyday. Before land loss, all survey households were not only self-sufficient in vegetable, but they were also providers of their own vegetable in local market. However, the abrupt fall of farmland made the households had nearly no land or very little land area for vegetable. The move from providers of vegetable to buyer of vegetable was really hard to accept for the farm households. It cost them not much, but everyday. And many local people thought that was not good for them. They therefore tried to use any possible land for vegetable growing. As many kind of vegetable could grow for short-time and they did not require the tight conditions (irrigation, land quality, etc.,), many people

grew vegetable on the spared land of IZ when the companies were setting up and that land was still not used by companies. Some people grew vegetables on the small areas along the sides of the small roads in the villages, or along the road of canals. Some people planted vegetable on expanded residential area they just received. Of course, almost households grew various kinds of vegetables in their gardens (In rural areas, gardens usually accompanied with the living houses). Despite those great efforts, many households had still buy vegetables in the local markets sometimes. Only 12% of households currently was self-sufficient of vegetable for the whole year.

#### *4.3.3.3. Reduction in animal raising scale*

It is very clear that there was a significant reduction in animal raisings in the survey households after the land loss. Both the number of raising households and the number of animals in raising households declined quite sharply.

Before the land loss, 60% of survey households kept the cows for four purposes of (1) doing land preparation services, (2) selling calf when cows gave birth, (3) providing manure for crop production, and (4) using the spare time of family member. At that time, land preparation (for rice transplantation) was very important and if the households kept cows, they could do land preparation by themselves, thus actively following the crop calendar. Also, the grass for cows was very much available at that time since there were large crop fields in the commune. However, after the land loss the total farmland in the households was very small, resulting in the large reduction in need for land preparation. Cow keeping for land preparation purpose was not very necessary as before. Also, when crop cultivation declined due to the sharp drop of farmland, the need for providing manure for crop production was not important anymore. The available grass for cow keeping also fell down much due to the replacement of IZ establishment for crop fields. These reasons resulted in the declines both in number of households keeping cows and in the number of cows in raising households. Only 8% of survey households (down from 60%) remain keeping cows after land loss and one household kept just 1 head (down from 1.2 head). The keeping households tried to keep cows for using the

spare time of some family member and get the available grass in IZ where some land was still not used.

**Table 12. Changes in animal raisings in survey households**

	Before land loss		After land loss	
	Raising households (%)	No. of animals per raising household	Raising households (%)	No. of animals per raising household
1. Cow	60	1.2	8	1
2. Sow	44	1.6	4	1
3. Fattening Pig	88	6.7	24	20.1
4. Poultry	100	44.5	60	22.7

(Source: Household survey, 2009)

The proportion of households raised the sows also decreased much, from 44% down to 4%. The number of sow in raising households also declined from 1.6 head to just 1 head per households. Such the declines were due to several reasons. Firstly, when the farmland decreased much, the crop production (including rice, vegetables, etc..) also fell down a lot and the availability of rice and vegetables was even not enough for human needs. The households even had to buy more rice and vegetables for human consumption. Without rice and vegetable surplus, many households had to give up the sow and fattening pigs. Secondly, the demand for piglet in the commune (and also in the regions) diminished very much because many households did not rear fattening pigs anymore due to the very shortage of rice and vegetables. In addition, the households' demand for manure also declined so much due to cropland decrease. The waste from sow and fattening pigs was thus necessary anymore. Consequently many households did not rear the sows and fattening pigs any more.

Although the percentage of survey households which rear fattening pigs decreased from 88% to just 24%, the number of pigs per rearing households increased from 6.7 heads to 20.1 heads. It was because few households enlarged the raising scale of fattening pigs when they obtained the compensation from land loss. Those households invested quite a lot for pig raisings and they reared the pigs at large scale to generate the earnings. However, this activity was also at risk due to the pig diseases in recent time.

The proportion of households rearing the chicken was also down from 100% to 60%. Compared to other kind of raising animals, the share of households rearing the chicken was still high. It was because many households thought that they needed to rear the chicken in order to prepare for some special days of the households in the year such as Tet holiday (Vietnamese New Year), ancestor death anniversary days, first day of lunar months, etc.,. Many households reared the chicken because chicken could salvage the food waste. However, without the rice surplus as before, the number of reared chicken in the households decreased around half, from 44.5 head to 22.7 heads per households.

#### *4.4.3.4. Wise use of the household budget*

At first when the households in the commune obtained the compensation for their farmland cutback, many households used their monies without a long-term plan. Almost all of them built or repaired their living houses and bought the furniture or other living assets (motorbikes, color TVs, DVD players). In addition, they also used their compensation for payment for getting piece of additional residential land, and daily cost for living. Some people in the commune even engaged in some evils such as gambling, drug addiction, etc.,. Their compensation therefore run out very soon. After one or two years, the households gradually realized the difficulties they had to face with as they had to buy rice and vegetable for their living, and they have to pay all other things from the compensation they received. They started to seek jobs for earnings and also started to set up the wise use of their available budget.

Without rice surplus anymore, the households currently had to buy more rice for their human consumption. In addition to their small rice produce, each survey households had to buy nearly 500kg of rice per year in the average. This cost them a significant share in their total annual expenditure cost. They therefore had to think much about when and where and from whom to buy in order to save the cost. Many survey households decided to buy paddy (not rice) right after harvesting time because the paddy price at that time were usually much cheaper than at other time of the year, and they can keep the paddy for half year, even whole year (while it was impossible to keep rice for six month as the rice quality would be degenerated).



Many survey households bought paddy from their relatives or well-known people in other nearby villages to secure the paddy quality and relevant price. They also tried to cut down the unnecessary expenditures in their daily life and expend the budget in the saving ways.

Several households realized that without farmland the only way to sustain the life is to get the stable and permanent jobs as the state officials, company workers, or other off-farm professional jobs. They started to think and implement the long-term plan of using monies by investing the budget for training and educating their young members. Many of them enquired what skills the companies in the IZ need to recruit the workers and they sent their young members to go to the training centers or schools to learn those skills. Thanks to that 3 sons and daughters of Mr. Nguyen Quang Thai (62 years old) and Mr. Nguyen Gia Hien (54 years old) in Lam Lang village, and many other cases had obtained the permanent jobs in the companies inside the IZ. Some households invested monies for their sons to learn how to drive truck to get the permanent job as drivers for some private companies. Some others invested monies for their daughters to learn to become hairdressers for opening the hair-salon later. Almost all households paid more attention to their children's educations as they thought it could be the good ways to sustain their livelihoods if their children could go to colleges and universities to study, and they would easily find a job after their graduation. They therefore invested a lot more for their children's education.

When the households faced with the difficulties in income generation and rice shortage, they tried to refuse their contribution to community or society. The leaders of the commune and villages admitted that it was very difficult to get the households' contribution for the fund to support the poor, for the fund to build or repair the common assets of the commune such as village roads and common village hall, environmental sanitary fees, improved kindergarten. There were several reasons that the households tried to refuse their contribution. The first was their real more difficulty in income earnings and sustainability when they lost their farmland. The second was that the villages and commune authorities did not have powerful tools to enforce the households to contribute the fund as before. When the farm

households had a lot of farmland, sometime they received the supports from the local authority for their farming activities in seed provision, technical supports, etc.,. If one household did not contribute for the some common fund, they would be treated as the bad one and possibly did not allow them to receive the supports anymore (Even a part of their farmland could be confiscated if they did not pay some fees). However, without the farmland or little farmland, those supports were not necessary for farm households anymore. The households did therefore not have much motivation to contribute the fund. Consequently, they tried to refuse or avoid the contributions.

#### ***4.5. Suggestions for the sustainable livelihoods of the households after land loss***

From the experiences of the survey households in Van Duong commune, it is quite clear that in order to get the sustainable livelihoods after the land loss, the households should first think about the long-term plan to use the compensation, not short-term plan. It means that the households should use a small share of compensation for house repair or purchase of living assets. The large part of compensation should be saved and used for the long-term plan such as the training or education of young family members, investment for running small business, and investment for permanent income generation activities (such as building rooms for rents). By doing so, the farm households could soon diversify their income generation activities and create permanent jobs for their family members. It is the most important to reach the sustainable livelihoods after the shock of land loss.

The wise use of family budget to save the living cost when the households faced with difficulties in earnings could be also an effective way to help farm households overcome the difficulties. The households should set up an expenditure plan, detailing what, when, where and from whom to buy necessary things for expenditures to reduce the cost like the case of paddy purchase by survey households in Van Duong commune. The households should also cut down the unnecessary expenditures such as organizing a big party for new house, a big party for longevity congratulation (for old people), or some other family events. Saving the monies and gradual investment for children's education should be one of intelligent ways for getting the sustainable livelihoods in the long-term.

In addition, the farm households could establish more strategies for their sustainable livelihoods based on their own resource conditions. If some members in the households could not find the permanent job, it is also good to promote the temporary work for them. If the farm households could mobilize the farmland for crop cultivation through the use of spare land areas, or rent and borrow of farm land, they should do in order to get self-sufficient in rice and vegetable as much as possible like the case of households in Van Duong commune.

Moreover, the local authorities should provide some training courses on some handicrafts to help farmers to move to non-farm jobs when they lost their land. In accompany with the training courses, the local authorities should help farmers to establish the handicraft cooperatives and support them in looking for markets at the beginning time.

## 5. CONCLUSION

Industrial Zones (IZ) in Vietnam has been developed rapidly, from only one IZ in 1991 to 33 IZs in 2000 and 148 IZs in 2007. Together with establishment of IZs, a huge area of farmland has been converted. Up to 2006, more than 157 thousands ha has been converted from agriculture land, including 28,644 ha for building IZs, resulting in the farmland loss of many farm households surrounding IZs. By 2005, land had been recovered from over 100,000 small households for the development of more than 190 industrial zones and clusters. How did those farm households do to recover from the shock of land loss or how were farmers' coping strategies for their sustainable livelihoods after the shock of land loss was really one of current hot issues in Vietnam.

With the aim of investigating the farm households' coping strategies for the sustainable livelihoods after they lost their agricultural land due to industrial zone development, this study was conducted in Van Duong commune, Bac Ninh province in Red River delta of Vietnam. This commune was one whose agricultural land was converted for Que Vo industrial zone – the largest IZs in Bac Ninh province which ranked among the provinces that had the highest percent of agricultural land revocation for building of IZs, 50.8 percent. The land conversion in Van Duong has been implemented since 2001. The changes in livelihoods of farm households were thus quite clear to investigate. In addition to collection of the secondary data such as the changes in farmland areas, number of households losing the farmland, the changes in economic activities of Van Duong commune, the primary data were gathered from direct personal interviews of 40 farm households, and from focus group discussions with participation of several stakeholders such as representative of farm households which lost their land, village staff and commune staff.

At first when Que Vo IZ was established only small agricultural land areas in Van Duong commune were converted for it in 2001. Gradually, the Que Vo IZ area was expanding to reach the setting area and agricultural land concession in Van Duong commune had been taken 8 times up to 2008. The total agricultural area in

commune had been decreased from 422.8 ha in 2001 down to 177 ha in 2008. Many farm households in the commune lost their farmland. Those households received the compensated amount between 31 and 165 million VND (as the survey result) that depended on converted land area, the land quality and also the point of recovery times. Although the compensation was considered as a start-up capital for the process of shifting to new livelihood activities, most of the households used a significant part of compensation for their house building or repair, for purchase of living assets such as motorbikes, televisions, furniture, etc., and for payment of expanded residential land that the household was assigned. Only small proportion of the survey households used a part of that compensation for business investment such as purchase of production/business assets, building rooms for rent, investment for education and job training, or deposition in the bank.

After a short of time when compensation run out and when the households faced with more difficulties in their lives as they currently had to buy rice and vegetables daily, the farm households started to seek for other jobs than farming. Although it was really hard for them at the beginning a significant ratio of them gradually found the job or engaged in the income generation activities - both permanent and temporary, after a while. *Diversification of income generation activities could be considered as first strategy to cope with the shock of land loss.* In addition to the farming activities on the remaining farm land areas, almost all farm households engaged in other activities for income such as the room building for rent, permanent work for companies inside IZ, small business running, enhanced temporary work. The diversification index measured by SID increased from 0.701 (before the land loss) to 0.802 after the land loss, reflecting the more diversification in income generation activities of the households after land loss. *Mobilization of all possible land for crop cultivation could be considered the second strategy of the land loss households.* All households tried to cultivate rice and vegetables on any possible land to reduce the purchased quantity of rice and vegetables. They borrowed or rent some farmlands from relatives or other households in the nearby villages. Many people grew vegetable on the spared land of IZ (when it was still possible), on the small areas along the sides of the small roads in the villages, or

along the road of canals, on expanded residential area, and in their gardens. *Reduction in animal raising scale could be seen as the third strategy of the households.* With only a little farmland, cow keeping for land preparation and for manure was not necessary anymore; sow and pig rearing was also decreased due to no rice and vegetable surplus for them, low demand for manure and also declining demand for piglets. *Wise use of the household budget could be considered as the forth strategy of the households who lost the land.* The households had to think much about when and where and from whom to buy rice for their family consumption to save the cost since it accounted for a significant share of their total annual budget. They also tried to cut down the unnecessary expenditures in their daily life and expend the budget in the saving ways. However, many households invested more budget for the training and education of their young family members in order that those member could get the jobs in the companies inside IZs or other permanent job in the society for sustainable life. It was also found that many households try to avoid the contribution for common fund after land loss.

From the experiences of the survey households in Van Duong commune, it is quite clear that in order to get the sustainable livelihoods after the land loss, the households should use a small share of compensation for house repair or purchase of living assets and the large share of compensation should be used for the long-term activities such as the training or education of young family members, investment for running small business, and investment for permanent income generation activities (such as building rooms for rents). By doing so, the farm households could diversify their income generation activities and create permanent jobs for their family members. In addition, the wise use of family budget such as setting up an expenditure plan with the detail of what, when, where and from whom to buy necessary things for expenditures to reduce the expenditure cost. Furthermore, the farm households could set up more strategies for their sustainable livelihoods based on their own resource conditions.

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